A Tale of Many Stories

Explaining Policy Diffusion

between

European Higher Education Systems

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Abbreviations

AIC – Akaike Information Criterion

BFR – Belgian Franc

BIC – Bayesian information criterion

CNTS – Cross-National Time-Series (CNTS) Data Archive

COUNTRY CODES

- AT – Austria
- BE – Belgium
- BE_fr – French Community of Belgium
- BE_nl – Flemish Community of Belgium
- DE – Germany
- DK – Denmark
- ES – Spain
- EL – Greece
- FI – Finland
- FR – France
- IE – Ireland
- IS – Iceland
- IT – Italy
- NO – Norway
- NL – Netherlands
- PT – Portugal
- SE – Sweden
- UK – United Kingdom (England)

EC – European Commission

ECJ – European Court of Justice

EHA – Event History Analysis

EHEA – European Higher Education Area

EHM – Event History Modelling

EU – European Union

EUR – Euro

EURYDICE – Information Network on Education in Europe

fsQCA – fuzzy set Qualitative Comparative Analysis

GATS – General Agreement on Trade in Services

GDP – Gross Domestic Product

ICT – Information and communication technology

IGO – International governmental organizations

ILO – International Labour Organization

IMF – International Monetary Fund

ISCED – International Standard Classification of Education

NPH – Non-Proportional Hazard

NPM – New Public Management

OECD – Organisation for Economic Cooperation and Development

PH – Proportional Hazard

PPP – Purchasing Power Parities

QCA – Qualitative Comparative Analysis

SUR – Seemingly Unrelated Regressions

TVC – Time-varying coefficient

UIS – UNESCO Institute for Statistics

UNESCO – United Nations Educational, Scientific and Cultural Organization

USA – United States of America

WB – World Bank

WDI – WB World Development Indicators

1 Introduction

Since Walker's seminal work on the diffusion of innovation among American states (1969), an ever-growing number of political scientists has been starting to write about the interdependencies between countries and the phenomena of policy diffusion. Empirical analyses in the framework of policy diffusion are typically interested in the spatial and temporal clustering of public policies and the various causal mechanisms that are underlying (non-)successful policy transfer: How and why do policies spread across time and countries?

Scholars dealing with policy diffusion usually refrain from thinking of domestic politics as a one-way street. Rather scholars dealing with the policy diffusion framework conceptualise the policy processes as situations of interdependent decision-making between national and international actors (cf. Sabatier 2007). Hence, the main theoretical interest is on the role of interdependency for explaining policy adoption. For example, the literature on policy diffusion often focuses on multi-level systems such as federal states. Serving as functional equivalent of policy laboratories, scholars describe such systems as most-likely cases for policy transfer and as valuable cases for gaining additional theoretical and empirical insights on diffusion processes. Examples are the exchange of ideas and policies between the states in the United States (for example, Savage 1985; Volden 2006; Walker 1969) or between the European Union (EU) and its member states (for example, Börzel and Risse 2003; Bulmer and Padgett 2004; Levi-Faur 2004; Radaelli 2008; Schmidt 2008a).

This is where the thesis in hand comes into play. The thesis develops a distinct approach for the systematic and comparative analysis of diffusion processes and their effects with regard to a rather neglected policy area – the case of European higher education policy. The core questions addressed are: *If and under which conditions diffusion mechanisms lead to the adaption of public policies? And what is the interplay between international, national, and policy-specific factors in determining cross-national patterns of policy adoption?*

To answer these research questions empirically, a macro-quantitative research design for examining policy diffusion between European higher education systems is developed (cf. Table 1-1). The research design is dealing with domestic decision-making and national governments as well as the (non-)adoption and modification of policies due to diffusion processes. The theoretical framework used aims at

disentangling theoretical arguments by formulating clear-cut expectations on when and how actors adopt external policies rather than simply following the various research strands. Event history analysis is used to explain policy change and adoption in the public higher education systems of 16 West European countries between the years 1980 and 1998. Overall 14 policy items describing performance-orientated reforms of universities like the adoption of external quality assurance systems or tuition fees are examined.

Different causal stories and arguments are tested. For this purpose, hypotheses on the relationship between factors triggering and conditioning diffusion processes and their impact on policy adoption are drawn from mechanism-based thinking on policy diffusion.[1] The research design is based on four sets of explanations for policy adoption. Three of them are utilizing causal assumptions dealing with the functioning of diffusion mechanisms on learning, externalities and socialization. A fourth set is based on the assumption that governments pursue policies independent from each other (as common responses to similar policy problems and preferences). Instead of mixing all kinds of theoretical assumptions from the start, the thesis contrasts and compares testable and coherent explanatory models on policy adoption.[2] In a step-wise fashion, robust variables are extracted and comparatively tested in synthesized statistical models. In a final step, synthesized models are constructed based on robust explanatory variables only. These models are finally used to comparatively test the various explanatory models in a final statistical model dealing with all diffusion mechanisms.[3]

In doing so, the thesis joins a growing number of diffusion studies that demonstrated the usefulness of mechanism-based and comparative frameworks in statistical analysis (for example, Boehmke and Witmer 2004; Daley and Garand 2005; Dobbin, Simmons and Garrett 2007; Shipan and Volden 2008; Simmons and Elkins 2004).

[1] A detailed discussion of the independent and conditional variables and the corresponding hypotheses can be found in chapter two. All variables are operationalized and constructed using indicators provided in existing data sets from international organizations and research groups. Full operational definitions can be found in the Annex II and III. The detailed discussion of the indicators used is also included in chapter four

[2] More specifically, factors indicating a change in the parameters determining the functioning and the outcome of diffusion processes and the underlying mechanisms are tested. See chapter three for more details.

[3] The research design also controls for alternative explanations (cf. chapter four). The control variables are referring to characteristics of the countries at risk. In the case of the common response- models controls for diffusion effects are also included

Furthermore, the thesis is the first study on the role of interdependencies in higher education and the diffusion of higher education policies in Europe.[4]

Overall, the thesis points to new insights on the causal relationships in policy diffusion. Empirical evidence can be found for (and against) all the four theoretical approaches – at least as distinct theoretical approaches. But in comparison, many of the assumptions related to interdependencies lack robustness, whereas the common response model seems to be the most stable one. This does not mean explanatory models based on interdependent decision-making are not suitable for analysing policy diffusion in higher education. Rather interdependency is a multi-dimensional concept that requires a comparative assessment of diffusion mechanisms. From this point of view, the recommendation for analysing diffusion is to start with a model based on domestic politics and successively extending this model with explanatory factors dealing with interdependencies. Diffusion variables matter, but it is only one side of the story.

The following two sections give a basic introduction into the field of policy diffusion and higher education research. Furthermore, section three highlights the relevance of this thesis regarding various questions and problems diffusion researchers are facing. The fourth section elaborates on the usefulness of studying higher education policies for gaining additional theoretical and empirical insights on policy diffusion. The last section of this introductory chapter provides a closer look at the content and the structure of this thesis. It also includes an outlook on the findings and results of this thesis.

[4] Though the diffusion of higher education policies in the US context is much better researched the focus on these studies is mainly on the role of US partisanship and interest groups (cf. Fowler 2010; McLendon, Hearn and Deaton 2006; McLendon, Heller and Young 2005; Sponsler 2010).

Table 1-1: Analytical framework and research design

Model	*Learning*	*Socialization*	*Externalities*	*Common responses*
Primary hypotheses (on the main driver of policy adaption)	• (Long-term) Policy experience • (Long-term) Country success	• Peer influence (regional, ideological, cultural peers; international norms) • Memberships in Networks (IGOs; EU memberships and accession candidates)	• Policies of competitors • Competitive countries • Competitive policies • Brain drain effect	• Government preferences • Voters' preferences • Domestic problem-solving • Historical legacy
Secondary hypotheses (conditional factors for main driver of policy adaption)	• Cognitive heuristics (regional, ideological, historical) • Domestic problem-pressure	• Domestic problem-pressure • Political Uncertainty (electoral accountability) • Common values and ideologies	• Domestic problem-pressure • International system Openness	• Electoral accountability • Domestic problem pressure
Controls	• Characteristics of countries and policies at risk influencing the reform capacity			• Country- and policy-specific factors • International norms • International interlinkages
Data Countries	16			
Time Frame	1980-1998			
Policy items	14			
Unit of analysis	Country*Policy*Year			
Total observations	4256			
Sources	Own dataset based on secondary analysis			
Research Methodology Case selection	Most Similar Systems Design (comparable cases strategy)			
Approach	x-centred (quantitative)			
Data analysis	Event history modelling (Cox regression)			
Chapters	2.4.1, 4.5 and 4.9	2.4.2, 4.6 and 4.9	2.4.3, 4.7 and 4.9	2.4.4, 4.8 and 4.9

1.1 Research on Policy Diffusion

How do policies spread? Why do some ideas turn into actual policies, whereas others do not? Where can we observe spatial and/or temporal patterns of policy adoption? And what drives (or hinders) such clustering? Scholars dealing with the phenomena of policy diffusion usually pick up questions of this kind. Originally the term “policy diffusion” was synonymous with the spread of all kinds of (technological and social) innovations (cf. Collier and Messick 1975; Gray 1973; Walker 1969).

But diffusion research is nowadays dealing with all kinds of policy change and transfer – from the adoption of specific ideas, approaches and policy instruments, but also referring to more encompassing scope of policy transfer linked to the adoption of organizational forms and institutions (cf. Baum and Oliver 1992; Collier and Messick 1975; Gray 1973; Rogers 2003; Strang and Soule 1998; Tolbert and Zucker 1983; Walker 1969). However, policy diffusion is neither understood as dependent nor independent variable, but follows a process-oriented conceptualization of the empirical phenomena (cf. Elkins and Simmons 2005: 36).[5] Correspondingly, the theoretical concept of policy diffusion largely refers to “any process where prior adoption of a trait or practice in a population alters the probability of adoption for remaining non-adopters” (Strang 1991: 325). That means the analytical focus is on the underlying causal mechanisms linking the cause and effect and thereby driving specific processes of diffusion and policy spread.

To put it differently, diffusion research usually[6] focuses on policy change and adoption as dependent variables, but follows mechanism-based explanations underlying the whole diffusion process. Causal mechanisms relate to the different kind of diffusion processes (cf. Graham, Shipan and Volden 2012). They can be described as "sequences of causally linked [social] events that occur repeatedly in reality if certain conditions are given" (Mayntz 2004: 241). Mechanism-based theories do not only include the trigger of the adoption process, but also deal with its intervening causal steps as well as its outcome in terms of if and when the adoption of a specific policy takes place.

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[5] That does not mean, that variable-oriented analysis is not suitable for testing hypotheses derived from mechanism-based theories. This depends on the level of analysis and the number of causal steps tested.

[6] More recent attempts try to discriminate between different aspects of diffusion processes regarding the overall outcome of these processes and mechanisms (for example in terms of temporal patterns like the speed or the duration of adaption processes). The underlying argument is that analysing different temporal aspects of diffusion mechanisms can help controlling for and discriminating between causal mechanisms (cf. Grzymala-Busse 2011). For example, emulation can only cause the adoption of a policy, but other mechanisms usually drive its expansion (cf. Boehmke and Witmer 2004).

But what diffusion processes are discussed in the existing literature? In other words, what mechanisms stimulate diffusion processes? Ideally four classes of diffusion mechanisms can be distinguished in the current literature determining the parameters influencing the choices and decision-making of political actors: externalities, lesson drawing, socialization and emulation.[7]

Lesson drawing relates to situations where national governments rely on experiences made elsewhere to solve domestic problems. The rationality for this behaviour rests on searching effective solutions to given problems. Emulation relates to the circumstance that actors might conform to widespread norms and policies. They merely copy models found elsewhere to increase the legitimacy of their own policy choices. In a similar vein, socialization processes are driven by the interaction of actors leading to the development and internalization of norms and beliefs. Externalities then describe processes like competition stemming from the growing political and economic interdependences. The underlying idea is that the choices of others can lead to costs and benefits that have to be incorporated into the decision-making calculus.

So what about the explanatory power of the various diffusion mechanisms?[8] Most analysts of diffusion expect increasing policy transfer and adaption. Also the empirical record seems to differ according to the mechanism under consideration. Externalities as well as emulation seem to spur policy adoption, though the latter usually on a relatively superficial level. Deeper change is usually not to be expected. Socialization though having deep impact on actors' preferences and identities– occurs relatively seldom due to its high prerequisites. Evidence for learning mainly pinpoints to the bounded versions of learning.

But current research is often characterized by studies testing specific diffusion models such as leader-laggards models (Berry and Berry 2007) or investigating a single causal mechanism underlying social action like socialization (for example, Zürn and Checkel 2005). Comparative analyses of different diffusion processes and mechanisms came up only recently (for example, Boehmke and Witmer 2004; Daley and Garand 2005; Dobbin et al. 2007; Karch 2007; Shipan and Volden 2008;

[7] Of course, it is not always clear, what kind of processes have to be subsumed under policy diffusion. Some authors also argue that a focus on non-hierarchical (or voluntary) mechanisms is a drawback in diffusion research and incorporate coercive adaption processes like legal obligations and economic sanctions into the study of diffusion (cf. Börzel and Risse 2009; Dobbin et al. 2007). Others use a different classification (cf. Börzel and Risse 2009; Graham et al. 2012). See chapter two for more information.

[8] See chapter two for a more detailed discussion on the various diffusion mechanisms.

Simmons and Elkins 2004). Consequently, current diffusion research is still facing a mixed empirical record on the final evaluation of the different causal stories and current findings should therefore be treated with caution.

Certainly, the study of policy diffusion has become one of the growth industries in the field of academic research and one can find a diverse array of studies reflecting different spatial, temporal, and substantial foci in empirical analyses (cf. Elkins and Simmons 2005; Graham et al. 2012; Heichel, Pape and Sommerer 2005; Howlett and Rayner 2008). Similarly, it is still surprising that –firstly– there are relatively few theoretical and empirical findings, if and under which conditions diffusion mechanisms lead to the adaption of policies. And –secondly– what the interplay between international, national and policy-specific factors in determining diffusion patterns is. Or in other words, what causal stories can be told – especially regarding the case of higher education policy?

1.2 Policy Diffusion and Higher Education Research

The field of higher education policy surprisingly does not form part of the agenda of researchers working on diffusion. But the same also applies to students of higher education research.

A lot of of studies deal with typologies to describe higher education systems (for example, Becher and Kogan 1992; Capano 1996; Clark 1983) and various attempts have been made to distinguish the different higher education systems. One of the most cited approaches that still used in current research is the model by Clark (1983). The seminal classification distinguishes between an organization of higher education that is dominated by the state authority, the market or academic oligarchy. But nowadays, none of these traditions still exists in its ideal form, and still scholars are searching for the answer to the questions which path higher education policies follow and what the outcome of these transformations is (cf. Maassen and Olsen 2007; Teichler 2006).

Most analysts dealing with higher education systems argue that the higher education institutions are in a period of far-reaching societal transformations, which is exerting pressures for reforming and changing the established national patterns (cf. Enders and Fulton 2002; Kyvik 2009).

In higher education research, different labels to describe these challenges for the national status quo are circulating in the academic discourse. For example, on the

domestic front, long-term structural challenges like "massification" (Teichler 1996) due to rising numbers of students are driving forces of transformation. Descriptions and narratives are dealing with a range of policy areas such as steering instruments (c.f. Vught 1995), structural changes (Teichler 2008), access procedures (Vossensteyn 1997), curricula designs (Witte 2006) and funding arrangements (Kaiser and Prange 2004).[9]

Higher education researchers usually consider a range of explanations for policy change ranging from functional approaches to political ones (cf. Teichler 2008). Though theoretical and methodological approaches suffer from “acute underdevelopment” (McLendon 2003: 166). In fact, comparative and theoretically well-grounded analyses of higher education policy remain more the exception than the rule (cf. Conner and Rabovsky 2012; Goedegebuure and Vught 1996; McLendon 2003; Slaughter 2001).

Some pioneering studies were conducted on the diffusion of higher education policies within the USA (cf. Cohen-Vogel and Ingle 2007; Cohen-Vogel et al. 2008; McLendon et al. 2006; McLendon et al. 2005). They demonstrated the usefulness of utilizing political science approaches to study the policy process in higher education. But the focus of this research is mainly on the role of US partisanship and interest groups (cf. Fowler 2010; McLendon et al. 2006; McLendon et al. 2005; Sponsler 2010). Policy diffusion is mainly measured in terms of neighbourhood effects. That means, the policy diffusion framework is used only partially. Research designs do not explicitly model the interdependency between state policies (for example, in terms of relational or spatial variables). Furthermore, a comparative test of causal mechanisms or a disentangling of different sources of policy diffusion is still missing. Therefore, knowledge on the role of interdependencies in higher education remains limited.

Another research strand dealing with the role of international organizations and institutions in higher education policy is increasingly utilizing approaches from the social and policy sciences (cf. Dobbins 2008; Heinze and Knill 2008; Martens, Rusconi and Leuze 2007 Jakobi and Martens 2010). These studies mainly focus on the impact of international policy promotion on domestic higher education studies (for example, in terms of policy instruments like benchmarking) (cf. Martens et al. 2004). Similarly, new modes of governance and platforms like the Bologna Process draw

[9] In higher education research a diverse array of policy dimensions can be compared (cf. Witte 2006: 77ff for an overview).

attention. Empirically, studies strive for answering the question if these legally unbinding forms of governance produce cross-national policy or diversity and what domestic factors explain their differential impacts (cf. Dobbins 2008).

From this point of view, there is rather limited knowledge on the extent to which international and national stimuli led to the diffusion of higher education policies – especially regarding the pre-Bologna phase. Or as Vught puts it: ‘‘[...] it is time that we—in higher education research—do a sort of a next version of Burton Clark’s ‘Higher Education System’, but about higher education system dynamics [...] identifying the crucial variables and their relationships that explain why higher education systems operate as they do’’ (CHEPS 2005: 4).

1.3 The Problem Context and Own Contributions

The concept of policy diffusion covers a wide range of research questions surrounding the spread of policies. Why do dissimilar countries adopt similar polices? What internal and external factors lead to the adoption of policies? How do processes leading to policy transfer develop? How do they operate? Which policies diffuse? What are the effects and the outcome of these processes? And more specifically, what determines the impact of diffusion processes? The set of research questions is relatively broad. Some scholars even argue that the policy diffusion framework can be understood as a bridge-building concept joining many different strands of research (cf. Börzel and Risse 2009; Graham et al. 2012).

The main aim of this thesis is to address different diffusion processes and their (international) stimuli in European higher education policy. Can we observe diffusion patterns in European higher education policy? And what causal stories can be told (or should better not be told)? Which tales make up a better explanation for policy adoption? And how could they be combined? Further interest is on the analysis of national and policy-specific factors conditioning the domestic impact of diffusion mechanisms. Overall, a theoretical framework based on existing reasoning from studies on diffusion is tested in a macro-quantitative research design.

The thesis follows a comprehensive approach incorporating the possibility of alternative explanations and interaction effects. Which factors are triggering diffusion processes? What is their impact on national policies? Are there causes for the clustering of policies that do not necessarily stem from interdependencies? Furthermore, what factors do account for the differential impact of diffusion

processes? Based on specific hypothesis on the relationship between international factors triggering diffusion processes (for example, the policy experience of other countries) and national and policy-specific factors conditioning their domestic impact (for example, the domestic problem-pressure) – the thesis explains patterns of policy adoption in European higher education. The main task is to test different explanatory models and see how these tales and stories work. In doing so, the thesis also deals with the question if a macro-quantitative approach is suitable for this task. More specifically, the analysis carried out in this thesis contributes to the solution of the following problems diffusion researchers are facing:[10]

First, several taxonomies and classifications of diffusion processes and mechanism-based thinking can be found in the existing literature. Still most of them lack analytical clarity. These classes of adoption mechanisms are to a great deal constructed according to research strands or methodological concerns rather than their theoretical background. As a consequence diffusion research is not only lacking a common wording and terminology (cf. Graham et al. 2012), but theoretical assumptions are often vague and overlapping (cf. Elkins and Simmons 2005; Meseguer 2005). A circumstance that is calling for a more systematic approach guided by theoretical coherence and consistency (cf. Braun and Gilardi 2006; Braun et al. 2007; Meseguer 2005).

Likewise, despite theoretical and methodological progress in what is now coined as the third generation of diffusion studies (cf. Howlett and Rayner 2008), explicitly dealing with the causal mechanisms underlying diffusion processes and their comparative analyses is only of recent date (for example, Boehmke and Witmer 2004; Daley and Garand 2005; Dobbin et al. 2007; Shipan and Volden 2008; Simmons and Elkins 2004). Current research is often characterized by studies testing specific diffusion models such as leader-laggards models (Berry and Berry 2007) or investigating a single causal mechanism underlying social action (for example, socialization) (for example, Zürn and Checkel 2005). Consequently, current diffusion research is still facing a mixed empirical record on the final evaluation of different causal stories.

Second, some authors highlight the complexities involved in analysing policy spread by distinguishing between vertical and horizontal approaches (cf. Jordana, Levi-Faur

[10] The listed points draw an overall picture and do apply to studies of policy diffusion to varying degree. A lot of authors are well aware of these problems and try to diminish distortions. These examples of best practice are also part of the upcoming chapters.

and Fernandez 2011; Levi-Faur 2005a; Karch 2007; Schimmelfennig 2007). This analytical dimension is often overlooked as it is cutting across causal arguments. A causal process like learning can follow both a horizontal as well as a vertical pathway. For example, studies dealing with diffusion in multi-level systems like federal states try to disentangle the vertical effects of federal governments on sub-national constituencies as well as the horizontal effects stemming from interdependencies on the sub-national level (cf. Daley and Garand 2005; Shipan and Volden 2006).

In addition, EU studies point to the circumstance that EU institutions can be a promoter of a policy as well as a mediator for intergovernmental interaction (cf. Bulmer and Radaelli 2005; Radaelli 2003). To give you an example, intergovernmental processes like the Bologna Processes are situated outside of EU institutions, but still operate under the coordinating impetus of the EC (cf. Huisman and Wende 2004). In this context, learning might take place due to the increasing information exchange between the representatives of member states. Or learning effects might stem from the promotion of policies through the EC.

The question is if policy adoption is mainly driven by international policy promotion or is it stimulated by the exchange between countries. This might not make a difference empirically – one might observe learning effects in both situations. But it can lead to wrong inference on the underlying causalities. Basically, it leads to an overestimation of international influences, as international networks might only be a necessary condition for horizontal diffusion to be successful. Furthermore, if one is interested in the content of policy transfer confusing the sources of policy diffusion might also lead to wrong conclusion.

Moreover, studies usually include controls for the characteristics of the adopting state (for example, the number of veto players as a proxy for the reform capacity of a political system). But research rarely contrasts and conceptualizes the possibilities of similar or common responses to domestic problems that might lead to the same policy output independently from each other (cf. Elkins and Simmons 2005; Holzinger and Knill 2005). A notable exception in this regard is coming from Volden, Ting and Carpenter who explicitly integrate the assumption that governments might learn from their own experience in past times (cf. Volden, Ting and Carpenter 2008).

Third, diffusion researchers often neglect dimensions of power and domestic politics – especially actor-specific explanations are often ignored (cf. Graham et al. 2012). Of course, domestic controls are usually included in the analysis, but mechanism-based

approaches often lack the integration of scope conditions and conditional variables.[11] More specifically, the contingent character of policy diffusion renders the explicit formulation of interaction hypothesis necessary (cf. Shipan and Volden 2006; Volden 2006; Volden et al. 2008).

Fourth, there seems to be a bias towards analyzing the adoption of single policies and unclear dependent variables (cf. Berry and Berry 2007; Howlett and Rayner 2008). But rather than oversimplifying the issue of policy adoption by merely distinguishing between the (non-)adoption of policies, modifications and extension of policies can also be included in the analysis.[12] In this context, studies on diffusion sometimes seem to be unsure about the actual effects of diffusion. According to Elkins and Simmons most diffusion studies came about to follow a process-orientated understanding of diffusion (Elkins and Simmons 2005: 36) that *might* imply the spreading and transfer of a certain policy or practice. But diffusion mechanisms might have the reverse effect. For example, learning can keep countries from adopting unsuccessful policies (cf. Mooney 2001).

Fifth, a divide often overlooked in diffusion research is the segregation of diffusion studies according to the methodological approaches applied. So far, the majority of diffusion studies are following a quantitative approach (cf. Gilardi 2012; Meseguer 2005). Due to the latent characteristic of causal mechanisms these studies have to operate with proxies as independent variables (cf. Simmons and Elkins 2004; Gleditsch and Ward 2006).[13] Diffusion mechanisms influence the parameters determining the choices and decision-making of political actors, but they cannot be observed and measured directly. Rather one has to identify variables suitable for empirical measurement that indicate the triggering and/or functioning of diffusion mechanisms.[14]

Additional confusion surrounds the fact, that scholars equate diffusion mechanisms and explanatory variables. But this is not correct as they are usually not testing the underlying causal chains and corresponding intervening variables (King, Keohane

[11] For example, by operationalizing conditional variables as spatially lagged (in-)dependent variables or interaction terms (cf. in chapter four).

[12] In terms of repeated events (cf. chapter three).

[13] This problematic applies to both quantitative and qualitative methods. Often people disregard the fact that even qualitative techniques like interviews do not allow us to observe and measure causal mechanisms directly (cf. Checkel 2006; Klotz and Lynch 2006: 361). That does not mean that econometrical designs often are falling shorter in this respect.

[14] See section 2.4 for more information.

and Verba 1994),[15] This does not necessarily speak against carrying out correlational analysis when the hypotheses to be tested are constructed on mechanism-based thinking. Although often ignored, yet it must be analytically distinguished.[16]

Sixth, scholars pinpoint to a selection bias problem in diffusion research. The prominent focus on policies that have spread explosively widely ignores the informative value of cases where we do not observe patterns of diffusion (cf. Howlett and Rayner 2008; Marsh and Sharman 2009; Meseguer and Gilardi 2005). Correspondingly, there is a bias towards environmental, economic, and trade-related policies.[17] Furthermore, it seems that a bias towards analysing the adoption of single policies and unclear dependent variables (cf. Berry and Berry 2007; Howlett and Rayner 2008) seriously hinders robust findings in research on policy diffusion effects.

1.4 A Most Likely Case for Policy Diffusion

Considering higher education policy in Europe seems especially suitable for analyzing diffusion effects. It can be seen as most likely case for gaining additional theoretical and empirical insights on diffusion processes. The advantage of considering this policy field stems from its susceptibility to different diffusion mechanisms.

The purpose of most likely cases in case study research is usually for theory disconfirming (cf. Eckstein 1975). And analysing European higher education policies fits nicely into this framework. Other policy areas like trade-policies are dominated by an economic rationale thereby favouring explanations based on competitive interdependencies. But higher education policy is a rather multi-dimensional policy field covering political, cultural as well as academic rationales (cf. Zha 2003). In other words, it provides the opportunities to formulate and test a range of plausible explanations rather than favouring explanations based on a specific diffusion mechanism. Moreover, a range of alternative explanations can be controlled for.

Historically diffusion between European countries has always been a relevant issue in higher education - think about the emulation of Humboldt's ideas on universities and its transfer from Germany to the USA and Japan in the 19th century or the

[15] For a discussion of the terminology concerning variables see van Evera (1997).

[16] I elaborate on this argument in more detail in section 4.4.

[17] I will elaborate more on the usefulness of considering European higher education policies to examine policy diffusion in section 1.4.

foundations of universities in the middle age at the very beginning of higher education institutions in Europe (cf. Perkin 2006). Moreover, the context of higher education systems in a globalising world is being confronted by many external challenges (cf. Martens et al. 2007; Neave 2003; Trondal 2002; Vught, Wende and Westerheijden 2002). Higher education systems increasingly have to deal with the growing interdependencies in other policy areas spilling over that render diffusion effects highly likely. One of the major changes of the past decades has been the growing economic integration across the world (for example, GATS) facilitated by more sophisticated information and communication technology (ICT), open financial markets and more affordable international mobility (cf. Vlk 2006). Correspondingly, higher education systems are becoming a focal point of the activities of international organizations such as OECD, UNESCO, and WTO. Such organizations, for example, argue that universities must restructure their higher education systems to become more performance-orientated. But they also give opportunities for governments at hand to learn from the experience of others as they provide country reports and league tables on the comparative performance of higher education systems.Academics and practitioners alike frequently highlight the growing importance of higher education in terms of economic growth and development. The technological development and the importance of innovations and human resources (or capital) as part of the economic competition between countries brings higher education to the fore of politicians' attention in industrial countries. Here universities seem to play a key role (cf. Carrier 1990; Etzkowitz and Leydesdorff 1997; Huisman and Kaiser 2003; Peters and Humes 2003). From this point of view, competitive interdependencies but also solving domestic problems might spur national policy adoption.

Usually, in multi-level systems one can find a complex interplay between vertical and horizontal diffusion mechanisms at work. Especially with regard to Europe, comparing EU member states level makes it difficult for scholars to disentangle intergovernmental, respectively supranational pathways of diffusion (cf. Bulmer and Radaelli 2005; Schimmelfennig 2007). A case selection focussing on European higher education system minimizes[18] the possibility of vertical diffusion processes.[19]

[18] I avoid the term „eliminating" as one could argue that other country's policies might also serve as a template for domestic policies – for example from the USA. Though the American higher education system is rather diverse and a lot of the policies under consideration have been implemented a long time ago. Furthermore the influence cannot explain country-specific differences in diffusion effects.

[19] Of course, the ideal way would be to consider centralized states that are only intergovernmentally connected. Due to transnational linkages this hardly applies to any state within the Western world.

In other words, analysing higher education policies throughout Europe helps to deal with the endogeneity problem usually present in the analysis of diffusion processes. Basically, scholars have to consider different perspectives when it comes to the analysis of diffusion processes in multi-level systems (cf. Levi-Faur 2005b).

One major perspective is the analysis of horizontal processes due to interdependency; let us say between the states in a federal system. Furthermore, it is often vertical diffusion processes that are examined. In the former, international organizations or federal governments are at best conceptualized as mediators of cross-national policy transfer, pushing national governments to adopt successful policy models found in other states (cf. Stone 2004).

But scholars approaching diffusion from the second perspective focus on the role of a superordinate decision-making level as a sender of ideas that means scholars conceptualize policies at the superordinate level as a major factor impacting on behaviour at the sub-level. For example, actors on a subordinated policy-making level might be influenced by adaptive pressures stemming from international norms and organizations (cf. Finnemore and Sikkink 1998), federal governments or – in a sub-national context – state governments pushing local authorities (cf. Shipan and Volden 2006; Welch and Thompson 1980). But vertical influences in higher education are less relevant.

Originally higher education policy was not part of the European agenda, European-wide cooperation changed considerably since the 1980s with the introduction of EU-mobility programmes for students and academics (cf. Beukel 2001; Wit and Verhoeven 2001). It culminated in the aim of creating a common European Higher Education Area (EHEA) when 29 ministers responsible for higher education signed the Bologna declaration denoting the actual start of the so-called Bologna Process. With this document the ministers agreed on establishing an EHEA by 2010. But due to the legally-unbinding and intergovernmental character, the influence of vertical processes in European higher education can at best be described as weak in the European context (cf. Beukel 2001). Except for the European mobility programs for students and the need to recognize professional degrees due to the Common

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Furthermore, comparing countries outside of the OECD raises the question on the comparability of cases.

Market, responsibilities for higher education are clearly located at the domestic level.[20]

But even globally, vertical mechanisms like the legal obligation to harmonize national policies play no significant role in higher education. Before the GATS trade agreement came into force in 1995, higher education was not subject to any international law. Only standards with regard to the recognition of professional degrees existed. For example, the UNESCO introduced the ISCED system to better classify educational achievements (cf. Martens et al. 2004; Martens and Jakobi 2007). Moreover, even GATS is not explicitly dealing with the credentials of higher education policy. It rather strengthens the economic dimension of higher education as it describes education as a service subject to trade liberalization. It makes governmental steering more complex, but it does not diminish governmental steering capacities (cf. Vlk, Westerheijden and Wende 2008).

Some authors argue that the OECD drives domestic policies through the promotion of NPM principles. But the influence of the OECD seems rather weak during the time period under consideration (cf. Martens 2007). For example, OECD reports on the country performance in higher education were only developed during the 1980s and 1990s. And they were only provided at the request of the country in question. Furthermore, the impact of the OECD cannot explain country- and policy differences in diffusion effects. All countries in the sample are part of the OECD. Moreover, NPM does not make specific claims, but remains a general approach (cf. Lange and Schimank 2007).

From this point of view, Europe cannot be understood as a vertically integrated political system in higher education. Rather the multi-level structure of European higher education policy serves as a functional equivalent of policy laboratories for the horizontal exchange of ideas and policies.[21]

It seems hardly comprehensible why higher education policy remains kind of absent from the agenda of researchers working on diffusion. The number of comparative

[20] In this context, the European Court of Justice (ECJ) was interpreting the EC's responsibilities in vocational training and education in a much broader sense. Following the so-called Gravier Case from 1983, respectively the Blaziot judgement in 1988 higher education was also considered to be a form of vocational training and education (cf. Witte 1993: 190; Wit and Verhoeven 2001: 186). A substantial side effect was that students from EU countries had to be treated like domestic ones. Still the essential parts of higher education policy (for example, on curricula, steering or funding) remained the legal responsibility of the EU member states.

[21] One still has to keep the possibility of vertical explanations in mind when discussing these strands of research and potential hypotheses. But the risk of overseeing vertical diffusion processes is even more limited as the empirical focus is on the pre-Bologna phase (cf. section 3.1).

and theoretically well-grounded analyses of higher education policy is still rather limited (cf. Conner and Rabovsky 2012; Goedegebuure and Vught 1996; McLendon 2003; Slaughter 2001). Some pioneering studies were conducted on the diffusion of higher education policies within the USA (cf. McLendon et al. 2006; McLendon et al. 2005). They demonstrated the usefulness of utilizing political science approaches to study the policy process in higher education. But their main focus is on domestic factors mediating external influences and not on variables measuring country-related interdependencies.

European higher education policies seem to be especially suitable for testing horizontal diffusion mechanisms, if one wants to disentangle the various histories and tales that might lead to policy adoption. Following historical and empirical evidence, one can expect diffusion effects to be very likely. In theory, any diffusion process can drive European higher education policies. May it be learning, competition or socialization – an elementary prerequisite for carrying out an x-centered research design where the main interest is on the significance of different independent variables and the underlying causal stories (cf. Ganghof 2005).[22] But this point turns out even more clearly when elaborating on the different explanatory models and the hypothesis to be tested (cf. chapter three).

1.5 Structure of Thesis and Outlook

Chapter two reviews the state of the art in more detail and provides the theoretical framework underlying the thesis. The chapter gives answers to the question what international, national and policy-specific factors – in theory – cause and stimulate (or hinder) diffusion processes and the adoption of public policies. The first two sections provide a systematic mapping of the diffusion mechanisms to be found in diffusion research. Existing theoretical arguments can be clustered according to the underlying causal logic into four groups: learning, emulation, socialisation and externalities. The first section introduces the causal logics underlying the various diffusion mechanisms, whereas the second section presents the four classes of diffusion mechanisms. The third section provides an overview of the national as well as policy-specific factors shaping and influencing the functioning of diffusion mechanisms. This

[22] Of course, the interest is on the effects of explanatory variables on a dependent variable (in this case policy adoption). But puzzling empirical phenomena or variations of the dependent variable do not primarily drive the research design.

part of diffusion research is still relatively underdeveloped. Overall most diffusion mechanisms are not characterized by a lot of scope conditions – especially the ones based on communication like learning, emulation and socialisation seem to depend only on the availability of information on the policies of other countries as a necessary condition. Nevertheless, current evidence supports the assumption that the inclusion of conditional factors into the empirical analysis usually strengthens the explanatory power of diffusion approaches.

Section four provides the theoretical framework of this study. As a matter of fact, theoretical arguments are often not as distinct and clear-cut as it seems at first sight. Theoretical assumptions and ideas are often overlapping and hybrid. Especially the distinction between rationalist and constructivist thinking is blurring. Furthermore, it is not always possible to clearly discriminate between structural and agency-based explanations in mechanism-based arguments. This chapter also shows that an overly competitive fight for rational or constructivist arguments is neither useful nor realistic. From this point of view, disentangling the different pathways of policy diffusion is an important step in making theoretical arguments less vague, providing common sense on how diffusion mechanisms work and what explanatory factors are suitable for empirical testing.

The subsections provide testable and coherent explanatory models on the functioning of the different diffusion mechanisms: learning model(s), a diffusion model(s) based on a combination of socialisation and emulation arguments and model(s) based on hypotheses about competitive and cooperative interdependencies. The three approaches are not a comprehensive list of explanatory factors to be found in diffusion research, but are constructed in a parsimony way by combining explanatory factors based on a similar theoretical background. A fourth set of hypotheses is formulated on the assumption that governments are policy- and/or vote seeking and that they reply to domestic policy problems and historical legacies (common response approach).

Chapter three deals with the question if we can observe patterns of policy adoption in European higher education policy and which of the policies under consideration (fail to) spread. The chapter covers the descriptive analyses of policy change and adoption in European higher education systems between the years 1980 and 1998. More specifically the EU-15 states with a fully-fledged higher education system (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, United Kingdom) and two associated members of the EU (Norway and Iceland) are covered. The overall patterns

described are based on performance-orientated legislation on higher education in the 16 European countries along five policy components and 14 items. The empirical data shows that the European higher education systems under consideration are characterized by an increasing probability for policy adoption.

Policy adoption and modification is characterized by several country-, policy- and time-specific patterns. Most reforms take place in the late 1980s and during the 1990s. These patterns are most pronounced regarding legislation on external quality assurance systems, funding discretion, the performance-orientation of public funding, institutional responsibilities for staff management, course planning and target agreements. Other issues like the responsibility for setting the student intake of universities or student selection are reformed less often. Taking a look at country groups, one can identify countries characterized by very few or late reforms (for example, Germany, Austria, Greece, Ireland, and Iceland). Other countries are characterized by relatively high legislative outputs (for example, the United Kingdom, the Netherlands, and Italy).

These complex empirical patterns require an explanatory framework combining assumptions on both country-specific as well as policy-specific factors. For example on the impact of cross-national interdependencies, its conditions as well as domestic factors as formulated in the previous chapter. The question remains, how to explain this variance of legislative outputs across time, countries and policies: How to measure the dependent and independent variables? What data sources are used? And what control variables are considered? In other words, what does the empirical model look like?

Chapter four deals with the empirical test of the theoretical framework provided in chapter two. It provides answers to the following empirical questions: First, what international factors cause and stimulate the adoption of public policies in higher education? What explanatory factors determine the probability for national governments adopting and transferring a certain policy? Furthermore, what is the interplay between international and domestic explanatory factors? Explanatory models and hypotheses are tested by means of a Cox Model for repeated events. Various partial models are tested in the various subsections on learning, socialization, externalities and common responses. The final subsection of this chapter also provides the comparative analysis of the explanatory models. It includes only robust variables passing statistical tests rather than all the previously tested variables.

Overall, the step wise tests of covariates provide a mixed picture on the role of diffusion mechanisms and conditional variables when it comes to explain the adoption of performance-related higher education reforms. This applies to the diffusion frameworks like learning, socialization and externalities, but also to the domestic model based on common responses as a reason for policy clustering.

Robust effects stemming from rational learning can only be confirmed with regard to the issue of student growth. This kind of learning does not seem to play a role in the case of financial developments. Also the possibilities of longer-term learning effects have been falsified. The results for the bounded versions of learning support the assumption on cultural and regional cognitive heuristics, whereas ideological shortcuts are partly rejected. In addition, interaction models dealing with problem-driven learning cannot be rejected for the time being.

According to the analysis, network socialization between EU member states is also disconfirmed. The same applies to diffusion hypothesis on the behaviour of EU accession candidates. But the assumption on network socialization driven by intergovernmental organizations cannot be rejected. Furthermore, ideological similarities between governments play a significant role in IGO memberships and EU accession candidates when it comes to adopting performance-orientated higher education policies. Contrary, diffusion hypothesis on peer socialization must be largely rejected. That applies to both the diffusion hypothesis on regional and cultural peers, but –within certain limits– to the assumptions on ideological peers. Common policies and norms also do not seem to be decisive when it comes to policy adoptions. A similar picture emerges regarding conditional hypothesis on the impact of domestic problem pressure on peer socialization. This hypothesis is impressively disconfirmed.

Some evidence can be found for diffusion effects caused by externalities. The diffusion variable on the policies of competitors is robust across all the various tests carried out in this chapter. But the diffusion hypothesis on competitive policies and competitive countries is disconfirmed by the analysis. Analogously, the diffusion hypothesis on the policies in target countries must also be rejected.

The variable measuring brain drain effects performs better in the interactive models, as the conditional hypothesis on the openness of the higher education system cannot be rejected. The same applies to the covariate on the policies of competing states. These results are contrary to the ones on the covariates dealing with competitive policies and competitive countries. From this point of view, a final evaluation cannot

be made at this point in time. Nevertheless, conditional effects on externalities in terms of domestic problem pressure cannot be found.

The conditional effects of domestic problem pressure in models dealing with common responses are also not robust. Contrary, diffusion hypothesis on domestic problem solving cannot be rejected for student-related problems like completion ratios and student growth. Similar to the learning example, the hypothesis is not supported by the variables dealing with fiscal policy problems. The various statistical models strongly support diffusion hypothesis on the historical legacy. Diffusion hypothesis on party politics and government preferences is also strongly supported. The same applies to the conditional effect of electoral accountability. The conditional variable is robust for both government preferences as well as voter preferences. Despite the robust interaction effect on voter preferences, the tests of the diffusion hypothesis on the singular effects of voter preferences have been disconfirmed by the cox regressions.

That means evidence can be found for (and against) all the four approaches – at least as distinct theoretical approaches. But in comparison, many of the assumptions related to interdependencies lack robustness, whereas the common response model seems to be the most stable one. This does not mean explanatory models based on interdependent decision-making are not suitable for analysing policy diffusion in higher education – it merely highlights the necessity of a comparative assessment of diffusion mechanisms. From this point of view, the recommendation for analysing diffusion is to start with a model based on domestic politics and successively extending this model by explanatory factors dealing with interdependency. Diffusion variables matter, but it is only one side of the story.

Another aspect in policy diffusion is that time matters in all models. Reconfiguring explanatory models can substantially inflate the non-proportionality of variables. That means testing the proportional hazard assumption is essential for cox models.

Interaction effects matter too. Causal relationships are often conditional. In all approaches, one can find evidence for the importance of conditional variables. But this does not necessarily mean these assumptions are superior to simple additive regressions. It highlights once more that statistical analysis has to adapt to the existing state of the art. Depending on the theoretical discussions quite different research designs are recommended, but robustness checks are essential.

The majority of control factors clearly lack robustness across all explanatory models, though many controls are significant and match the expected relationship. From my

point of view, this does not pose such a problem. The main interest is on the effect of the independent variables. Therefore, the robustness of controls can vary across models. It is rather another argument for comparative tests and the integration of covariates from stepwise analysis. But that does not mean that control variables cannot play different roles in different diffusion processes.

The final chapter five includes concluding remarks on the thesis and an outlook on future research. It provides a summary of the theoretical and empirical findings and deals with some methodological problems that arose during the study. Last but not least, the usefulness and limitations of the design and future research options are discussed.

The appendices and a reference list are following the conclusion.

2 The Politics of Policy Diffusion

Arguably one can distinguish between different approaches that are dealing with the diffusion of policies. It seems as if this conceptual overflow impedes analytical clarity and the synthesis of both empirical and theoretical findings. Next to policy diffusion, studies dealing with cross-national policy convergence, Europeanization or policy transfer can be identified in the literature (cf. Knill 2005; Levi-Faur and Vigoda-Gadot 2006; Newmark 2002; Holzinger, Jörgens and Knill 2007a; Marsh and Sharman 2009; Börzel and Risse 2012). The various concepts share several assumptions, but despite a similar empirical interest and conceptual intersections, one can also find distinct features that complicate the transfer of concepts and empirical findings between the various approaches.

Hence claims for a more systematic approach to policy diffusion prevail (cf. Graham et al. 2012). Though this problem calls for more theoretical coherence and consistency (cf. Braun and Gilardi 2006; Meseguer 2005), it also reminds us of the need for a less ideological approach when it comes to testing (opposing) theoretical paradigms action (cf. Fearon and Wendt 2002; Risse 2003). An overly competitive fight for rational or constructivist arguments is neither useful nor realistic.

As a matter of fact, theoretical arguments are often not as distinct and clear-cut as it seems at first sight. Theoretical assumptions and ideas are often overlapping and hybrid. Especially the distinction between rationalist and constructivist thinking is blurring. In a similar vein, mechanism-based thinking is often not able to clearly discriminate between structural and agency-based explanations. From this point of view, theorizing is more about choosing different analytical instruments than opposing ontological interpretations (cf. Fearon and Wendt 2002). That means theories are rather analytical toolboxes rather than opposing truths about the social world.

Of course, a general and clear-cut theory on the causes and effects of the different diffusion processes is missing. We still lack considerable knowledge on diffusion processes, their interaction, and their effects on policy change and adaption to specify a fully developed explanatory model on the causes and effects of many diffusion processes. In terms of higher education there is hardly any evidence we can build upon. The main aim is to contrast and compare testable and coherent explanatory models on the functioning of different diffusion mechanisms in a step-

wise fashion rather than mixing different arguments under one single framework from the start.

The underlying idea is to –first– construct models in a parsimony way with combining explanatory factors based on a similar theoretical background. In a second step, extensive models based on robust variables on learning, socialization, externalities and common responses are constructed and compared within the empirical analysis. Theory development requires more insights on the evidence that can be derived from such a stepwise approach. The additional finding on the robustness of variables within and across theoretical frameworks tells us more about the previously carried out singular analysis than simply providing fully fitted models.[23] Furthermore, a comprehensive test seems also recommended as indeed one can find many hypotheses, but there is not really a theory of diffusion that guides the deductive selection of explanatory factors.

This chapter proceeds by formulating falsifiable and clear-cut theoretical arguments on the functioning of diffusion mechanisms by disentangling theoretical arguments on policy diffusion. But it also provides common sense on how diffusion mechanisms can work and what explanatory factors are suitable for empirical analysis. Hence, this chapter deals with the main questions along which causal analysis in diffusion research is structured: what triggers and stimulates the diffusion of policies? What causal mechanisms are discussed in the literature? What is their empirical record? In doing so, two groups of factors can be distinguished in the state of the art to explain why governments adopt certain policies: First, causal mechanisms; and second, variables determining the functioning and effectiveness of the causal mechanisms, that means factors conditioning the impact of diffusion processes (cf. Braun et al. 2007; Simmons and Elkins 2004; Holzinger et al. 2007a; Knill 2005). Overall, four sets of explanatory models and hypothesis on the triggers as well as the conditions of diffusion processes are formulated that will be tested in the upcoming chapters: on learning, externalities, socialization and common responses.

The chapter proceeds as follows: The first three sections provide the basic answers discussed in the current state of the art on what triggers and stimulates policy diffusion. In order to analyse diffusion, differences within mechanism-based thinking in diffusion research are highlighted in the first section. The main focus is on the

[23] Of course, the research design is –third– also based on a final and comparative empirical test of diffusion variables that serves as a final evaluation of the various theoretical approaches in terms of ”competitive testing“ (Jupille, Caporaso and Checkel 2003: 20).

causal arguments usually discussed. This focal point has been chosen due to the x-centred motivation of the thesis (cf. Ganghof 2005; Gschwend and Schimmelfennig 2007). The study is not driven by an empirical puzzle that one wants to solve like in a y-centered perspective. Rather the primary interest of this thesis is on the explanatory variables: What explanatory factor matters and why? And what effects can be explained with the independent variables of interest?

Following the causal logic underlying diffusion mechanisms, the second section provides the four broad and ideal types of diffusion mechanisms that can be found in the current literature: learning, socialization, emulation and externalities. The conditionality of diffusion processes is highlighted in the third section. The section deals with the question of contingency. What determines the actual impact of diffusion processes? What is the interplay between diffusion mechanism and domestic politics? Current research pinpoints to several country- and policy-specific factors conditioning the domestic impact of diffusion mechanisms.

Hence, the question remains how to theorize policy adoption in higher education? Section four deals with the theoretical framework underlying the following empirical analysis. As already mentioned, theoretical arguments are often overlapping and hybrid. This is demonstrated by highlighting intersections within mechanism-based thinking in diffusion research. Other difficulties underlying the construction of the analytical framework relate to the need to translate theoretical assumptions on the triggers and functioning of diffusion mechanisms into variables suitable for empirical measurement or the necessity of theoretical parsimony due to problem of integrating too many explanatory variables into statistical models. Within these limitations, hypotheses are provided along four distinct theoretical models. In order to provide a coherent and systematic theoretical framework that is suitable for empirical analysis, hypotheses on the relation between policy adoption and variables triggering and conditioning processes of learning, socialization, externalities and common responses are formulated in the various subsections.

2.1 On Mechanism-based Thinking on Policy Diffusion[24]

Originally dealing with the spread of (technological and social) innovations, diffusion research is nowadays analysing all kinds of processes driving policy adoption. The

[24] Annex VII provides a list of recent mechanism-based and comparative empirical studies on policy diffusion in political science.

various diffusion processes and the underlying causal mechanisms discussed in the literature are supposed to have –at least analytically– distinct empirical effects and outcomes (cf. Elkins and Simmons 2005; Meseguer 2005). But as a matter of fact, diffusion research has ended up in a diverse and often unconnected array of theoretical assumptions relying both on rational as well as constructivist reasoning.

Existing work usually pinpoints to diffusion patterns being too complex to generate (simple) (dis-)equilibria for identifying the conditions of policy diffusion (cf. Mooney 2001; Braun and Gilardi 2006). And recent attempts to formalize diffusion processes are highly specific theorizing only singular diffusion mechanisms like learning, emulation or competitive interdependence (for example, Volden et al. 2008; Franzese and Hays 2008; Boushey 2012). Approaches trying to deal with the complexities of diffusion processes do provide simple threshold models that mix constructivist reasoning under the framework of utilitarianism (for example, Braun and Gilardi 2006; Braun et al. 2007). In other words, a general and clear-cut theory on the causes and effects of the different diffusion processes is still missing.

Largely, mechanism-based thinking clusters around two causal arguments:[25] First, existing diffusion mechanisms accounts can be grouped according to the rationality for policy adoption – what drives governments' behaviour and actions? Analytically diffusion mechanisms refer to rationalist reasoning based on instrumental considerations of actors or on constructivist arguments dealing with norms and rule-driven actors. Second, causal mechanisms differ according to their impact on the properties of policy choice. Whereas diffusion mechanisms can have a direct impact on the beliefs of actors, they might also influence the structural conditions for decision-making.

First, the theoretical arguments in mechanism-based thinking on policy diffusion cluster according to the underlying assumptions on the logic of governmental behaviour. This reflects the classical institutionalist reasoning by March and Olsen concerning the underlying logic of social action, this means the logic of

[25] The implication of this mapping is that any mechanism found in the literature can be subsumed under distinct theoretical assumptions about the causal chain between triggers of diffusion processes and their effects. Simmons and Elkins have distinguished at least thirty diffusion processes in the literature (2005). The reader has to be aware that the mapping provided is just a selection of the main mechanisms to be found in the literature. In addition, this classification is rather inductively. It is also possible to classify differently. For example, the notion of learning as applied here is quite instrumental (cf. Rose 1993). But other forms of learning like social learning (Hall 1993) should be subsumed under the heading of socialisation. From my point of view these approaches just indicate that socialisation effects can also take place in shorter time periods than usually expected in theories relying on the logic of appropriateness. And again, these are quite broad and ideal categories.

consequentialism and the logic of appropriateness (March and Olsen 1989; see also Börzel and Risse 2003 and Opp 2013).[26] Is action driven by instrumental or normative reasons and motivations? In the former case, actors are supposed to primarily follow material preferences, interests, and desires. Diffusion mechanisms referring to the latter are usually based on the assumption that actors' behavior is rule-based, meaning that actors are following mutually shared understandings and beliefs of appropriate behavior.[27] Thus, rather than thinking about the consequences of their choices, actors decide according to situational interpretations and upon the rightness of their actions (cf. Sending 2002; Sjöblom 1993).[28]

For example, communication at and across different institutional levels may create an "isomorphic" environment facilitating the adoption of policies and structures even without the existence of binding rules. In these situations organizations often follow common standards (cf. DiMaggio and Powell 1983: 151). Especially in situations of uncertainty actors usually adopt commonly accepted and widespread approaches and models as the most appropriate choice. This may be the case when processes are not well understood, ambitions are unclear or future developments are unknown or the outcomes unsecure.

Yet, the adoption of widespread policies might also stem from the instrumental consideration of policy makers in terms of their re-election and the electoral success of their parties. A strategy often used to avoid the consequences of unpopular measures is to play a game of "blame avoidance" and to pass the buck on the responsibility for these actions to others (cf. Weaver 1986).

Politicians sometimes refer to the reforms of peer countries or to international organizations to legitimate their own policy choices. Especially multi-level systems like the European Union are said to leave broad options for blaming and shaming. A prominent example is to blame the need for welfare state retrenchments on the

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[26] I use the term „reflecting" as there seems no exclusive and clear-cut definition of rationalism and constructivism (cf. Fearon and Wendt 2002).

[27] In this regard, some distinguish the logic of arguing (for example, Risse 2000). As March and Olsen themselves subsume this logic under the "logic of appropriateness" (1989, 1998), I will not deal with mechanisms such as persuasion or arguing separately. Especially since arguing seems primarily about norm formation (cf. Finnemore and Sikkink 1998), whereas the theoretical starting here is on policy adoption.

[28] As a matter of fact, the constructivist program often aims at rules and social structures rather than at agency-orientation and individuals. In constructivist debates, the question about choice is not as straightforward as in rationalist approaches. Actors following the logic of appropriateness still have to interpret and decide upon the rightness of their actions. From this point of view, I deviate from March and Olsen's assumptions as it is questionable how far their constructivist reasoning allows for external impacts on actor's motivations to follow a rule or norm (cf. Sending 2002: 454).

economic integration and the increasing competition within the European Union or the Globalization (cf. Hellwig and Samuels 2007; Kumlin 2011; Pierson 1996).

To put it differently, acting takes place according to the expected consequences of actors' choices. That does not mean that actors are only following their self-interest, they might also incorporate social and ideational values into their expected utility maximizations.

Second, causal mechanisms differ according to their impact on the parameters determining the choices and decision-making of political actors. (cf. Braun and Gilardi 2006; Schimmelfennig 2007; Simmons and Elkins 2004). Although diffusion approaches are dealing with all kinds of interdependent decision-making, it is mostly the national government that constitutes the unit of analysis. The reason is simply that governments are usually the main actors who have to decide upon changing existing policies.[29] However, what determines the actual decision-making and actions of national governments? Regardless of whether governments follow a normative and/or instrumental rationality, action theory in its most basic form assumes that choices and consequent actions (if intentional)[30] are jointly caused by the actor's perceptions and beliefs on the policies in question as well as by their specific interest, desires, and preferences (cf. Fearon and Wendt 2002: 55; Searle 2001).

While diffusion mechanisms can have a direct impact on actors' beliefs, they might also influence the structures that are underlying decision-making. Both kinds of processes can determine the preferences of actors for alternative policies. In other words, mechanism-based thinking can also be organized according to the assumption on what induces the diffusion of policies. Is the stimulus and/or the trigger of the causal mechanism changing the internal properties of the actor or leading to altered decision-making conditions? In the prior case, the functioning of the diffusion mechanism and consequent actions are based on changing internal factors and intrinsic motivations of decision-makers, whereas in the latter case actors are adapting their specific interest and desires to altered constraints and opportunities underlying decision-making.

In a more rationalist reading, actors base their decisions on the consequences of alternative policies. To calculate the consequences of their actions, agents have to

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[29] I use the word "usually" as sometimes the national competencies remain on a sub-national level. Also, adopting policies might stem from coercive impacts as in the case of international law. The existence of veto players has also to be taken into account.

[30] Some constructivist authors argue against the intentionality of rule-driven behaviour (cf. footnote 28).

cognitively link policies with their self-interest; thus, they simply have to know about the efficiency of alternative policy choices. This notion is carried in cognitive or causal ideas and beliefs over cause and effect relationships and strategies for the attainment of goals (cf. Goldstein and Keohane 1993; Schmidt 2008b). Actors have to ask if the policy under consideration is effective for achieving their goals and desires. Several diffusion concepts are based on shared causal or cognitive ideas and beliefs. For example, lesson drawing is based on the assumption that actors update their causal beliefs on new information on the functioning of policies (cf. Rose 1991). Actors share beliefs on means and ends and diffusion processes can influence these cognitive perceptions and beliefs on the policies in question.

The argument is basically built around the question, which policy is working best for the attainment of an actor's goals? New information on the effectiveness of specific policies or insights from scientific research might lead to an update of causal beliefs. For example, the use of diagnosis related groups (DRGs) to determine the actual costs of a treatment was driven by the observation that hospitals using DRGs as a base for their cost planning differed substantially in terms of cost developments compared to the traditional form of cost reimbursement (cf. Schmid et al. 2010). The incentives for containing the costs in case of funding systems based on DRGs seemed much higher compared to funding based on retrospective cost reimbursement.

In a similar vein, constructivist diffusion mechanisms can impact on normative beliefs. Similar to rationalist arguments on causal beliefs, actors have to cognitively link policies with their normative ideas. This argument is basically about pairing action with a specific situation. What do I believe what are (non-)appropriate policy choices in a specific situation? Furthermore, what are the criteria for distinguishing the appropriateness of policies? Consequently, diffusion mechanisms are based on the assumption that actors' behaviour is based on "normative" (Schmidt 2008b) or "principled" beliefs (Goldstein and Keohane 1993).

Rules are followed as long as actors accept them as true and natural choices. How do I have to act according to my identity and the role I am supposed to play? For example, certain rules are just taken for granted like abolishing slavery (Finnemore and Sikkink 1998: 895). Due to internalized values and norms, action becomes independent of material consideration since actors have an intrinsic desire to follow that norm (cf. Alderson 2001; Checkel 2005). This idea applies to concepts like persuasion or socialization. For instance, the normative beliefs on environmental risks can drive state governments in the USA to adopt strict regulation on chemicals

even when facing substantial economic problems (cf. Olive, Raymond and Gunasekara 2011).

But altering the social and material payoffs associated with policy choices can also drive diffusion processes. In a rationalist reading, payoffs refer to the costs and benefits associated with a specific policy. If the actors' desire is to maximize the utility associated with policy choices, then they will likely adapt to new constraints and opportunities. Preference for a specific policy can be based on the expected electoral rewards, party politics or organized interests and lobbying. Sometimes, benefits are structured by the need to arrive at package deals or in bargaining situations (for example in government formation). Yet, payoffs can also be based on economic rewards and competition. The previously given example on blame avoidance can serve as case for this kind of behaviour here.

Diffusion mechanisms can also relate to the normative and social value of a policy from a constructivist point of view. For instance, the emergence of international norms can alter the normative structures underlying world politics and it can render the adoption of a specific policy as a more appropriate and legitimate choice (cf. Finnemore 1996). In other words, they determine the normative value of alternative policy choices embedded in the institutional and cultural structure in which the actor operates. Which policies are socially rewarding? Which norms are socially accepted in a given situation? This reframing in the interpretation and projection of the appropriateness associated with the adoption of alternative policy choices can be found in conceptualizations like mimicry or emulation when actors are driven by legitimacy pressures and/or the desire for conformity (cf. Sharman 2008). Similarly, (legal) rules set pressure on actors and organizations "primarily by redefining the normative value of old practices" (Suchman and Edelman 1996: 930). Rather than becoming intrinsic to actors' identities, rules are followed as they are interpreted as legitimate and right in a specific context or situation.

2.2 The Mechanisms of Policy Diffusion

Following this causal logic, four classes of causal (or: *diffusion*) mechanisms can be identified in the current state of the art: emulation, learning, socialization, and externalities. [31]

Learning relates to situation where national governments rely on experiences made elsewhere for domestic problem solving. The rationality for this behaviour rests on searching effective solutions to given problems. The background idea is that the experience of others provides information to solve ones own problems. In turn, this will lead to an updating on causal beliefs and to additional knowledge on the effectiveness of certain policies. For example, politicians learnt from the effects cutting unemployment pays had on the labour market performance in OCED countries (cf. Gilardi 2010). Approaches subsumed under the notion of learning incorporate several theoretical concepts like lesson drawing (Rose 1991), Bayesian Updating (Meseguer 2003), or bounded rationality and cognitive heuristics (Weyland 2007).

Externalities then characterize diffusion mechanisms based on setting positive and/or negative incentives for the adoption of certain policies that are manipulating and influencing utility calculations of domestic policy-makers. From this point of view, externalities relate to the cost and benefits the policies of others entail for decision-makers and their adjustments (cf. Abbott and Snidal 2001; Braun and Gilardi 2006; Elkins and Simmons 2005; Lazer 2001).

Two of the main concepts that belong to this category of diffusion mechanisms are competition and coercion. Whereas the latter concept describes situations where governments are obliged to adopt certain policies (for example, in the case of legal requirements and compliance with international law and harmonization), diffusion research mainly focuses on processes of competition and the costs they create for domestic policy makers (for example, Boehmke and Witmer 2004; Sharman 2008; Shipan and Volden 2008; Simmons, Dobbin and Garrett 2008).[32] In this regard, externalities are supposed to relate to policy areas characterized by institutional and

[31] Providing a mathematical analysis of formal models would go beyond the scope of this thesis. We still lack considerable knowledge on diffusion processes, their interaction, and their effects on policy change and adaption to specify a fully developed formal model of several diffusion processes.

[32] Some authors also incorporate coercive adaption processes into the study of diffusion (for example, Dobbin et al. 2007), that means several mechanisms like legal obligations, economic sanctions, or international political pressure forcing governments to adopt certain policies. Following our initial focus on non-coercive diffusion mechanisms I do not deal with this kind of causal mechanisms and stick to the narrow definition.

trade-related competition as in the case of economic policy (cf. Scharpf 1997b; Holzinger and Knill 2005). For example, interstate competition in the USA influenced the adoption of Indian gaming policies. Economic pressure in the form of a loss in businesses; tax revenues and jobs drove this diffusion process (cf. Boehmke and Witmer 2004).

Socialisation relates to the internalization of shared beliefs due to interaction of actors. In this regard, diffusion through socialisation clearly frames the cognitive dimension of appropriate rules. In turn, diffusion mechanisms might lead to a redefinition of actor's identities and belief systems and the internalization of international norms. Similar arguments can be found in concepts like normative isomorphism (DiMaggio and Powell 1991), social learning (Hall 1993), taken for grantedness (Braun and Gilardi 2006) or type II internalization (Checkel 2005). Another way of changing normative beliefs is promoting ideas as legitimate or true through reason giving as in the case of persuasion and arguing (cf. Risse 2000).

Normatively, rules might be followed as they are interpreted as legitimate. But they might also be followed as actors belief them as being true. For example, based on scientific knowledge or own experience, actors cognitively link problems and situations with distinct approaches (cf. March and Olsen 2006). To put if differently, agents might internalize normative beliefs and practices as well as group affiliations (cf. Abdelal et al. 2006; Johnston 2005: 1032f). In such situations, actors accept the group norms as given and adopt their desires and identities to the ones of the community. In this regard, diffusion in terms of socialization clearly frames the cognitive dimension of appropriate rules (cf. March and Olsen 2006) as it relates to the internalization of shared beliefs. Choosing policies based on conscious instrumental calculation is replaced by a normative rationality.

The idea behind conceptualizations based on socialization is that actors interacting with each other develop shared beliefs and internalize common norms This in turn shapes actor's perceptions on the legitimacy of norms and policies and might lead to a redefinition of actor's identities and belief systems and the internalization of norms (cf. Checkel 2005; Finnemore and Sikkink 1998). Although socialisation does not directly lead to policy change the outcome might be the adoption and transfer of specific policies. For example, there is evidence for European institutions framing ethnic politics in East Europe during the 1990s in terms of liberalization and minority rights (cf. Kelley 2004).

In a similar vain, emulation describes the desire (or need) of domestic actors to conform to international widespread norms. Here actors merely copy models found elsewhere to increase the legitimacy of policy choices. For example, former colonies often imitate the policies of the colonial power when it comes to modernizing their political institutions (cf. Massey 2009).

Copying international models must not always stem from searching for effective solutions or an advanced understanding of the underlying causal relationships to given problems as it is assumed in the case of learning. Policy transfer in mimetic processes is rarely purposive and goal-orientated as explanatory Rationales focus on peer pressure and reputation as drivers (cf. Meseguer 2005: 78). Strictly speaking, emulation relates to legitimacy pressures stemming from the misfit between internationally acclaimed norms and policies and their domestic counterparts.

Mechanisms based on the logic of emulation refer to a bunch of concepts ranging from norm cascades (Finnemore and Sikkink 1998), mimetic isomorphism (DiMaggio and Powell 1991), mimicking (Johnston 2005) or type I internalization (Checkel 2005), symbolic imitation (Gustafsson 1983), bandwagoning, threshold or tipping point models (cf. Granovetter 1978; Schelling 1978) to herding (Hirshleifer and Teoh 2003; Levi-Faur 2002). [33]

[33] Some authors doubt if emulation is a mechanism on its own or rather a mixture of socialization and learning (cf. Graham, Volden and Shipan 2008: 25). I disagree with the latter assumption as emulation has different analytical implications and underlying assumptions than a (rational) learning model or socialization. Though I agree that the analytical distinction is not always testable (cf. subsection 2.4.2).

Table 2-1: Ideal Types of Policy Diffusion Mechanisms

Impact on *→ What induces change?* **Type of explanation** *→ What drives governments' behaviour?*	**Agent** *→ altered governments' beliefs (normative/causal) about different policies induce change*	**Structure** *→ altered constraints and opportunities (ideational/material) associated with the pursue of different policies induce change*
Constructivist *→ Normative rationality (legitimacy-driven)*	I SOCIALISATION *Basic Idea: interaction leads to the development and internalization of normative ideas*	II EMULATION *Basic Idea: the desire of actors to conform to widespread norms and socially valued policies*
Rationalist *→ Instrumental rationality (utility-driven)*	III LEARNING *Basic Idea: the experience of others provides new information on the effectiveness of policies leading to an update of causal ideas*	IV EXTERNALITIES *Basic Idea: the choices of other actors entail costs and benefits to be incorporated into decision calculus*

Source: own table.

2.3 The Conditionality of Policy Diffusion

The functioning of diffusion mechanisms based on voluntariness and communication presupposes rather weak requirements at first glance (cf. Holzinger and Knill 2005: 790).[34] However, the existing literature offers a wide array of theoretical assumptions on what kind of factors condition diffusion mechanisms (cf. Braun et al. 2007; Dolowitz and Marsh 1996, 2000; Holzinger and Knill 2005; Knill and Lenschow 2005; Schimmelfennig 2007; Simmons and Elkins 2004; Rogers 2003; Tews 2002). Basically one can distinguish two sorts of factors influencing the functioning of the identified diffusion mechanisms: country-specific and policy-specific factors.[35]

[34] Especially in a globalised and interconnected world there should be both as information about policy choices of other countries is usually available so that countries policies can have (at least theoretically) an impact on (dependent) countries.

[35] One can also add a third category referring to international and transnational factors. But I do not deal with them separately as they are already implicit on the discussion on the causal mechanisms. For example, if one assumes that socialization is driven by interaction in networks than it is obvious that highly institutionalized networks are better able to create trust and gradual socialization (cf. Finnemore and Sikkink 1998).

With regards to country-specific factors the focus is often on the similarity of the countries under investigation (cf. Holzinger and Knill 2005; Holzinger and Knill 2007; Lenschow, Liefferink and Veenman 2005). A basic assumption is that the national impact of diffusion mechanisms is bolstered the more similar countries in terms of culture, institutions, and socioeconomic contexts are. To put it differently, the more dissimilar the cultural, institutional, and socioeconomic characteristics of countries the less diffusion between these countries can be expected. For example, governments tend to align their policy choices with countries they share historical and cultural ties like in the case of anti-smoking policies and the diffusion of second hand smoking restrictions in the English-speaking countries (cf. Asare and Studlar 2009).

But the literature also offers alternative explanations on country-specific characteristics that might influence patterns of diffusion and its effects – for example, the compatibility between policy legacies and external policy models or the reform capacity of political systems (cf. Holzinger and Knill 2005; Mastenbroek 2005; Tews 2002).

Policy- (or sector-)specific factors then relate to a focus on policy attributes themselves (cf. Knill 2005: 7f; Makse and Volden 2011; Heichel et al. 2005: 818). Country-specific factors like state capacities might depend on the sector under consideration. For example, studies on Europeanization have shown that state capacities for reforms are contingent on the policy sector (cf. Steunenberg and Toshkov 2009; Steunenberg 2007). In this regard, the costs for policy adoption and reforming current arrangements are rather policy- than country-specific as they depend on policies pre-existing in a country (cf. Falkner et al. 2005; Mastenbroek and Kaeding 2006).

But the conditional effect of policy-specific factors can also stem from interdependencies with other policy fields (cf. Bönker 2008). For example, public sector reforms in terms of privatization and retrenchments are often influenced by fiscal policies and the economic performance of a country.

Also empirical evidence pinpoints to the finding that policy ideas seem to travel much easier than policy instruments and setting (cf. Bache and Olsson 2001; Bomberg and Peterson 2000; Radaelli 2005). This is kind of surprising as earlier scholars assume that ideas and beliefs are more difficult to change than policy instruments or settings (cf. Hall 1993).

Assumptions on the contingency of policy diffusion are often depending on the causal mechanism under consideration. That means factors of contingency differ according

to the diffusion mechanism. A mechanism like competition might be influenced by other conditional variables than a learning process. Theories of learning often refer to cognitive short cuts that influence the probability of learning effects like cultural biases since actors have to decode information (cf. Dolowitz and Marsh 2000). The factors triggering competition are usually not based on communication and information, but on competitive interdependencies between markets and political systems. Hence, other scope conditions are of relevance here. Factors like the compatibility and relative advantage of policy reforms compared to keeping the status quo might filter its effect (cf. Makse and Volden 2011).

From this point of view, dealing with the contingency of competition might require the explicit formulation of theoretical assumptions for each of the causal mechanisms under consideration. But this dimension of policy diffusion is often overlooked. In any case, diffusion researchers neglect dimensions of power and domestic politics. Of course, domestic controls are usually included into the analysis, but mechanism-based approaches usually lack the explicit integration of scope conditions and conditional variables. More specifically, the contingent character of policy diffusion renders the explicit formulation of interaction hypothesis (and their test) necessary (cf. Shipan and Volden 2006; Volden 2006; Volden et al. 2008).[36] This is especially important in mechanism-based thinking as it encompasses several steps in a causal process (cf. Falleti and Lynch 2009). Even in a situation characterized by no legal or political imposition, domestic politics play are crucial role in explaining why actors adopt certain policies.

2.4 Theorizing Policy Diffusion in Higher Education[37]

By and large, two groups of explanatory factors can be distinguished, on why governments adopt certain policies: First, (international)[38] factors triggering diffusion processes and the underlying causal mechanisms like learning; and second, variables determining the functioning and effectiveness of diffusion mechanisms, that

[36] For example, by modeling interaction terms or by constructing spatially lagged variables (cf. section 4.1).

[37] I subscribe to a stricter use of the term diffusion relating to voluntary processes of policy adaption (cf. Holzinger et al. 2007a). I do not include assumption on coercive mechanisms driven by international law and alike into the theoretical framework. The framework mainly deals with diffusion mechanisms based on assumptions related to communication and information exchange as well as competitive and cooperation interdependencies. This is due to the empirical focus on higher education policy.

[38] The focus of the diffusion framework is usually on international factors, but domestic factors might also lead to policy clustering (cf. subsection 2.4.4).

means factors conditioning the impact of diffusion processes. Overall, primary hypotheses are formulated on the relationship between variables triggering and influencing diffusion processes based on causal mechanisms like learning and policy adoption. Secondary hypotheses relate to the interaction between these diffusion variables and conditional variables in relation to policy adoption as the dependent variable. That means the theoretical framework explicitly deals with the conditional nature of policy diffusion by formulating specific conditional hypothesis on the interaction with the different diffusion variables. In other words, secondary hypotheses are dealing with conditional variables mediating the effects of diffusion variables.

The theoretical framework discriminates between different diffusion mechanisms by providing coherent explanatory models for explaining policy adoption (cf. Zürn and Checkel 2005: 1057). The theoretical framework is trying to disentangle theoretical arguments according to the underlying causal ideas on when and how actors adopt external policies. Conceptualizations that are not based on a distinct and precise set of causal propositions hinder the search for observable and (preferably) distinct empirical indicators (cf. Elkins and Simmons 2005: 38; Gerring 1999) – a serious obstacle for valid and robust empirical testing of theoretical models.

First, despite the terminological and ontological differences, the theoretical paradigms discussed in section 2.1 should not be interpreted too narrow from a conceptual point of view. Usually causal assumptions are theoretically sounder than their empirical counterparts expect (c. Risse 2003). Also hybrid forms of diffusion mechanisms exist which cut across the causal logics presented. This relates to constructivist and rationalist reasoning as well as the structure- or agency-centeredness of explanations (cf. Figure 2-1).

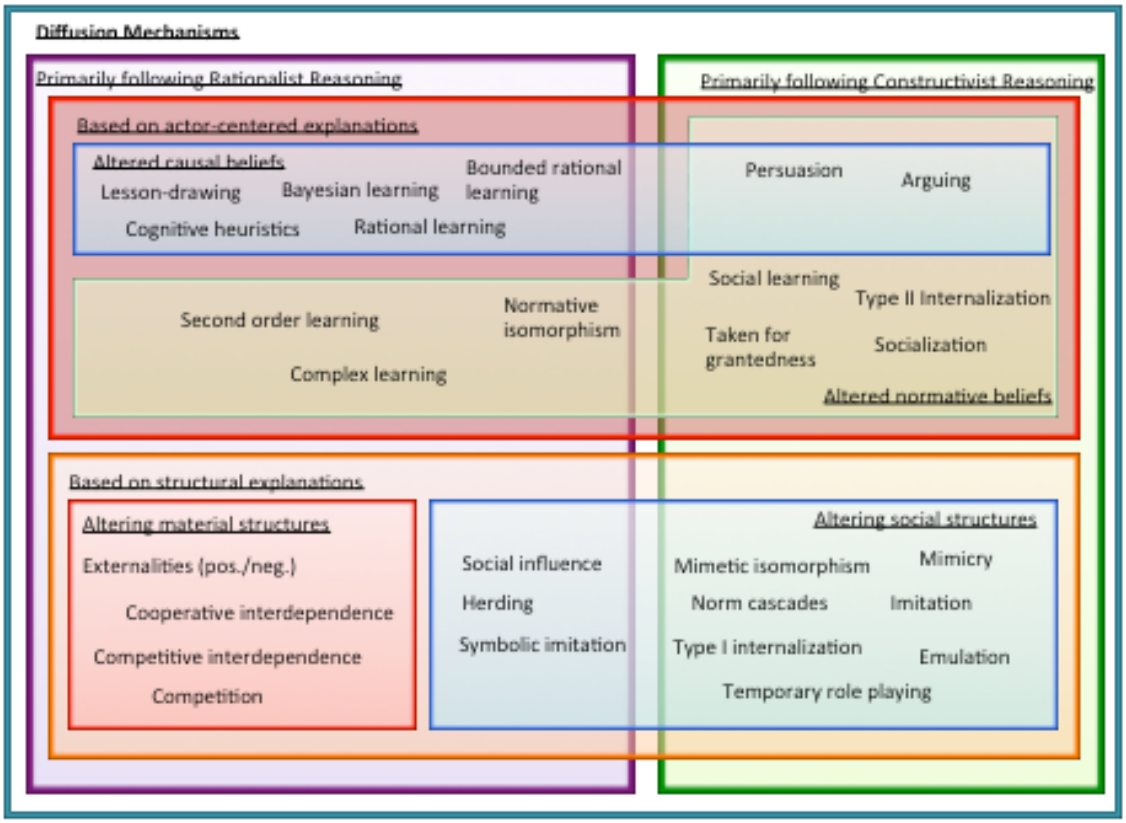
Rationalist and constructivist thinking are partly overlapping. For example, the basic distinction between a normative and instrumental rationality does not fully intersect with the ideational versus material dichotomy and can turn out to be misleading (cf. Fearon and Wendt 2002; Klotz and Lynch 2006). Causal beliefs are usually linked with the material interest of an actor as they determine the expected utility of a policy (cf. Braun and Gilardi 2006) rather than the rightness of policy choices.[39] Still, causal beliefs about the effects of a specific policy are an ideational concept like norms or

[39] Except when effectiveness becomes the appropriate norm.

discourse and it is part of constructivist thinking, too (for example in processes based on arguing).

Furthermore, actors might also incorporate social and ideational values into their expected utility maximizations. Concepts dealing with the social influence of international institutions usually highlight the distributional effects of norm compliance in terms of social rewards and costs (cf. Johnston 2001).

Figure 2-1: A Venn diagram of policy diffusion mechanisms



Source: own figure.

However, rationalist notions also found their way into constructivist thinking. For instance, at first internalizing new norms might be driven by an instrumental rather than a normative rationale (cf. Checkel 2005). Internalizing new norms is usually a long-term process. But joining a network or community is often driven by self-interest rather than normative reasons. Eventually, transnational problem solving can result in normative isomorphism due to the discourses and communication exchange accompanying the mutual actions carried out (cf. DiMaggio and Powell 1983; Rakic 2001).

Diffusion mechanisms such as persuasion or arguing are referring to scientific knowledge not only changing normative beliefs, but also persuading actors to link causes and effects with regard to distinct problem-solving approaches. Vice versa, one can also identify a few rationalist concepts like complex or second order learning that assume learning beyond strategies and conceptualize actor's preferences as endogenous (cf. Hall 1993).

Hence, the distinction between constructivist and rationalist thinking is not as sharp as often claimed. Causal mechanisms such as persuasion rely both on rational as well as on constructivist thinking. But this does not mean that structural changes might not ultimately cause a change in actors' beliefs in terms of socialization or learning effects. For example, in case of institutional learning policy makers and civil servants in specific institutional settings might incrementally adapt their political values to the organizational norms (cf. Rohrschneider 1996).

Now, one could argue that it is the adaption of actors to their structural environment that leads to an update of their beliefs. From this point of view, structural conditions seem to lead to the internalization of norms. Yet, analytically, a structural change is not sufficient for norm internalization. On the contrary, the original desire to conform to altered structural conditions can indirectly and ultimately lead to a change of the actor's beliefs (cf. Checkel 2005). From this point of view, emulation can precede socialization effects. But the opposite argument would not make sense. In other words, as soon as a type II internationalization is reached (that means, the norm is internalized) it usually[40] cannot be replaced by type I internationalization (that means, simple role playing) afterwards.

It could also be argued that structural and actor-based explanations differ in terms of the degree of change and the length of the causal chain under consideration. However, that would be a very bold statement to make. Here it seems helpful to remember that the ideal types constructed in diffusion research merely reflect different theoretical ideas about the main drivers for social action (actors' beliefs and the structural conditions). They should be used as labels and connotations, not as normative claims about the superiority of either agency or structure in determining social actions. This is an issue for actual empirical research rather than for conceptual work.

[40] In case all other things being equal. Of course, exogenous shocks or other changes might lead to a redefinition of norms and values.

Second, diffusion mechanisms influence the parameters determining the choices and decision-making of political actors, but they can rarely be observed and measured directly. Due to the latent characteristic of causal mechanisms one has to operate with proxies as independent variables (cf. Simmons and Elkins 2004; Gleditsch and Ward 2006). More specifically, theoretical assumptions on the triggers and functioning of diffusion mechanisms have to be translated into variables suitable for empirical measurement. Therefore, the theoretical framework is informed by the need to find explanatory concepts indicating an actual and observable change of behaviour.

In other words, explanatory factors have to be identified that might indicate a change in actors' beliefs and the structural conditions as the main parameters influencing diffusion processes in terms of policy adoption. In an ideal empirical world one would find distinct empirical indicators to discriminate between theoretical assumptions. Concepts believed to be hardly traceable in empirical studies are not considered here.

To give you an example, one has to be aware of the certainly existing limitations of variable orientated approaches (cf. Aus 2007; Kittel 2006; Ebbinghaus 2005). An example might demonstrate the problems for formulating and testing diffusion mechanisms and their underlying assumptions in a macro-quantitative design. The concept of lesson-drawing refers to policy transfer through national governments rationally utilizing problem-solving experiences of other countries (cf. Rose 1991: 4). Learning can result in a change of believes and preferences (cf. Levy 1994: 283), or only in an adaption of new strategies (cf. May 1992). Both might result in a policy change, although this does not have to be the case (especially in the latter case). Here we face two problems. To examine the assumption that learning has taken place in a macro-quantitative design we need an actual and observable change of behaviour. If actors have drawn lessons without changing their behaviour we might detect no (statistical) effects. Correspondingly for a macro-quantitative approach we have to use a theoretical concept of learning arguments that allows for empirical observations (at least implicitly).

Furthermore, we do not know what exactly caused an observable learning effect. We are not able to trace the micro-foundation of the causal effect. We might be able to formulate a hypothesis on the probability that a cause is leading to a certain outcome through a distinct mechanism by dealing with the theoretical assumptions underlying the function of this causal mechanism and its impact on social action. We could formulate hypothesis regarding the impact of international stimuli for learning. For

example, one can assume that learning effects are more likely the stronger the networking between countries (cf. Simmons and Elkins 2004).

Third, the following presentation of the various hypotheses is not a comprehensive list of explanatory factors to be found in diffusion research. There are good reasons for this limitation as recent methodological works pinpoint to the necessity of theoretical parsimony and the problem of integrating too many explanatory variables into statistical models (cf. Achen 2002; Achen 2005). Moreover, one has to acknowledge that it is particularly the number of potentially relevant conditional factors that seem almost endless – especially if someone is utilizing neighbouring research strands like Europeanization (cf. Mastenbroek 2005). Therefore, the selection of theoretical assumptions to be discussed and tested in the following subsections is far from being inclusive. The main goal is to comparatively test causal assumptions on the functioning of diffusion mechanisms – not to fully explain all the variation in terms of policy adoption.

Following these restrictions, four sets of hypotheses are formulated on policy diffusion due to learning, socialization, externalities and common responses:[41]

2.4.1 Learning

Policy diffusion due to learning refers to constellations where governments utilize experiences of external actors in order to solve domestic problems. The rationality for this behaviour rests on searching effective solutions to given problems, based on the idea that the experience of others provides information to solve one's own problems. Rather than changing the decision-making conditions by altering payoffs, learning relates to situations where national governments update their causal beliefs about the effectiveness of policies.

Studies dealing with learning often remain vague regarding the actual impacts of learning processes (cf. Elkins and Simmons 2005; Meseguer 2005; Mooney 2001)). It is possible that a programme may be evaluated positively or negatively or there

[41] The socialization approach is based on assumptions referring to two ideal diffusion mechanisms: socialization and emulation (cf. section 2.2). As previously mentioned, I still subscribe to a stricter use of the term diffusion relating to voluntary processes of policy adaption. I do not include assumptions on coercive mechanisms driven by international law and alike into the theoretical framework. The framework mainly deals with diffusion mechanisms based on assumptions related to communication and information exchange as well as competitive and cooperation interdependencies. This is due to the empirical focus on higher education policy. Letters and numbers are assigned to diffusion and conditional to describe the theoretical approach and to ease the readability (for example, "conditional hypothesis A1" relates to the first hypothesis dealing with the conditional nature of learning).

may be simply no possibility to transfer it (cf. Rose 1991: 22; Dolowitz and Marsh 2000; Elkins and Simmons 2005).

Furthermore, a main problem in applying the concept of learning is to answer the question about which results national policy-makers do care for. Do they really want to find effective solutions for domestic problems? Or is it about economic benchmarks and political results (for example, in terms of payoffs at the ballot) (cf. Meseguer 2005: 77)?

2.4.1.1 On Rational Learning

As a consequence, governments tend to align themselves with policies that can be found in more successful countries (for example Elkins, Guzman and Simmons 2006; Meseguer 2006; Simmons and Elkins 2004). Epistemic communities or international organizations can serve as reference as well. Organizations like the International Monetary Fund (IMF) and the Organization for Economic Co-operation and Development (OECD) frequently provide country reports, peer reviews, and identify best practices which then become powerful international policy instruments for further mutual learning processes (cf. Schäfer 2006).

This assumption seems to question the analytical distinction between horizontal and vertical diffusion processes. What drives policy adaption in case of international comparisons and benchmarking? Should we think about data provided by international actors in terms of a causal factor on its own? One cold also argue that it is simply a necessary condition for learning effects to take place. Lastly, it is the policy experience of country governments that are taken into consideration by policy makers. And international reports are only functioning as a source for this kind of information. This argument seems less straightforward if one thinks about the possibility that governments weight information differently or that international organizations follow their own interest when providing insights on domestic policies. They are actors themselves and cannot only be understood as devices or platforms for providing information.

The concept of learning plays a vital part in higher education studies. Especially in recent years it became prominent in studies dealing with the impact of international organizations on national higher education policies. Probably the best-known example is the so-called Bologna Process and the exchange of policy- specific information to deal with domestic problems (cf. Heinze and Knill 2008; Veiga and

Amaral 2006). Another example, relates to the role of the OECD in promoting mutual surveillance and adjustment by providing indicators and country reports (cf. Martens and Wolf 2006).

But the issue of disentangling both effects seems less problematic regarding higher education policies. First, the scope of activities by international organizations in higher education was relatively limited before the mid-1990s. Except some agreements on the recognition of professional qualification, international regulations on higher education were nearly non-existent (cf. Mundy 2007). Though one has to acknowledge that the international organizations like the UNESCO and the OECD were increasingly providing information on national higher education policies, activities were only at their beginning. Until the end of the 1990s, international exercises to systematically map and evaluate higher education policies focused on a relatively low number of aggregated indicators (cf. Godin 2005). Reliable and valid data was difficult to gather (cf. Godin 2005). And more detailed country comparisons were simply not available.

Also the degree of institutionalization of international efforts was rather weak. For example, OECD reports on the country performance in higher education were only provided if requested by the country in question (cf. Martens 2007). From this point of view, assuming an informational and ideational impact of international actors seems less plausible than the impact of intergovernmental interdependencies. The data and experience from international sources is surely a necessary condition for learning on the effectiveness of policies, but the institutionalization of international and transnational networks or organizations highlighted in higher education studies was still rudimentary in the 1980s and 1990s. Rather higher education policy has to be mainly understood as a product of horizontal diffusion processes and domestic politics.[42]

Analytically then, governments are expected to change and transfer policies according to the policies implemented in successful countries. In the 1990s, for example, Denmark and the Netherlands were quite successful in fighting unemployment. Both cases provided valuable insight on how to reform labour markets (cf. Barrell and Genre 1999). In a similar vein, European strategies in higher

[42] It is also questionable if one could empirically disentangle both effects in a macro-quantitative design. Experiments or interviews could help to find out about policy makers' sources of information and how they weigh information from different sources. But the possibility of testing in a macro-quantitative design is rather limited. Even if international data would provide clear-cut information on which countries and policies are most successful, there would be probably a high degree of collinearity in the actual country data.

education aimed at increasing the market- and performance-orientation of policies (cf. Billing 2004; Frølich, Schmidt and Rosa 2011).

However, several authors showed that learning can work in both directions with negative experience also causing learning effects (cf. Lee and Strang 2006; Mooney 2001). Such processes seem to be at work when states abolished interventionist or Keynesian macro-economic policy in favour of deregulation and privatization in the last decades (cf. Meseguer 2005).

In a similar vein, universities and higher education systems are performing quite differently. Whereas the German higher education system with its Humboldtian ideal of Academic oligarchy was supposed to be the most successful model during the early 20th century, countries following this approach run into severe problems under budgetary constraints and growing student numbers (cf. Frølich et al. 2010; Schimank and Winnes 2001). Under these conditions many countries reformed their higher education systems.

Form this point of view I expect that the relative performance of other countries having adopted performance-orientated higher education policies impact on the choices of governments:

> **Diffusion hypothesis A1** (*learning from success*): The adoption of a higher education policy *i* is influenced by the comparative performance of *n* other countries with policy *i*.

In a more general understanding of learning, one would expect that governments consider information on countries having adopted new policies and of those sticking to the status quo. That means information on the usefulness of policies can be derived from both countries having implemented new policies, but also from the performance of countries sticking to traditional approaches.

> **Diffusion hypothesis A2** (*learning from experience*): The adoption of a higher education policy *i* is influenced by the policy experience in *n* other countries.

Furthermore, short-term success seems to be more important to political decision-makers (cf. Weyland 2007) – a behaviour perfectly fitting times where knowledge becomes out-dated quickly and where politicians think in terms of legislative turnover and electoral payoffs. But higher education research often highlights the slow and

path-dependent transformation of higher education systems as the full implementation of higher education policies usually takes three to seven years (cf. Cerych and Sabatier 1986).

This circumstance does not necessarily speak against the assumption that politicians have a limited time frame when weighing information. But it supports the argument that decision-making in higher education is following a different time clock compared to other policy fields. In other words, causal ideas might take longer before they are updated (cf. Kingdon 1984). From this point of view, I expect time to have an impact on policy adoption too. In contrast to the previous hypothesis, I assume long-term developments to influence government decisions:

> **Diffusion hypothesis A3a** (*longer term learning from success*): The adoption of a higher education policy *i* is influenced by the longer-term comparative performance of *n* other countries with policy *i*.

> **Diffusion hypothesis A3b** (*longer term learning from experience*): The adoption of a higher education policy *i* is influenced by the longer-term experience with policy *i* in *n* other countries.

2.4.1.2 On Bounded-rational Learning

Similar to the emulation mode, assumptions associated with learning are independent of the existence of an active promoter of policies (cf. Börzel and Risse 2009). That is to say, an updating of causal beliefs and learning about the effectiveness and performance of policies can be caused by mutual observations. Here, different assumptions exist regarding the question which problem-solving approach has to be adopted. In other words, where do governments look for information and how do they weigh them. Governments are usually supposed to converge in their policy choices if all available information is considered and weighted to the same degree only (cf. Holzinger and Knill 2005: 783).

One of the most questionable assumptions in comprehensive versions of rational learning relates to the unrestricted availability of information and the costs for obtaining them (cf. Gilardi, Füglister and Luyet 2010; Meseguer 2006; Weyland 2007; Volden et al. 2008). Proponents of bounded versions off learning highlight different technical and cognitive shortcuts that limit the possibilities of learning.

For example, if governments differ in their information processing capacities, if they are neither perfectly rational nor collect all available information or if the considered experiences show ambiguous results, divergence may occur. Correspondingly, some learning frameworks are dealing with cognitive heuristics, which emphasize certain short cuts in the governmental search for and evaluation of information (Friedkin 1993; Strang and Meyer 1993; Weyland 2007). Searching for policy solutions is still problem-driven, but causal beliefs are bound towards specific biases in the inferences and decision-making processes of individuals. So, if cognitive short cuts exist and policy-makers are rationally bounded, then learning still leads to policy adoption. However, this is a contingent pattern (cf. Meseguer 2006: 77).

Although increasing informational linkages between countries exist, information is supposed to be spatially biased with information easier and more readily available from closer states and neighbouring countries (cf. Grossback, Nicholson-Crotty and Peterson 2003; Meseguer 2006; Weyland 2007). Discovering regional clusters in learning would come to no surprise due to this "availability heuristic". Correspondingly, I expect that governments are not searching for policy solutions evenly, but that a regional bias exists. More specifically, governments are only expected to learn from neighbouring countries rather than considering more distant countries:

> **Conditional hypothesis A1** (*learning from neighbours*): The effect of learning is contingent on the choices on higher education policy *i* in *n* neighbouring countries.

In addition, inferential short cuts can refer to the influence of actor's prior beliefs and cultural factors (Meseguer 2005: 75; Weyland 2005). Learning is based on the processing and interpretation of information on causal relationships. The outcome of this process also depends on an actors' prior belief, meaning that an actor's cultural imprinting influences his way of decoding information. In this regard, learning processes can be conditioned by country-group-effects referring to "family of nations" (cf. Castles 1993). For instance, a country-group effect has been driving the case of anti-smoking policies and the diffusion of second hand smoking restrictions in the

English-speaking countries of the Republic of Ireland, Scotland, and England (cf. Asare and Studlar 2009).[43]

Similarly, higher education systems sharing the same historical legacies are supposed to follow similar pathways (cf. Dobbins 2008). Rooted in similar higher education traditions like the Humboldt, Napoleonic or the Market Model (cf. Brennan 2010; Clark 1983; Gellert 1999), I expect similar heritages to spur learning processes. Following this argument, one can assume that learning effects are conditioned by the similarity between sender and recipient in terms of their university cultures and historical roots:

> **Conditional hypothesis A2** (*similar historical origins*): The effect of learning is contingent on the historical similarities between the higher education systems in *n* countries.

Furthermore, Bayesian learning approaches assume that governments do not distinguish between different informational sources. Given a certain state of information, they rather search for the solution that is expected to yield the best results (the most appropriate solution in terms of their preferences). Correspondingly, the occurrence of a learning effect might depend on the ideological similarity between senders and recipients (cf. Volden 2006). In cases governments share partisan alignments and ideological preferences, insights derived from others' experience seem to be more comparable to governments. Following this argument, one can expect that learning effects be conditioned by the ideological distances between governments. Or to put it differently, ideological similarity between countries makes learning more likely:

> **Conditional hypothesis A3** (*ideological similarities*): The effect of learning is increasing with the ideological similarities between governments in *n* countries.

2.4.1.3 On Problem-driven Learning

Last but not least, governments tend to incorporate policies of other countries into their domestic political programs in situations of high uncertainty (cf. Rose 1991;

[43] See also the general patterns of the UK to ignore France and Ireland, but to learn from the USA, Canada or Australia (cf. Rose 1993: 107/167).

Simmons and Elkins 2004). If the available policy options and the underlying causes and effects are hitherto unknown or not clear, conclusions have to be drawn on empirical evidence. The underlying assumption is that the uncertainty condition renders learning from peers and others' experience more likely than a prospective and systematic evaluation based on conventional research and experience (for example, in terms of pilot projects). The latter is often too time-consuming and costly. Time pressures can multiply this effect.

In a similar vein, domestic problem pressure seems to have an impact on the cross-national transfer of higher education policies (cf. Heinze and Knill 2008; Witte 2006: 93f). Relevant aspects can relate to policy-specific problems like low enrolment or completion ratios, budgetary constraints and academic unemployment. But often it is the more general picture restricting the state's capacities to solve policy problems (cf. cf. Scharpf 1997b). States facing socio-economic vulnerability generally adapt to external pressures more easily (cf. Schmidt 2002: 898). This can relate to economic and fiscal problems like high public debts, low economic growth and high unemployment rates. Thus I expect an increased domestic problem pressure to impact on the willingness of governments to learn from others:

> **Conditional hypothesis A4** (*problem-driven learning*): The effect of learning is increasing with the domestic problem-pressure.

2.4.2 Socialization

It does not seem feasible to empirically discriminate between both constructivist kinds of diffusion processes in a macro-quantitative design. Emulation patterns stem from a change in the reputational payoffs linked with the embracing of a certain norm and policy, whereas socialization is changing one's core beliefs on the appropriateness of a specific policy. Following role-conforming behaviour then results in adopting policies associated with the reference norms, but can also result in pure symbolism (cf. Gustafsson 1983) or blame avoidance (Bennett 1991: 223). For example, official commitments to the non-proliferation of arms often do not match the domestic implementation of these ideas (cf. Solingen 2007). To determine whether a government has adopted a policy because of the associated social rewards or due to norm internalization usually requires data on the underlying attitudes of the actors (cf. Checkel 2006; Wimmel 2003).

As a consequence, the approach adopted here is based on the assumption that actors interacting with each other develop shared beliefs and internalize common norms. This, in turn, shapes actor's perceptions on the legitimacy of norms and policies and consequently influences the adoption of similar policies (cf. Checkel 2005; Finnemore and Sikkink 1998). This basic idea leads to the question on the ways actors interact. What kind of interactions can trigger socialization processes? A main focus in the literature on socialization is on networks as channels of diffusion (cf. Jordana et al. 2011; Lazer and Friedman 2007; Rogers 2003). Networks can take different forms ranging from epistemic communities, international organizations, multi-national corporate entities, peer-to-peer networks, but also ad hoc meetings or regular summits and working groups (cf. Lazer 2005). To narrow down the analysis, I focus on the role of two pathways of socialization: international networks and peer influence (cf. Cao 2010).

But how long does it take to develop and internalize common norms? Maybe it takes 10 years of exposure or even longer to develop a common group-adherence? The effects of this adaption process should be observable much earlier. Actors are usually conforming to the expectations within a group, even if they have not internalized a specific norm yet.[44] From this point of view, one has to relax the assumption on the difference between emulation and socialization – instead of thinking about distinct causal mechanisms with emulation being driven by conformity pressures and socialization requiring the adoption not only of practices, but also of interests and identities. Emulation understood as simple response to the environment should rather be treated as a first step in a sequence leading to norm internationalization (cf. Checkel 2005).

Existing tests of socialization and of the interaction hypothesis showed mixed empirical results. Whereas some authors are very skeptical about normative explanations (for example, Weyland 2007) or could only find few effects linked to the interaction in communication networks (for example, Simmons and Elkins 2004), others found evidence pointing to the importance of socialized norms and professional networks when it comes to explain policy diffusion (for example, Lee and Strang 2006; Sugiyama 2008). In a similar vein, Simons et al. show that epistemic communities play a crucial role when cause and effect relations are unclear (2008).

[44] The expression "internalizing a norm" can be misleading. It could simply mean to internalize what the reference norm is, but that does not mean that this pattern is stable or that an actor develops a new identity. Actors could just internalize how to "play the game" as in the case of "role playing" (cf. Checkel 2005).

Usually scholars dealing with policy diffusion associate a strong impact of herding effects, geographically proximate peers and global norms on cross-national policy transfer (cf. Daley and Garand 2005; Lee and Strang 2006; Shipan and Volden 2008). Nevertheless, empirical evidence also points to the limited impact of emulation in terms of the depth of change as policy adoption usually remains at the surface.

For example, Cohen-Vogel and Ingle show that emulating policy adoption usually relates to the agenda setting and policy-formulation process, but dilutes in the domestic decision-making process (2007). In a similar vein, Boehmke and Witmer point show that emulation can cause the adoption of a policy, but not its expansion (2004). In accordance with these findings, some authors refer to emulation as being a more short-lived diffusion process whose impact on the diffusion of policies diminishes with time (cf. Shipan and Volden 2008).

Some authors question the impact of global norms and symbolic and normative imitation at all (cf. Simmons and Elkins 2004; Weyland 2007; Grossback et al. 2003). In addition, scholars highlight cases of symbolic imitation of policies where the actual conclusions are already reached, i.e. the adopters simply try to legitimize their decisions ex post (cf. Bennett and Howlett 1992; Braun and Gilardi 2006). Overall, a final evaluation of emulation mechanisms remains difficult.

2.4.2.1 On Network Socialization

With regards to socialization in international networks (hereafter network socialization), norm entrepreneurs might fall back on different platforms to promote policies. Research often highlights the role of international organization in promoting policies (cf. Finnemore and Sikkink 1998: 900; Kelley 2004). International institutions like the EU or the OECD can exhibit influence on national actors in the policy-making process. Especially processes dominated by expertise and technocratic aspects can eventually lead to norm internalization and community-based behaviour (cf. Radaelli 2000; Martens and Jakobi 2007). An environment characterized by regular and frequent interaction of people having a similar professional background seems to be particularly prone to develop common norms (cf. Finnemore and Sikkink 1998: 900; Mintrom 1997; Teodoro 2009). A prominent example is the development of ideas on the European Monetary Union (cf. Verdun 1999).

Usually, students of socialization expect a stronger impact of norms that are highly institutionalized in the international system, for example, in international law or

international organizations. Especially in cases of frequent interactions involving joint working groups on technical tasks, trust as well as normative and political convergence is gradually generated (cf. also Holzinger and Knill 2005). From this point of view, one can expect that socialization effects between the European Union member states are in general more likely than on other contexts:

> **Diffusion hypothesis B1a** (*EU partners*): The adoption of a higher education policy *i* in an EU member state is influenced by the policy choices in *n* EU countries.

Furthermore, scholars point to intergovernmental or transnational networks serving as a platform for joint decision-making and exchange between politicians, experts, bureaucrats, and private stakeholders (cf. Haas 1992; Simmons and Elkins 2004: 10). Correspondingly, one can not only expect convergence due to (shared) membership in intergovernmental groups and organizations, but also diffusion effects regarding the policy choices of the connected states (cf. Simmons and Elkins 2004: 180; Strang and Meyer 1993). Therefore, I expect the adoption of a specific higher education policy to be influenced by the membership in intergovernmental organizations and the policy choices of its members:

> **Diffusion hypothesis B1b** (*intergovernmental organizations*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* countries associated in the same intergovernmental organization.

Although the EU owns only limited budgetary powers, the EU has become an external actor setting incentives in many policy areas that often engage in domestic empowerment (cf. Börzel 2005; Schimmelfennig 2007; Schimmelfennig and Sedelmeier 2005). For example, the EU is giving economic assistance and supporting investment in research and development (cf. Prange and Kaiser 2005; Trondal 2002). In addition, the EU is conducting capacity building by providing financial and technical assistance to accession countries (cf. Dimitrova 2002). Through these measures – if conditional – the EU is setting incentives for domestic actors to adopt similar policies. But these incentives are not necessarily material. In case of the membership perspective for potential accession candidates, material incentives and social influence can go hand in hand (cf. Kelley 2004). In terms of higher education, the material impact remains rather low, whereas EU-related credentials like the academic mobility programs ERASMUS or the introduction of the

European Credit Point Transfer System (ECTS) created a European dimension in higher education (cf. Martens et al. 2004). From this point of view, I also expect governments with a future EU membership perspective to align with the higher education policies of EU member states:

> **Diffusion hypothesis B2** (*EU candidate*): The adoption of a higher education policy *i* in a EU candidate country is influenced by the policy choices in *n* EU countries.

The prerequisites for successful norm internationalization are seemingly high (cf. Finnemore and Sikkink 1998; Zürn and Checkel 2005). Its preconditions do not only relate to the institutional setting of the interactions, but also to the properties of the recipient. To put it differently, the fit between existing domestic norms and normative claims seems to influence actor's openness to new norms and whether they are susceptible to socialization effects (cf. Börzel and Risse 2003). Here, one can expect socialization processes to be more successful if the interacting actors have rather similar and homogenous cognitive frames, meaning the community is less heterogeneous.

These arguments lead back to the initial argument that norm internalization is much more likely in professional contexts such as epistemic communities (cf. Simmons et al. 2008). For example, the working together in the Delor Committee significantly altered the beliefs of central bankers to conform to the idea of a single currency (cf. Radaelli 2000). Hence, I expect the members of intergovernmental organizations to converge in their policy choices in case they share a similar ideological background and preferences:

> **Conditional hypothesis B1** (*ideological similarity)*: The effect of network socialization is increasing with the ideological similarity between its network members.

2.4.2.2 On Peer Socialization

On an international scale, socialization can also relate to legitimacy pressures stemming from the misfit between broadly acclaimed norms and policies and their domestic counterparts.[45] These may originate from the desire of national policy-

[45] This conceptualization comes close to the meaning of emulation (cf. section 2.2).

makers to keep pace with others and to increase social rewards, but may also result from the need to legitimate one's structures and policies compared to reference norms and practices (cf. Finnemore and Sikkink 1998; Meyer et al. 1997a). Rationales focus on peer pressure and reputation as drivers (hereafter peer socialization) (cf. Meseguer 2005: 78).

In relation to peer influence, authors often distinguish reputational cascades depending on the standing of the sender (cf. Simmons and Elkins 2004; Stone 2004). Broadly speaking, governments tend to emulate peers with which they share the same ideological (cf. Grossback et al. 2003), cultural and historical (cf. Elkins and Simmons 2005) or regional (cf. Grossback et al. 2003) background.[46] From this point of view, I expect governments to imitate the policy choices of different peers

First, most scholars associate a strong impact of geographically proximate peers on policy adoption (cf. Daley and Garand 2005; Lee and Strang 2006; Shipan and Volden 2008). The underlying assumption is that countries in the same region usually have a lot of values and norms in common. This argument is linked to the assumption that socialization effects are more likely if actors already share certain ideas and already consider themselves as part of the community. Hence I expect that regional clusters also influence higher education policies:

> **Diffusion hypothesis B3a** (*regional peers*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* countries belonging to the same region.

Second, I expect partisan networks to be of relevance for peer socialization too. Similar to regional effects, socialization seems much more likely in case of shared beliefs, values and ideological viewpoints between governments:

> **Diffusion hypothesis B3b** (*ideological peers*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* countries sharing ideological preferences.

Third, socialization and peer influences are processes based on communication and mutual surveillance. From this point of view, it seems plausible that successful

[46] Others expect countries to emulate pioneering states (cf. Lee and Strang 2006; Stone 2004), but this argument is hardly testable here. The policies under consideration are mainly new to the European region, but not on a global scale. That means pioneering states would be located outside of the sample.

socialization is more likely between governments that are coming from countries sharing cultural ties. The explanatory power of these factors is mainly based on the assumption that historical and cultural patterns are linked to specific ways of interpreting and perceiving which in turn frame the behaviour and the interactions of actors (cf. Feick and Jann 1988: 210). Following this argumentation I expect governments to follow the choices of countries with a similar cultural heritage:

> **Diffusion hypothesis B3c** (*cultural peers*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* culturally similar countries.

However, the most prominent branch within diffusion research on socialization deals with the role of international norm diffusion (cf. Graham et al. 2012). Socialization processes are not necessarily dependent on the existence of a peer or the influence of an active norm promoter (cf. Checkel 2005). International norms and standards might also serve as templates for policies to be emulated and transferred by national governments.

The clash between international and domestic norms can create additional pressure finally leading to policy changes on the domestic scene. For example, even unconsolidated democratic regimes such as the Ukraine adopted the Non-Proliferation Treaty (NPT) in 1994 to achieve a better international reputation (Cortell and Davis 2000: 82).

The underlying assumption is that international norms prove to be of higher legitimacy than domestic ones and, therefore, change the legitimacy-driven behaviour of national actors in favour of the internationally acclaimed policy (cf. Finnemore and Sikkink 1998; Meyer et al. 1997a). International league tables can result in adaption pressure on domestic arrangements as national governments have to legitimate the status not only in domestic politics, but internationally as well (Kern, Jörgens and Jänicke 2000).

Similarly, countries often rely on the number of followers as an indicator for social acceptance in a given context (cf. Hirshleifer and Teoh 2003; Levi-Faur 2002; Meseguer 2005). Correspondingly, one can expect policy adoption to be triggered by the sheer number of countries adopting a specific policy. The changing number of policy followers serves as an indicator for the legitimacy of a policy in normative terms.

Actors have to link norms and policy choices (cf. Klotz 1995: 27; Checkel 1998: 337). As Levi-Faur points out – even if structural forces of change can be considered as global – domestic actors have to interpret and to project external stimuli (2005b). Thus, in cases where reference norms are fuzzy or even ambiguous and highly contested, a clear-cut interpretation of social rewards turns out to be quite difficult (cf. Finnemore and Sikkink 1998; Wiener 2007). Consequently, students of diffusion assume that socialization effects become more pronounced as soon as a critical mass (Sharman 2008) or threshold (Finnemore and Sikkink 1998: 901; Simmons and Elkins 2004) is reached. Hence, I expect that policy adoption be linked to its pre-existing policy spread within the population. Or to put it differently, the more proliferated and common a policy, the higher the probability for policy transfer:

> **Diffusion hypothesis B4** (*international norms*): The adoption of a higher education policy *i* is influenced by its proliferation in *n* countries.

Copycatting the behaviour of others to increase the legitimacy of policy choices might have comparative advantages against more demanding forms of policy adoption. Especially in cases characterized by a high degree of uncertainty concerning the effects of certain policy measures or high transaction costs relating to information gathering and time pressure (cf. Bennett 1991: 223; Hall 1993). Such situations can relate to critical junctures and shocks, but also to high degrees of problem pressure or political uncertainty (for example, due to upcoming elections) (cf. Nicholson-Crotty 2009; Tsebelis 2002).

Higher education is especially characterized by uncertain conditions. In this context, the transition to the knowledge-based economy, an increasing international networking in Academia, growth in student numbers and diminishing state funding have added up to an unmatched component of uncertainty and rendered the problem-solving capacities of national governments highly problematic (cf. Clark 1998). Consequently, national governments – driven in part by uncertainty over future developments – may imitate the practices, models, and policies of peers perceived to be legitimate and successful. As the main focus is on national government, I expect peer socialization to be contingent on both political uncertainty as well as domestic problem pressure:

> **Conditional hypothesis B2a** (*problem-driven peer socialization)*: The effect of peer socialization increases with the domestic problem pressure.

Conditional hypothesis B2b (*uncertainty-driven peer socialization)*: The effect of peer socialization increases with uncertain political situations.

2.4.3 Externalities

Externalities characterize diffusion mechanisms based on setting positive and/or negative incentives for the adoption of certain policies. From this point of view, externalities refer to the cost and benefits external policies cause for decision-makers (cf. Abbott and Snidal 2001; Braun and Gilardi 2006; Elkins and Simmons 2005; Lazer 2001). Externalities put adaptive pressure on domestic actors by altering the material payoff structure associated with pursuing a specific policy. This will lead to an adjustment of the cost-benefit ratio and the decision calculus of actors that, in turn, will influence their interests and desires as to which policy to adopt.

The two main concepts belonging to this category of diffusion mechanisms are competition and coercion. While the latter concept describes situations where governments are obliged to adopt certain policies (for example, in the case of legal requirements and the compliance with international law), diffusion research mainly focuses on processes of competition and their externalities affecting domestic policy-makers (cf. Boehmke and Witmer 2004; Sharman 2008). [47] In this regard, externalities are supposed to relate to policy areas characterized by institutional and trade-related competition as in the case of economic policy (cf. Scharpf 1997b).

Usually diffusion research finds strong evidence for the impact of externalities (cf. Jensen and Lindstädt 2012; Simmons and Elkins 2004; Boehmke and Witmer 2004; Sharman 2008; Shipan and Volden 2008; Simmons et al. 2008). Though it seems, as if the impact of competition is rather policy-specific with a strong focus on economic- and trade-related policies. For example, some authors do not find evidence in the case of public sector reforms (Lee and Strang 2006) or in the case of environmental policies (cf. Holzinger, Knill and Sommerer 2008).

The overall adoption pattern in case of externalities can be described as “mutual adjustment” (Scharpf 1997a). Though externalities stemming from competition are supposed to lead to the introduction of more efficient and performance-orientated

[47] Some authors also incorporate coercive adaption processes such as legal obligations, economic sanctions, or international political pressure forcing governments to adopt certain policies into the study of diffusion (for example, Dobbin et al. 2007). Following our initial focus on non-coercive diffusion mechanisms, I do not deal with this kind of causal mechanisms.

policies, cooperative interdependence does not necessarily imply the adoption of competitive measures as usually the payoffs associated with the adoption of a common standard drive policy adoption. But studies dealing with diffusion and regulatory competition are unsure about the actual effects and if governments inevitably head to a race-to-the-bottom in regulation (cf. Vogel 1997; Volden 2002).

2.4.3.1 On Competitive and Cooperative Interdependencies

Competition describes pressures stemming from the growing political and economic interdependences between different economies (in terms of the mobility of capital, goods, and services) and their impact on the payoff structures associated with pursuing different policies. Regulatory competition between different constituencies leads to the mutual adjustment of policies counted as competitive. Rather than prescribing any institutional model, countries engage in a constant competition for international investments and therefore need to keep their economies competitive (cf. Drezner 2005). From this point of view, the actions of national governments create competitive pressures on each other to reform national institutions and policies, and to improve and enhance their effectiveness and efficiency. Consequently, one can expect government's decision-making to depend on the policies adopted by competitors. A prominent example refers to the impact of global integration on domestic taxation or social expenditures (cf. Jahn 2006).

Similar arguments can be found in studies dealing with other policies that do not seem to have an economic dimension at first sight like moral policies (cf. Berry and Baybeck 2005) or higher education policy (cf. Heinze and Knill 2008). Theoretically competition deals with the increasing international integration of national economies. But this increased competition in the wake of global economic integration and the need for a highly qualified workforce inevitably leads to a functional need for a competitive and attractive higher education system too. From this point of view, competitive pressures might drive domestic governments to choose the most competitive policies when reforming their higher education systems:

> **Diffusion hypothesis C1** (*competitive policies*): The adoption of a higher education policy *i* is influenced by the competitiveness of policy *i*.

But research on higher education also highlights the economic importance of higher education systems. Despite a strong focus on examining cultural and social functions

of higher education institutions (cf. Teichler 2005), a lot of scholars deal with the causal relationship between the outputs of higher education systems in terms of graduation numbers and skilled workforce and the level of economic growth in a country (for example, Huisman and Kaiser 2003: 139).

Consequently, scholars refer to the increasing importance of having effective higher education systems not only in terms of solving sector-specific problems (for example, high drop out rates, overburdening costs or academic unemployment), but also in general economic terms. For example, higher education systems indirectly influence the overall levels of unemployment and budgetary problems. But they also help to increase the competitiveness and innovativeness of domestic economies in terms of providing ideas and knowledge for entrepreneurial activities.

The importance of education and human capital for economic development is a rather old idea. Moreover, the growing importance of higher education institutions in attracting business and investments seems directly linked to what is called the transformation towards the knowledge-based society (or economy) (cf. Heidenreich 2003; Vught et al. 2002). Its development does not only depend on a technical infrastructure appropriate for high-technology industries, but also requires competitive higher education institutions and a corresponding degree of educational attainment of the working population. More specifically, knowledge-based economies compete for a highly skilled workforce (cf. Peters and Humes 2003). Consequently, one can expect government's decision making to be dependent on the policies adopted by its competitors:

> **Diffusion hypothesis C2** (*policies of competitors*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* competing countries.

Some authors make the argument, that policy makers usually know about both the countries they are competing with as well as the policy choices needed to gain competitive advantages (cf. Dobbin et al. 2007: 458). Policy makers will avoid following the least competitive countries and will concentrate on the most competitive country as a benchmark (cf. Cao 2010; Simón and Allard 2008). From that point of view, competitive pressure increases with the relative performance of other countries. The more successful these countries are, the less attractive the own site. As a consequence, the international competitiveness degrades. For example, in terms of the question if countries are successful in attracting foreign investments and trade (cf. Garrett 1988), economic performances related to labour market developments or

economic growth (cf. Elkins et al. 2006; Simmons and Elkins 2004), but also to the international reputation of the university sector (cf. Marginson 2006). Similar to the learning approach, I expect countries to adapt new higher education policies according to their own competitive advantages compared to countries with performance-orientated higher education policies:

> **Diffusion hypothesis C3** (*competitive countries*): The adoption of a higher education policy *i* is influenced by the relative performance of *n* other countries with policy *i*.

Recently, authors point to externalities stemming from cooperative advantages when having compatible policies and common standards (cf. Abbott and Snidal 2001; Braun and Gilardi 2006; Elkins and Simmons 2005; Lazer 2001). For example, as the US state of California adopted strict emission standards for cars, it became beneficial for other US states (and even European countries) to adopt these standards. The Californian market was important enough to gain cooperative benefits outweighing the costs for adopting to this common technical standard too (cf. Vogel 1997). [48]

In contrast, externalities stemming from competition are supposed to lead to the introduction of more efficient and performance-orientated policies, whereas cooperative interdependence does not necessarily imply the adoption of competitive measures. More important are the benefits associated with the adoption of a common standard. Payoffs might stem directly from having compatible higher education policies. For example, sharing similar higher education credentials can lead to a kind of common higher education area with an increasing exchange of students and staff (cf. Robertson and John 1996).

But externalities might simply originate from costs associated with lacking reforms and retaining the status quo. For example, young people might leave the country to study elsewhere. This risk is often described as “brain drain” (cf. Enders and Weert 2004). High potentials might leave their home countries due to the (low) attractiveness of national higher education systems. From this point of view, it is the policies of countries attracting a lot of a country’s student population that seems to have a significant impact on government’s cost-benefit calculations. Hence, I expect that governments adapt to risks of brain drain. More specifically, governments will

[48] Cooperative advantages (and, in return, competitive pressures) seem to become even more pronounced as soon as a critical mass is reached and the number of countries with a specific policy is very high (cf. Sharman 2008). To put it differently, the size of the target market also matters.

implement performance-oriented higher education policies if countries attracting many domestic students did likewise.[49]

> **Diffusion hypothesis C4** (*brain drain*): The adoption of a higher education policy *i* is influenced by the policy choices in *n* countries attracting domestic students.

2.4.3.2 On Differential Externalities

Usually, empirical evidence for the impact of competitive pressure is strong (cf. Boehmke and Witmer 2004; Sharman 2008; Shipan and Volden 2008; Simmons et al. 2008). Still, this assumption is often controversial and has led to the formulation of a variety of assumptions on what kind of factors condition the domestic impact of competition.

For example, some authors believe that domestic problem pressure conditions the need for mutual adjustments and economic spill-overs (cf. Schmidt 2002: 898). Usually, it can be expected that economically stronger and more competitive states are less susceptible to transfer policies from smaller, economically less threatening states (cf. Shipan and Volden 2008). The economic systems of larger states are more diverse, thus, they can deal with competitive pressure in one policy field more easily. Moreover, the economic possibilities of smaller states to compete with larger states seem to be limited and, therefore, less threatening when it comes to economic competition.

In a similar vein, poor output performances of a higher education system (for example, in terms of academic unemployment or low labour productivity), seems to drive the need to adapt to competitive pressures (cf. Dobbins 2008; Heinze and Knill 2008; Witte 2006: 93f). Therefore, I expect domestic problem pressure to condition the impact of competition on policy adoption:

> **Conditional hypothesis C1** (*problem-driven competition*): The effect of competition is increasing with the domestic problem-pressure.

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[49] Furthermore, assuming that countries compete for shares on the same markets, some expect that countries trading with the same third parties are moving in the same direction. This triadic relationship simply spotlights that political decision-makers anticipate the policies of their competitors in terms of trade. If a developing country is concluding bilateral trade agreements with an industrialized country like the USA, this has implications for other trading partners of the USA in that region as well (cf. Neumayer and Plümper 2010). Though empirical evidence questions whether this kind of mechanism applies to other policies not directly related to trade (cf. Lee and Strang 2006: 900).

Likewise, competitive pressure is supposed to be stronger in states that are economically integrated and more trade-dependent (cf. Holzinger and Knill 2005).[50] The underlying logic is that competition alters the payoff structure, but the costs for keeping existing policies and ignoring competitive pressure will be much higher in times of economic and similar policy-specific vulnerability. The same applies to the benefits and costs of cooperative interdependencies.

Similarly, I expect that more open higher education systems have a greater risk of experiencing problems like brain drain and the loss of qualified workforce to other countries. This risk seems much lower in case of closed systems. To put it differently, I expect it more likely for national governments of countries with more open higher education systems to take the policies of other countries into their decision-making calculus:

> **Conditional hypothesis C2** (*openness of higher education systems*): The effects of externalities are increasing with the international openness of domestic higher education systems.

2.4.4 Common Responses

The diffusion approach is an alternative to explanatory models based on the assumption that governments often have to deal with similar problems and exogenous, but common stimulations and shocks (cf. Bennett 1991; Simmons et al. 2008). But not any clustering of policies or increasing similarity might be caused by interdependent policy-making.

2.4.4.1 On Parallel Problem solving

Most notably, the increasing globalization in terms of political and economic integration creates common policy problems for national governments that might lead to similar responses and problem solving. For example, regarding environmental policy countries face quite similar problems. Environmental problems are often a global problem (for example, climate change) and require international solutions. As

[50] This is not a necessity. For example, despite its open economy, Switzerland was very successful in dealing with global economic pressure due to its corporatist arrangements mediating domestic problem pressure (cf. Katzenstein 1985).

a consequence, national environmental policy is increasingly subject to multilateral agreements and international lobby groups. Furthermore, due to the increasing economic integration, there is always a risk of a "race to the bottom" concerning environmental standards. As environmental protection usually implies costs for domestic business and industries, the increasing capital mobility and the fear to lose jobs might keep governments from adopting stricter environmental regulations (cf. Hoberg 2001).

From this point of view, various domestic factors can be considered driving the common response of national governments to cope with external pressures. Regarding performance-orientated higher education policies several socioeconomic factors are discussed, like the lacking international competitiveness and reputation of most of the European universities (cf. Hackl 2001; Huisman and Wende 2004), the financial situation of universities, brain drain, low graduate rates or academic unemployment (cf. Altbach 1998; Schimank and Stölting 2001; Teichler 1996).

I assume that parallel problem solving is driven by similar domestic problems the countries are confronted with. Contrary to learning from other countries, clustered policy choices seem to depend on a country's own performance and experience. A poor domestic performance will urge governments to carry out higher education reforms and to adopt new policies.

> **Diffusion hypothesis D1a** (*domestic problem solving*): The adoption of a higher education policy *i* is influenced by the problems of the higher education system in country *j*.

For example, governments might follow general problems characterizing specific policy sectors (cf. Schmidt 2002). But domestic policy-makers might also distinguish policy-specific problems when it comes to reforming higher education. This may, for instance, relate to a country's own experiences in terms of dealing with budget cuts or increasing student numbers (cf. Carrier 1990; Eicher 1990; Lange and Schimank 2007).

But governmental preferences on policy adoption also seem to be influenced by the actor's prior beliefs (cf. Meseguer 2005: 75). This argument points to the notion of "increasing return" that alters the cost-benefit ratio of domestic actors (cf. Pierson 2000: 265). Different points of departure can have decisive effects on convergent developments, policies may indeed move in the same direction, though from different points of origin, leading to the persistence of national peculiarities (cf. Bleiklie 2001,

for higher education policy). In other words, domestic problem solving is path dependent.

Correspondingly, I assume that the probability for policy adoption is also determined by policy legacies. Similar to welfare state traditions, European higher education systems are characterized by different historical traditions in higher education that seem to influence the possibilities of governments to pursue policy seeking (cf. Dobbins 2008). For example, performance-orientated policy reforms that largely aim at strengthening the role of market instruments in the public university sector seem to be more likely in case of higher education systems that are rooted in the Market Model rather than the Humboldtian or Napoleonic tradition. Hence, I expect policy adoption to be influenced by its historical legacies:[51]

> **Diffusion hypothesis D2** (*historical legacy)*: The adoption of a higher education policy *i* is influenced by the historical legacy of a country *j*.

But discussions in higher education research also refer to factors like the general economic and fiscal problems as public debts or high unemployment rates (cf. Agasisti 2009). Policy adoption in higher education can also be driven by general problems restricting the state's capacities to solve policy problems. This may, for instance, relate to fiscal and economic restrictions stemming from regulatory competition (cf. Vogel 1995; Scharpf 1997b; Drezner 2001: 57ff), low economic growth or increasing governmental debts. I expect the domestic problem pressure to condition the government's willingness to actually deal with the problems related to higher education. In times of good economic and financial outlooks, the need for reforming higher education seems of secondary interest.

> **Conditional hypothesis D1** (*domestic problem pressure*): The effect of domestic problem solving is increasing with the domestic problem-pressure.

2.4.4.2 On Party Politics

In the context of parallel problem solving, the focus is often on the similarity of the countries under investigation in terms of institutional, cultural and economic factors (cf. Holzinger and Knill 2005; Holzinger and Knill 2007; Lenschow et al. 2005). The

[51] A similar case is made in terms of university cultures and similar historical traditions in subsection 2.4.1.2 on bounded-rational learning.

underlying assumption is that the likelihood that governments facing similar problems choose similar solutions is bolstered the more similar countries in terms of culture, institutions, and socioeconomic contexts are. Such countries will probably deal with a problem in a similar way by adopting the same policy concepts. To put it differently, dissimilar cultural, institutional, and socioeconomic characteristics of countries render a common response of these countries highly unlikely. But this is a rather obvious claim.

As a matter of fact, the mechanisms at work in case of common responses to similar problems remain rather under theorized. Scholars dealing with policy diffusion usually take control variables on domestic politics into account, but they do not take the issue of counterfactuals and alternative explanations more serious. Even though there are approaches that can help to fill these gaps. For example, Braun and Gilardi were trying to link the theoretical discussions on diffusion mechanisms to more general ideas on the policy process (cf. 2006).

Accordingly, policy makers are conceptualized as policy-driven and/or vote seeking when it comes to policy adoption (cf. Budge and Laver 1986; Braun and Gilardi 2006; Strom 1990). Vote seeking behaviour refers to the goal of parties to win the election and to maximize their electoral outcomes. From this point of view, governments follow the preferences of the median voter in their policy choices to secure re-election (cf. Aldrich 1983; Warwick 2011). Policy seeking then refers to the fact that parties are also tools for implementing specific measures and policies (cf. De Swaan 1973: 88).

I expect performance-orientated reforms in higher education policy to follow a similar pattern. Scholars often stress the importance of preferences and beliefs of national governments for explaining policy transfer and adoption (cf. Mastenbroek and Keulen 2006; Treib 2005). Moreover, studies dealing with higher education policy also highlight the importance of national strategies and preferences for policy transfer (for example, Heinze and Knill 2008; Martens and Wolf 2006). Hence I expect the programmes and preferences of national governments to impact on the adoption of specific higher education policies:

> **Diffusion hypothesis D3** (*government preferences*): The adoption of a higher education policy *i* is influenced by the policy preferences of the government in a country *j*.

In case of vote-seeking behaviour, policy adoption is rather about the preferences of the electoral bodies than the government program (cf. Bräuninger 2005; Kayser 2007). Consequently, the preferences of the voters should trigger or delay the adoption of performance-orientated policy reforms in higher education:

> **Diffusion hypothesis D4** (*voter preferences*): The adoption of a higher education policy *i* is influenced by the voter's preferences in a country *j*.

Of course, the relative importance of both logics varies (cf. Strom 1990). In case of approaching elections, vote-seeking behaviour might be more beneficial to governments. Governments at the beginning of legislative cycle usually worry less about negative opinion polls. Another situation where governments tend to be more ideological about policy choices is in cases where the public responsibility for unpopular measures can be avoided. Coalition governments often leave the possibility to blame the coalition partner for governmental policies (cf. Bawn and Rosenbluth 2006; Hellwig 2012). Overall, I expect that the vote seeking behaviour of governments is contingent on the electoral accountability. I expect a stronger impact of voter's preferences in cases where governments risk a higher electoral turn-over (cf. Carmignani 2003):

> **Conditional hypothesis D2a** (*electoral accountability and voter preferences)*: The effect of *voters' preferences* is increasing with the electoral accountability in a country *j*.

Similarly, I do expect that the impact of governmental preferences be less pronounced in cases characterized by electoral uncertainty:

> **Conditional hypothesis D2b** (*electoral accountability and government preferences)*: The effect of *government preferences* is decreasing with the electoral accountability in a country *j*.

2.5 Summary

Several features characterize the study of policy diffusion. First, neither a common terminology nor a theory of policy diffusion exists. Rather existing work usually pinpoints to diffusion patterns being too complex to generate (simple) (dis-)equilibria for identifying the conditions of policy diffusion. And recent attempts to formalize

diffusion processes are highly specific theorizing only singular diffusion mechanisms like learning, emulation or competitive interdependence.

Numerous taxonomies and classifications of diffusion processes and the underlying causal mechanisms can be found in the existing literature. Still theoretical assumptions are often vague and overlapping. But from an analytical point of view, four classes of diffusion mechanisms can be distinguished in the current literature: learning, socialization, emulation and externalities.

Though integrating both external and internal variables for determining policy adoption diffusion research is often lacking the explicit formulation and test of conditional variables, diffusion studies increasingly bring domestic politics back in. This also includes actor-specific explanations and the possibility of alternative explanations. As a matter of fact, comparative analyses of different diffusion processes and mechanisms came up only recently and current diffusion research is still facing a mixed empirical record on the final evaluation of the different causal stories.

Against this backdrop**,** this chapter provides the theoretical framework of the upcoming empirical analysis. The formulated hypotheses disentangle theoretical arguments by approximating clear-cut expectations on when and how actors adopt external policies. Overall four sets of hypotheses have been formulated:

The learning approach predicts that governments are adopting policies that are successful in other countries; and that countries have positive experience with. This also includes hypothesis on the long-term effects of learning. Conditional factors refer to the existence of cognitive shortcuts and the degree of domestic problem pressure.

The socialization approach is based on assumptions referring to two ideal diffusion mechanisms (socialization and emulation), as it does not seem feasible to empirically discriminate between both kinds of diffusion processes in a macro-quantitative design. As a consequence, the approach adopted here is based on the assumption, that governments follow widespread norms and shared rules. Therefore, one can expect reputational cascades and international norms to impact on policy change. Here, I expect political uncertainty and domestic problem pressure to spur processes based on peer socialization. Similarly, membership in international organizations or institutions like the European Union can lead to the development of common norms and policies. In addition, the effect of a EU membership perspective can lead to effects based on social influence. The heterogeneity between the interlinked

governments in terms of ideological preferences can serve as a conditional factor for all kinds of network socialization.

According to the approach based on externalities, policy transfer follows the most competitive policy (or country). Furthermore, governments tend to align their policies with other countries having similar economies and/or attracting most of its own student population as they are competing for the same type of workforce due to the risk of brain drain. Conditions applying to competition are the international openness of the higher education as well as the domestic problem pressure

Last but not least, the common response approach is derived from the assumption that governments are choosing analogous policies independently from each other because they are facing similar problems. The hypotheses are dealing with the policy preferences of governments and voters, historical legacies and problems in domestic higher education sectors. I expect the degree of domestic problem pressure to impact on the effect of domestic problems, whereas the electoral accountability in a country might impact on the question if governments are policy-driven or rather vote-seeking.

3 Performance-orientated Policy Reforms in European Higher Education

The *explanandum* in research on policy diffusion is primarily related to the outputs of the political systems – that means the policies adopted by political actors like (national or sub-national) governments. Although studies often deal with diffusion effects in terms of policy outcomes (cf. Lee and Strang 2006; Heichel et al. 2005), these levels of implementation may be influenced by many intervening variables (cf. Holzinger and Knill 2005: 776). Outcomes refer to the actual behaviour of actors. Do rule addressees really comply and follow the regulations and policies adopted (cf. Börzel and Risse 2001)? That means, outcomes also deal with the enforcement and application of rules (cf. Treib 2006). But policy outputs merely describe content and/or legislative instruments adopted by political actors to implement their policies.

From this point of view, policy outcomes are only indirectly related to the causal mechanisms underlying diffusion processes. Although policy outcomes remain a substantial part of theoretical reasoning (for example, as a source of information about policy effectiveness as in the case of lesson-drawing), diffusion mechanisms only determine the parameters influencing the choices and decision-making of political actors (cf. Collier and Messick 1975; Gray 1973; Most and Starr 1990; Volden et al. 2008; Walker 1969). To put it differently, the focus is on the analysis of policy outputs. That means the actual legislative and administrative measures adapted by governments, rather than their outcomes and impacts (cf. Braun and Gilardi 2006; Braun et al. 2007). Falling back on outcome data does not seem feasible as these implementation levels may be influenced by many other variables only indirectly related to diffusion mechanisms (Holzinger and Knill 2005: 776).

The thesis investigates policy adoption in higher education. Moreover, instead of oversimplifying the issue of policy adoption by merely distinguishing between the (non-)adoption of policies, modifications and extension of policies are also examined. More specifically, the thesis discusses the diffusion of performance-orientated higher education policies as exemplary indicators for diffusion effects. The policy items are part of the same policy development, which is a move towards a more performance-orientated higher education policy. These policy items serve as qualitative markers for activities in the broader policy area. In other words, adopting legislation dealing with one of the policy items points to performance-orientated reforms and a move towards a more performance-orientated higher education policy.

This chapter presents descriptive evidence on the spread of performance-orientated policies. That includes information on the adoption of specific legislation and the timing of policy reforms in the sample countries, but also on how the (baseline) hazard rate varies over time.

The first two section elaborate in more detail on the scope of this study. The first section deals with case selection and the empirical and temporal range of this study. Overall 16 West European countries during the years 1980 to 1998 are considered. The second section deals with the impact of diffusion processes. Students of policy diffusion consider many different policy dimensions and it turns out that scholars of policy diffusion have very different understandings and assumptions on the dependent variable, its direction, but also regarding the actual object to be analysed. There is still a bias in terms of the scope of change analysed, but also in terms of geography and policies under consideration.

The third section deals with the different policy components and the various items in more detail. What are performance-orientated policy reforms? And which aspects are examined in this thesis? The data on policy adoption presented here is based on a selected range of components and items within higher education policy.[52] Overall 14 policy innovations, their adoption and modifications are considered.

The fourth section discusses the issue of measuring the policy outputs of the different countries. It deals with the operationalization of policy outputs. In the countries under consideration different legislative instruments are used to induce policy. In some countries policy adoption is based on parliamentary laws and acts, whereas in other countries change is based on governmental legislation or policy documents and voluntary agreements. The section also elaborates on how to deal with situations where the responsibilities for higher education policy rest on the intermediate or sub-national level like in the federal states of Germany and Belgium, but also in Spain and the United Kingdom (cf. Swenden 2001).

Section five highlights different patterns of policy diffusion. Change usually happens selectively. Policy adoption and modification show several country-, policy- and time-specific differences. Most reforms take place in the late 1980s and during the 1990s. Those patterns are most pronounced regarding legislation on external quality assurance systems, funding discretion, the performance-orientation of public funding,

[52] Detailed information on the national policy outputs can be found in the various country reports (cf. Annex III).

institutional responsibilities for staff management, course planning as well as policy on target agreements). Other issues like the responsibility for setting the student intake of universities or student selection are reformed less often. Taking a look at country groups, one can identify countries characterized by very few or late reforms (for example, Germany, Austria, Greece, Ireland and Iceland). Other countries are relatively often leaders in the various policy areas and/or are characterized by a relatively high legislative output (for example, the United Kingdom, the Netherlands, and Italy). Differences exist between countries and policies in terms of the timing and frequency of policy reforms – though the empirical data shows that the diffusion of performance-orientated policies is characterized by an increasing probability for policy adoption.

3.1 On Selecting Cases

Even in macro-quantitative designs, researchers have to (*or should*) deal with the issue of case selection and delineating the unit of analysis (cf. Ebbinghaus 2005; Seawright and Gerring 2008). The thesis investigates policy adoption in higher education. Moreover, instead of oversimplifying the issue of policy adoption by merely distinguishing between the (non-)adoption of policies, modifications and extension of policies are also examined. National policy adoption is investigated on a yearly base that means the unit of analysis is country-year-policies. [53]

The thesis covers the years from 1980 until 1998. Usually studying diffusion covers the period from the emergence of a new policy. Here this is not possible for two reasons: first, the analytical focus of this project is diffusion in a certain policy area, that means higher education policy, and not a specific policy innovation; and second, comparable panel data for higher education indicators before the 1980s can hardly be found in databases of the EU, EURYDICE, OECD or UNESCO (cf. Windzio, Sackmann and Martens 2006: 5; Jakobi 2007). The period of investigation ends in

[53] Some scholars advocate the use of a dyadic approach for analysing horizontal diffusion processes (cf. Gilardi and Füglister 2008; Holzinger 2006). Analysing country-pairs instead of countries offers the advantage to increase the number of observations available for statistical processing. In addition, it helps to construct relational variables between sender and recipient countries. I refrain from using this approach, as diffusion mechanisms are latent construct that cannot be measured directly. Therefore, the data structure of the dependent variable is not truly dyadic like in the case of wars or bilateral trading treaties (cf. Elkins et al. 2006; Gilardi 2010; Neumayer and Plümper 2010). Furthermore, from a methodological perspective the outcome of the analysis is not independent from the sampling. Also one has to keep in mind that the increase in observations is artificial and can lead to collinearity. The number of subjects remains the same. This could lead to an underestimation of standard errors in quantitative models.

1998. Afterwards the vertical effects of the (pan-) European polity[54] can no longer be distinguished from the horizontal diffusion processes under consideration in this thesis. This is due to the start of the Bologna Process.

The empirical focus is on policy change within West European higher education systems. To ensure data availability and comparability for the period of investigation the sample encompasses the EU-15 states (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom) and two associated members of the EU (Norway and Iceland) are covered.[55]

Higher education systems in the European region are relatively similar, thereby ruling out some system-specific characteristics as explanations.[56] Extending the sample beyond Western Europe does not seem feasible due to the missing comparability of higher education systems. European higher education can essentially be described as public higher education systems. This does not apply to most other countries of the OECD (cf. McDaniel 1996; McDaniel 1997). And a focus on private higher education systems in other cases is not feasible, as governments might simply have not the necessary legal possibilities to regulate higher education. Furthermore, close countries like the Eastern European ones were for the main part of the study period brought into one line with possibilities to neither change nor interlink with Western higher education systems.[57]

3.2 The Policy Dimensions in Diffusion Research

Although a lot of authors follow a process-orientated understanding of policy diffusion, two major difficulties exist concerning the study of diffusion: Firstly, the identification of the object to analyse (Berry and Berry 2007; Blomquist 2007; Howlett and Rayner 2006; Rogers 2003); and secondly, formulating assumptions on the actual effects of diffusion processes and mechanisms. Concerning the latter, the

[54] I use the term “pan-European” as formally the Bologna Process is located outside of the institutional framework of the EU (cf. Racké 2007)

[55] Smaller countries like Liechtenstein and Luxembourg are missing, as they did not have a fully-fledged university system (cf. Kaiser et al. 1992; Wielemans and Vanderhoeven 1993). The situation changed in Luxembourg by the end of the 1990s though. Switzerland is excluded as the responsibilities for higher education rest solely on the sub-national level (except for the two federal universities).

[56] In doing so, this logic is not following a most-similar-system design in a strictly theoretical sense, but refers more to Lijphart’s comparable cases strategy (cf. Przeworski and Teune 1970; Lijphart 1975).

[57] This most-similar-system design also helps to delimit the problem of conditional convergence (cf. Sala-i-Martin 1996).

majority of studies assume that diffusion processes increase the probability for policy adoption and transfer in such a way that in times of globalization and growing interdependence and internationalization more policy change is to be expected (cf. Dobbin et al. 2007).

Still authors emphasize the ambivalence and complexity of diffusion processes and their impacts (for example, Mooney 2001). For example, actors might draw negative lessons from the experience of others. In such a case a diffusion process finally leads to the non-proliferation of an idea or a policy. Others highlight the stickiness of national institutions (cf. Börzel 2005). So from a theoretical perspective growing interdependence and processes of internationalisation might also lead to less policy change and a persistence of national configurations. From this point of view, investigating the outcome of diffusion does not only mean to observe its effects on policy change but also to structure comparisons on the direction and degree of policy change.[58] Then the question remains, what ideas and policies are actually diffusing? Is any policy change in favour of policies and practises found elsewhere policy diffusion?

Usually, determining the policies to be analysed is an empirical rather than a theoretical question. Policies might qualify as new to some countries or policy fields, but not to others. For example, governance modes based on self-regulation are relatively new in policy fields like technology policy (cf. Whitford and Tucker 2009), but they were much more common in other areas like higher education policy (cf. Clark 1983). From this point of view, time is an important aspect that might frame the interest in researchers and policy-makers in a policy. Most ideas are not completely new, and different policies may qualify as new and innovative depending on the space, time and policy context.

Some authors provide conceptual toolkits for defining and narrowing down the empirical focus (cf. Howlett and Cashore 2009; Howlett and Rayner 2008).[59] Focusing on the outputs of the political systems as *explanandum* different dimensions of policy change are identified along which the analysis of policy diffusion can be structured: Whereas policy goals and objectives refer to the overall aim linked

[58] Here considering cross-national policy convergence often serves as a useful tool for the systematic comparisons of all kinds of diffusion effects resulting in convergence and/or divergence (cf. Bennett 1991; Heichel et al. 2005; Holzinger, Knill and Jörgens 2007b; Kerr 1983).

[59] Discussions on identifying the dependent variable also deal with technical aspects, for example, measuring the probability of adaption, respectively the earliness of adoption (cf. Berry 1994; Berry and Berry 2007).

to specific programs and initiatives (for example, quality assurance in higher education institutions), policy instruments describe the applied methods and tools for achieving the policy goals and aims (for example, performance-funding of higher education institutions). Policy settings then refer to the concrete tuning of these instruments (for example, the amount of performance-funding).

Despite these conceptual refinements, diffusion studies are still examining dominant policies instead of systematically mapping all kinds of policy change.[60] By and large diffusion studies investigate the spread of ideas, practises, and objects, that are new to (most of) the countries under investigation (cf. Rogers 2003); and that are most likely cases for diffusion, that means policies adapted by a large scale of countries (cf. Meseguer 2005).

Research on policy diffusion can be distinguished according to the regions and policy fields under consideration (cf. Heichel et al. 2005). Some studies deal with global patterns of diffusion, whereas others only consider regional patterns of diffusion (for example, within OECD countries, the USA, Europe or Latin America). In this regard, a major focus in the literature on policy diffusion is on the exchange of ideas and policies within the United States (cf. Savage 1985; Volden 2006; Walker 1969). For example, Mintrom and Vergara show that the possibilities of policy entrepreneurs to successfully advocate the program of school choice increase with the involvement of these actors in federal policy networks (cf. Mintrom 1997; Mintrom and Vergari 1998). But the concept of policy diffusion has been expanded to inter-regional diffusion too (cf**.** Börzel and Risse 2012). And though most studies focus exclusively on OECD- or European countries one can also find studies dealing with developing countries (cf. Heichel et al. 2005).

Apart from country-specific differences coverage differs also according to policy fields investigated (Ibid.). Empirical analysis is often limited to specific policy fields like economic, social or environmental policy or finance and telecommunication. As policies and regions are characterized by different degrees of interdependence between international and national actors this makes perfect sense at first sight.

But scholars pinpoint to a selection bias problem in diffusion research. The prominent focus on policies that have spread explosively widely ignores the informative value of cases where we do not observe patterns of diffusion (cf. Howlett and Rayner 2008; Marsh and Sharman 2009; Meseguer and Gilardi 2009). Furthermore, it seems that a

[60] For a notable exception see Holzinger et al. (2008)

bias towards analysing the adoption of single policies and unclear dependent variables (cf. Berry and Berry 2007; Howlett and Rayner 2008) seriously hinders robust findings in research on policy diffusion effects.

Some authors also try to track more comprehensive changes like institutional regime types or policy styles to large-scale patterns of diffusion such as capitalism, economic liberalism and democratisation (cf. Simmons et al. 2008). But concepts like democratization and liberalisms are rather complex. Does the diffusion of democracy refer to policies aiming at the reform of Authoritarian regimes, a set of political institutions or an overall idea? Especially regarding the latter, it is often difficult to clearly identify actors' understandings and what kind of policies they associate with these ideas (cf. Sharman 2008; Weyland 2010). The causal chain between the causal effects and an actual behaviour might be even harder to trace compared to examining the diffusion of particular policy components.

As a consequence, some authors have tried to cover policies and their specific components more comprehensively, for example by examining multiple events (cf. Boehmke 2009a; Gilardi and Füglister 2008; Volden 2006). Rather than treating the policy as a whole, multiple components of that policy are identified. For example, the impact of diffusion processes on the strength of state hazardous waste programs in the United States can be measured according to several components ranging from the financial and administrative resources linked to the program to its enforcement (cf. Daley and Garand 2005): Is there an independent enforcement agency? How far-reaching are its competencies? Do regulations allow for liability suits? But what does this tell us about higher education policies?

3.3 A Menu of Performance-orientated Higher Education Policies[61]

Approaching diffusion in higher education policy from rather general concepts like marketization or governance seems not reasonable here. Concepts like these are simply not specific enough. For example, does the diffusion of marketization refer to policies aiming at the reform of governance regimes that are state- and/or academia-centred (cf. Clark 1983)? Or does it refer to a set of political institutions? Or is it an overall idea? Especially regarding the latter, it is often difficult to clearly identify actors' understandings and what kind of policies they associate with these ideas (cf.

[61] For the sake of simplicity I use the general term "Ministry of Education" or "public authorities", rather than national and country-specific termini in the subsequent sections and chapters.

Sharman 2008; Weyland 2010). But even if one would agree on a definition of public policy as a starting point of empirical inquiry – for example "public policy is whatever governments choose to do or not" (Dye 1995: 4) – then one still needs an answer to the question how to map policies and policy change. How can one capture the essential dynamics of the political processes involved?

Research on higher education reforms in general considers quite different aspects of the policy field ranging from institutional and organizational changes, academic- and knowledge-related issues to structural aspects (cf. Altbach 2002; Kogan 1996; Teichler 2004; Teichler 2005; Witte 2006: 77ff). To deal with this problem, identifying patterns of diffusion seems easier regarding the adoption of pre-defined policy models or innovations. Although this does not mean that the explosive spread of a policy always indicates interdependent decision-making (cf. Bennett 1991). But it increases the plausibility of external explanations in cases where one finds common developments.

Potentially higher education policies consist of manifold dimensions and components. And even a focus on performance-based higher education policies requires some containment. Following discussions in higher education research and to narrow down the analysis this thesis is dealing with performance-orientated policy reforms in higher education (cf. Conner and Rabovsky 2012). A whole body of literature emerged since the 1980s dealing with the changing governance philosophy of most governments in OECD-countries[62] and the reforms of public universities in Europa from a cameralistic and heavily regulated higher education system towards a more flexible and market-orientated system where universities are much more autonomous regarding their internal regulations (cf. Jongbloed 2003; Kaiser, Vossensteyn and Koelman 2001; Lange and Schimank 2007, Leszczensky et al. 2004; Lange and Schimank 2007; Salmi and Hauptman 2006). More specifically, the formal adoptions and modification of several (qualitative) policy items is used to trace performance-orientated policy reforms (cf. Table 3-1).

Considering these policies seems especially appropriate for studying diffusion. First, these policies are described to be at the core of national responsibilities and higher education steering (cf. Eurydice 2000; Jongbloed 2003; Leszczensky et al. 2004). Governments have an interest and the possibility (or need) to deal with the policies under consideration.

[62] Note, the thesis is not dealing with preference formation (cf. Hooghe 2005).

Second, performance-orientated policy reforms aim at increasing the efficiency of higher education institutions (cf. Agasisti 2009; Bevc and Ursic 2008; Harvey 2006; Jongbloed 2004; Salmi and Hauptman 2006 Stensaker et al. 2010). This relates to objectives like matching the societal needs in terms of the quantity and quality of tertiary education offered and the courses and skills taught (so-called external efficiency). Other objectives are the containment of costs and public expenses or improving the throughput of the systems (for example in terms of educational attainment) (so-called internal efficiency).[63] For example, allocating public funds according to output-based criteria like the number of graduate students is usually setting incentives for higher education institutions to improve their productivity (in terms of the input/output relationship). Moreover, differential weights for specific subject and disciplines might improve the external efficiency as well. In that case, institutions have a specific incentive to respond to the societal (or governmental) needs and increase the number of graduates in a specific field.

Hence, performance-orientated policy reforms have a broad impact. They are of relevance to both the higher education system, but also to the political system in general. And in principal, the spread of these policy innovations can be subject to any of the diffusion mechanism under consideration in this thesis. Third and in a likewise fashion, the relevance of these policies beyond the education sector makes the assumption that these policies come to the fore of governmental attention much more reasonable and better suited for aggregate data analysis. Sometimes the argument is that policies do not spread, because issues are simply not salient to domestic policy makers (cf. Nicholson-Crotty 2009).[64] Focussing on performance-orientated policies makes it more plausible that governments deal with these issues.

Fourth, identifying patterns of diffusion seems easier regarding the adoption of pre-defined policy models or innovations. This increases the plausibility of external explanations in cases where we find common developments like in higher education policy – especially as research on higher education reforms in general considers quite different aspects.

Fifth, I adopt a broader approach to the goal of making universities more performance-orientated by including several related policy components. Studying the

[63] Note, in empirical analysis internal and external efficiencies are hardly distinguishable. Therefore performance indicators relating to both dimensions are examined (on financial efficiency as well as outputs in terms of graduation ratios).

[64] Likewise, some theories in political science make assumptions about substantial policy change only (for example, Tsebelis 1995).

diffusion of institutional autonomy deals with issues often neglected by higher education researchers when they evaluate the performance-orientation of funding approaches. Though funding arrangement usually have a direct impact on the cost structure and productivity of institutions, it only partly determines the production function of a higher education system. Likewise important seems to assign the capacities to act accordingly. For example, universities might be financed on behalf of input-indicators – for example according to the number of students enrolled. If the state now determines the institutional student intake there is no possibility or incentive for universities to increase its cost efficiency or productivity as the funding structure is largely fixed by the state (cf. Kaiser et al. 2001). Other authors highlight the need to diversify the higher education system as condition for the expansion of higher education (cf. Huisman and Kaiser 2003; Teichler 2008).

Last but not least, the policies spread quite differently. The usual critique of choosing only positive cases for policy adoption is therefore obsolete.

Table 3-1: Performance-orientated higher education policies

No.	*Policy item*	*Description*
A1	External quality assurance system	System-wide quality assurance activities like external evaluations, accreditations or quality audits
A2	External stakeholder participation	Inclusion of representatives from external interest groups like business or industry in institutional governance bodies
B1	Responsibility for student intake	Allowing universities to determine the appropriate institutional capacities themselves
B2	Responsibility for course planning	Responsibility for planning on institutional course portfolios lies at the universities
B3	Responsibility for student selection	Institutional autonomy on student selection
C1	Formula-funding	Allocating current public funds for regular teaching activities on behalf of general, pre-formulated and objective criteria
C2	Target agreements	Regular public funds are based on performance contracts between the responsible public authority and each university defining the financial provisions as well as the institutional objectives and goals
C3	Performance-driven funding	Regular public funding depends on shortly changeable performance indicators like student numbers (input-driven) or graduate numbers (output-driven)
C4	Study vouchers	Student receives a funding voucher that can be redeemed at any university so the government reimburses funding on behalf of the vouchers submitted.
D1	Lump-sum funding	Regular public funds come in terms of block grants so that allowances can be freely distributed within universities
D2	Responsibility for staff	Granting universities autonomy to hire and manage their staff themselves
D3	Responsibility for buildings and equipment	The acquisition or operation of buildings and equipment is up to the universities themselves
E1	Study fees	Charging fees to be paid by students for registering at universities and/or tuition.
E2	Contract-based services	Allow or promote the idea of marketing and selling teaching services to customers
Note: Own listing (cf. Annex I).		

3.3.1 External Quality Assurance

The first policy component indicating performance-related policy reforms deals with two items related to external quality assurance. As one way to increase the academic quality of tertiary education while at the same time guaranteeing institutional accountability, governments can introduce external quality assurance systems (for example, quality audits, accreditation, evaluation) (cf. Woodhouse 1999). Traditionally, ministerial control covers the programs and degrees offered by public universities. The ministry, responsible for higher education, usually has to approve the curricula and degrees offered by universities. External quality assurance systems deal with the move from *exante* to *expost* control of teaching activities at public universities.

External quality assurance systems have usually a two-fold effect. Firstly, they provide additional data and insights on the quality and performance of specific institutions.[65] This information can be used by the public authorities themselves to improve development planning, but they can also serve as additional source of information for students as consumers of tertiary education (cf. Dill and Soo 2004: 70f). Secondly, the academic managements becomes more aware of problems and poor performances within their institutions and can implement measures to strengthen its efficiency (cf. Harvey 2006 Stensaker et al. 2010).

The participation of external stakeholders in university governance is another option to increase the performance-orientation of public universities (cf. Amaral and Magalhães 2002). Integrating insights of representatives of business and trade unions into institutional decision-making strengthens the link between universities and their external environment. Usually external stakeholders follow different logics and interests than Academia that resonate better with the idea of entrepreneurial universities. From this point of view, external stakeholder participation is considered as another option to strengthen the performance-orientation of higher education systems.

3.3.2 Institutional Autonomy on Student Supply

Secondly, institutional autonomy is surveyed across several issues. The capacity of universities to actually adapt to externalities is an aspect of performance-orientated

[65] Of course, the results of quality assurance processes have to be reported to the responsible Ministry of Education and/or to the public.

reforms (also in conjugation with funding) often overlooked in higher education research (cf. Berdahl 1990; Conner and Rabovsky 2012). Two areas of institutional autonomy are considered. The first part deals with the management of institutional resources. This refers to he budgetary discretion of universities. Are public provisions earmarked or are they provided as lump sums where universities decide themselves what the best way of spending the money is. Moreover, possibilities to manage staff and facilities as main institutional resources seem to be essential.

The instrument of lump sum (or block grants) for recurrent public funding for universities refers to awarding budgets rather then earmarked funds characterized by itemised budgets. Instead of specifying in detail on what to spend the funding allowances from the national ministries, the state universities can internally distribute the allocated budget on their own.[66] Institutions become more autonomous in how to spend the public money on different functions (for example, for staff salaries or equipment). The underlying causal assumption is that lump sums provide a high degree of spending autonomy to the universities, finally enhancing academic freedom and efficiency (cf. Melck 1985).

In addition, the ability to act strategically does not only depend on the financial autonomy of an institution. Likewise developing and implementing an own strategy on managing its physical resources like the staff, but also buildings and equipment seems necessary (cf. Jongbloed 2003; Rosa, Amado and Amaral 2009). In case of detailed steering, universities cannot minimize their costs and might indeed not want to (cf. Leszczensky et al. 2004).

3.3.3 Performance-orientated Public Funding

The third component refers to higher education reforms on the regular public funding for tertiary education at universities (cf. Jongbloed and Vossensteyn 2001; Kaiser et al. 1992; Leszczensky et al. 2004). The performance-orientation of different funding approaches can be considered. The first item deals with the allocation method used for distributing funds across the various universities (cf. Darling et al. 1989). Does the level of individual funding follow an ad hoc and/or incremental path? Or do public authorities use a general and objective formula to determine the funds? Possibilities for strategic and goal-orientated behaviour are limited in case of no transparency and

[66] Of course, general rules of public sector finance and accountability prevail (cf. Frølich 2011).

ad hoc resource allocation. But the use of funding formulas usually helps to clearly set incentives and performance criteria for universities.

The second policy item describes the used planning instruments. Traditionally, funds are based on budget proposals (or requests). But the performance-orientation of universities is supposed to be higher in case of target agreements (or performance contracts) as it mounts a direct relationship between funding arrangements and the effectiveness of higher education institutions (cf. Salmi and Hauptman 2006). And similar to the use of funding formulas it aims at increasing the transparency and accountability in the approaches on funding tertiary education.

Third, the performance-orientation of funding arrangements can differ according to the flexibility of funding levels. In case of fixed appropriations, no direct incentive to increase the institutional performance in the subsequent years exists (cf. Leszczensky et al. 2004). Here the use of performance indicators like student numbers or graduate rates promises remedy. Allocating funds on behalf of cost-based indicators like the existing staff numbers or the surface of the previously used buildings does not set incentives to minimize costs. The same applies to an incremental allocation of funds.

Last but not least, the incentives to adapt to external responses for universities could be increased by an introduction of study vouchers to finance universities on behalf of student flows (cf. Greenaway and Haynes 2003; Jongbloed 2004; Salmi and Hauptman 2006). If funds are directly linked to student choice, universities have a clear financial incentive to adapt to student needs or to reduce internal cost growth.

3.3.4 Institutional Autonomy on Resource Management

Fourthly, the institutional possibilities to determine the supply of students and graduates are another area of university governance that is of interest, when dealing with the external responsiveness of public universities (cf. Jongbloed 2003). This section also deals with academic autonomy on self-determining the actual student intake, the course planning (for example in terms of curricula and courses offered) as well as student selection (cf. Berdahl 1990). Academic freedom seems to be a prerequisite for increasing both the internal as well as the external efficiency of universities. In case universities close down programs that are inefficient or respond to student demand and offer new courses, possibilities for strategic behaviour are also restricted.

3.3.5 Cost-sharing Policies

Last but not least, promoting cost-sharing policies can result in an increasing performance-orientation of students and universities (cf. Bevc and Ursic 2008; Jongbloed 2003; 2006; Jongbloed and Vossensteyn 2001). Two essential policies are considered. Next to the introduction and promotion of registration and tuition fees, the possibilities to acquire additional private income by marketing (teaching) services are studied. Similar to demand-side vouchers, study fees are a market element that has re-distributional consequences as it sets a prize for studying. As such it gives incentives to both the students as consumers as well as universities as providers of tertiary education to maximize the payoffs of their choice and to minimize their costs. In other words, incentives are set for performance-orientated behaviour. Granting additional funding opportunities to universities also helps to set incentives for efficiency gains. For example, as external actors can buy university services another market element is integrated into higher education systems rewarding efficient behaviour.

3.4 Comparing Legislative Instruments

Following the previous elaborations, the empirical scope of this study is restricted to the adoption, modification and promotion of one of the fourteen (qualitative) policy items.[67] Overall, policy outputs based on different legal instruments are considered (cf. Kaeding 2007; Trantas 1995).[68] Next to outputs like acts, (framework) laws, decree laws, ordinances, parliamentary guidelines and/or decisions that required the consent of the national parliament for passing the legislation, reforms based on government decrees, ministerial orders or circulars are considered.[69] Sometimes university laws did not change fundamentally, but mostly by means of budget laws regulating budgets, accounts and staff (cf. Wielemans and Vanderhoeven 1993: 153).

[67] The readers have to keep in mind that the actual meaning of public higher education institutions depends on the national context and the corresponding national law (cf. Teichler 1990: 23).

[68] A list of legal instruments can be found in Annex II.

[69] In some cases, policy adoption was not based on legislation, but on policy documents. For the operationalization of policy outputs see also section 3.3 or Annex I and II.

More specifically, the focus is on regulating the public university system and their activities in tertiary education. The regulation of private universities, non-university higher education institutions like polytechnics or research-related activities is excluded to narrow down the analysis and to further increase the comparability between higher education regulations.

Data on policy-outputs are based on qualitative evidence from existing higher education research. More specifically, the data collection is drawn from international databases like the information network on Education in Europe (EURYDICE), the CHEPS Higher Education Monitor and - in cases where data was fuzzy or simply missing – additional inquiries based on existing country reports and higher education literature have been conducted (cf. Annex III).

Provisions are only considered if they require the system-wide application of the policy based on actual and binding legislation. The underlying assumption is that states must adopt binding legislative and regulatory measures regarding the public university system and tertiary education in their territories to ensure the actual implementation of policies. That does not imply that measures adopted cannot provide facultative provisions like it is often the case with framework laws. Such provisions can still be considered as policy change as long as they are binding and apply to the system level (for example, in terms of framework regulations). The same applies to pilot projects applying to the whole system. Broadly speaking policy instruments reported involve setting standards (obligatory or facultative) or pilot projects.

Financial action programs (for example, in terms of project funding) or policy documents indicating governmental discussions or recommendations (for example, White Papers, Green Papers, Government Reports) are not considered. This does not apply to other official documents leading to an actual change of national higher education policies. Sometimes changes in higher education did not require legislative change as in the case of Denmark (cf. Bache 1998: 284f). Some of the higher education reforms in Denmark were induced through a Multi-Annual agreement between (almost all) parliamentary parties in 1992. With this agreement the student intake as well as the budget for the higher education sector for the next couple of years was set and it functioned as a base for the gradual deregulation of student intake and the allocation of block grants according to the taximeter principle.

In addition, policies implemented by regulatory agencies as in the case of higher education funding in Ireland and the United Kingdom (cf. Kerr 2006; Williams 1998).

These agencies are still under the authority of the Ministerial units, therefore one can assume that the decisions are coordinated and backed up by Minister as their principle.

As responsibilities for higher education policy in de-centralized systems often rest on the intermediate or sub-national level the unit of analysis is case-specific. This applies to the federal states Germany and Belgium, but also to Spain and the United Kingdom (cf. Swenden 2001).

In the case of Belgium, developments at the sub-national level are considered from 1989 onwards. Higher education policy in Belgium was originally the domain of federal policy. But this responsibility for higher education was transferred from the federal level to the three language communities in 1989 by a special law on the funding of the Regions and Communities. With this legislative act, every linguistic Community acquired the right to organize, fund and control its higher education institutions independently from federal regulations. It became possible for every Community-Government to implement its own higher education policy according to its own objectives, goals and priorities. From that point on, the federal government was merely providing the overall budgets, but the Communities were free in determining the rules on how to assign public funds and resources.[70] Overall, the transformation towards the sub-national level did not result in a complete re-design of systemic characteristics. Rather the Communities reformed the existing arrangements while maintaining the basic principles. This path dependency seems especially pronounced in funding allocation. But despite a still prevailing similarity between the Communities, two different kinds of higher education systems with different regulations and authorities exist in Belgium.[71] Whereas the German-speaking community did not have a fully developed higher education system (cf. Wielemans and Vanderhoeven 1993),[72] the higher education system of the Dutch-speaking region of Flanders as well as the French-speaking region Wallonia have to be distinguished.

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[70] Federal initiatives in higher education policy usually aim at promoting research. For example, the Federal Council for Science Policy (FCSP) or the “Interuniversity Attraction Poles” (IAP) Programme are supporting research initiatives (cf. EC 2004).

[71] Note that there exists another federal element in the Kingdom of Belgium. Next to the already mentioned language communities, three regions exist within Belgium. Although partly overlapping, regional and linguistic entities are not congruent –neither spatially nor institutionally. Whereas the communities have the responsibility for areas like education, culture, and social policy, the regions deal with policy issues related to economy, infrastructure, and environment (cf. Woyke 2003).

[72] As a matter of fact, there was no fully-fledged university in the German-speaking part before 2005 (cf. Eurydice 2005).

The situation in Germany and Spain is more complicated. The *Länder* and *Regiones autónomas* are able to introduce their own approach. Moreover, intermediary bodies consisting of representatives from both constituencies (partly) regulate these higher education systems.[73] But federal influence is guaranteed during the study period by so-called framework laws. States or regions are able to introduce their own approach within the limits set by the federal government. To uphold both the comparability with the rest of the sample as well as data availability, for both countries the focus is only on policy adoption involving the central government. [74]

In a similar vein, both the higher education system of Scotland and the English system[75] operate under different regulations. Therefore, I restrict the analysis to England as example for the higher education system of the United Kingdom. Whereas responsibilities for the Scottish system are located at the regional level, the English system is under the jurisdiction of the central government.

3.5 European Higher Education Systems as Policy Laboratories

Advocates of policy diffusion usually deal with the growing interdependencies between national and international actors. In doing so, the literature on policy diffusion often focuses on multi-level systems such as federal states. Serving as functional equivalent of policy laboratories, scholars describe those systems as most-likely cases for policy diffusion and as valuable cases for gaining additional theoretical and empirical insights on diffusion processes. Examples are the exchange of ideas and policies between the states in the United States (for example, Savage 1985; Volden 2006; Walker 1969) or between the European Union (EU) and its member states (for example, Börzel and Risse 2003; Bulmer and Padgett 2004; Levi-Faur 2004; Radaelli 2008; Schmidt 2008a). In a similar vein, the multi-level structure of European higher education policy might serve as a functional equivalent of policy laboratories for the horizontal exchange of ideas and policies on performance-orientated higher education.

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[73] The *Consejo General de Universidades* in Spain consists of representatives from public universities as well as from national and regional governments and legislatives, whereas the German *Kultusministerkonferenz* only includes the responsible Ministers from the *Länder*. but joint commissions between *Bund* and *Länder* guarantee common standards. See Annex II.

[74] I included a dummy variable into the analysis controlling this shared responsibility on the several policy items (cf. section 4.2).

[75] Institutions in Wales and North Ireland belong to the English higher education system, but for the sake of simplicity I only use the term English.

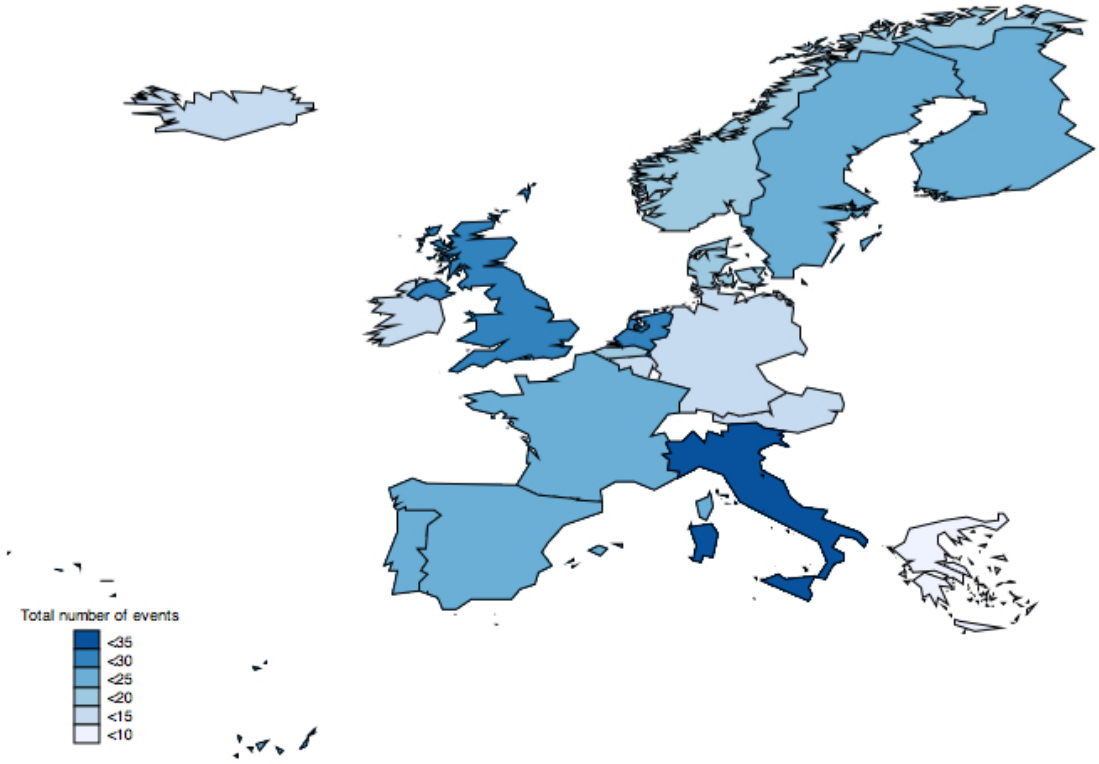
In accordance with this point of view, all countries under consideration adopted legislation on performance-orientated policy items between the years 1980 and 1998. Though country-specific differences prevailed in terms of the number of policies adopted until the end of the observation period in 1998 a clear pattern is hard to identify (cf. Figure 3-1).[76] Here, Greece can be considered an outlier with less than 10 events, but other countries at the "periphery" of our sample are characterized by relatively few reforms as well. This applies to Germany, Austria, Ireland and Iceland, but also the French-speaking Community of Belgium. Countries like Portugal, Spain, France, Sweden and Finland were adopting performance-orientated legislation more often. This applies to a lesser degree to Denmark, the Flemish Community of Belgium and Norway too.

Among the countries that have adopted performance-orientated legislation most frequently were the United Kingdom, the Netherlands and Italy with over 25 events counted. Certainly, this does not imply that these countries were very innovative in terms of the scope of performance-orientation. Nor does this tell us anything about the success of their reforms. For example, Italy was always very active in adopting legislation. Nevertheless, the scope of reforms was usually limited (cf. Annex III). From a substantial point of view, other countries with fewer reforms like Denmark can be considered leaders in adopting performance-orientated policies.[77]

[76] That does not necessarily mean that these patterns are causally linked to spatial interdependence (cf. Franzese and Hays 2008). Spatial patterns can relate to many international, country- and policy-specific factors (cf. Beck, Gleditsch and Beardsley 2006). The next chapter deals with the explanatory factors for policy adoption.

[77] Though this logic drives the identification of the potential senders of a policy (cf. Annex IV.A).

Figure 3-1: The number of performance-orientated legislation adopted in each country



Note: The country map shows the absolute number of legislation across all policy items a country was formally adopting between 1980 and 1998. Source: Own illustration based on country reports (cf. Annex III).

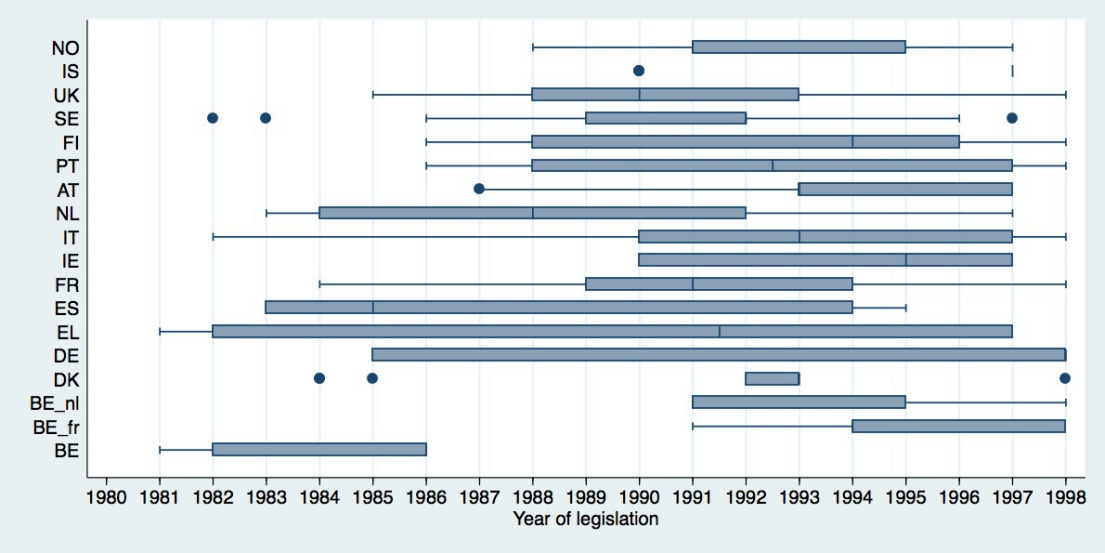
But the main interest of this study is not on country-specific patterns in terms of the event count (cf. Boehmke and Witmer 2004; King 1989). The main interest is on the timing of performance-orientated higher education reforms. Countries differed according to their absolute legislative output. But how did policy change and adopting new legislation evolve over time? Is it a rather incremental process, characterised by on-going and constant efforts to reform the system across time or are reforms carried out in a rather singular and disconnected fashion?

3.5.1 On the Timing of Policy Adoption

Turning to the actual reform processes in the individual countries and the timing of higher education reforms (cf. Figure 3-2). The boxplot shows the distribution of legislation across time in all of the sixteen countries. Reform activities usually took place in the second half of the 1980s and the 1990s. The majority of legislation was adopted in the 1990s. Some countries like Ireland and Iceland did not even become active in the 1980s. This finding mirrors the previously formulated findings on the

lower legislative outputs in these countries. But the box plot also offers new insights on the different reform processes in the various countries. Reform processes in the majority of countries are focussing on the late 1980s and 1990s. Only in a few countries like Germany, Spain, Italy and Greece events cut across the whole time period.[78] Unlike in the Italian case, in Germany and Greece legislation was adopted only rarely in the first half of the 1980s and in the second half of 1990s. From this point of view, the box plot indicates a backlog rather than a constant reform process. Legislative action in Denmark and Iceland also took place in specific years, but the events where more concentrated. Iceland adopted legislation in 1990 and 1997 only. Denmark carried out reforms in the mid-1980s and than again in the 1990s (1992 and 1994 and 1998).

Figure 3-2: The timing of higher education legislation (across all policy-items)



Note: The horizontal box plot shows the timing of legislation on deregulating aspects of managing institutional supply adopted by each country between 1980 and 1998. Countries with no legislation adopted are not listed. The right (or upper) whisker indicates the year the latest legislation was adopted within the study period, whereas the left (or lower) whisker refers to the year of earliest legislation. The box covers the time span in which the middle 50% of events have been taking place. The right end (or top) of the box shows the years when the latest 25% of legislation were introduced, and the left end (or bottom) indicates when the earliest 25% of the total number of legislation was adopted in each country. The band within the box displays the year representing the median count of adopted legislation and splits the observation into half. Spots identify outliers (that means, legislation adopted more/less than 1.5 times of the interquartile range (IQR) (cf. Tukey 1977). Source: Own illustration and data (cf. Annex VIII).

[78] Note, the box plot does not indicate any information on the frequency and number of legislation. The box plot merely shows the distribution of the (ranked) events across times.

A look at the distribution of legislation across policies and time shows that the events are not evenly distributed (cf. Figure 3-3). The observed legislative cascades differed in terms of the policies under consideration. The first reforms had been initiated in the early 1980s, but the majority of legislation concentrated in the 1990s. In some case like institutional student selection and service contracts, legislation had even almost exclusively been adopted in the 1990s. As a consequence, the median adoption took usually place much later in the first half of the 1990s.

Most countries reformed their higher education systems with regards to external quality assurance and external stakeholder participation in the second half of the 1980s and the first half of the 1990s (for example, Portugal, Spain, Sweden, Austria and the United Kingdom). In some cases, the reform processes concentrate in the 1990s like in the cases of Denmark, Norway, Finland and Italy. In France, activities focused on the 1980s. Legislation on external stakeholder participation was adopted earlier than policies on external quality assurance systems. Policies were already implemented prior to the 1980s in a number of countries and continued throughout the 1980s and 1990s. Governments introduced external quality assurance system from the second half of the 1980s onwards. Among the first countries adopting legislation on external quality assurance systems were the Netherlands and the United Kingdom. Other countries dealing with external quality assurance procedures were Spain, France and Austria. In the first half of the 1990s most of the Scandinavian countries followed a similar track. Only Iceland did not adopt similar legislation before 1997. Further countries with late (or few) reforms in both areas were Germany, Greece and Ireland.

The majority of countries became only active in the area of institutional management on student supply in the 1990s. Aspects of higher education policy like deregulating the governance of student intake, course planning and student selection were reformed in the 1980s by only a minority of the countries (for example Spain and Portugal, but also in the United Kingdom). Moreover, almost all of these reforms dealt with course planning and student intake. Only Spain adopted legislation on all of the three areas in the 1980 - perhaps due to the regime change in Spain and the need for putting the higher education system on a new regulatory framework? But the pace of reforms increased across all policy items at the beginning of the 1990s. Among the countries that were adopting legislation only in a single or a few years are Iceland, Belgium (both Communities), France and Ireland. Most countries engaged in a constant process of reforming their higher education systems in this policy area.

Overall, regulating the resource management at universities was an issue in all countries throughout the period 1980 to 1998. All countries –except for Greece[79] and Austria– adopted new legislation on public funding arrangements. Some other countries only carried out selective reforms. For example, Ireland did not carry out any reforms regarding the use of budget proposal (as opposed to target agreements). The same applied to Belgium (and its Communities). Countries with a relative high frequency of adoptions and modifications seem to be the Netherlands, Italy, Norway, Finland, Portugal and France. Countries like Germany and Spain adopted corresponding legislation on a few occasions only.

Considering the progress of countries towards a performance-orientated funding approach, some countries seem to have been struggling more with their funding arrangements than others. For example, Mediterranean countries like Italy, Spain, Portugal and France often adopted legislation without any substantial progress. The Netherlands and the United Kingdom were also relatively active, but they were usually at the forefront of performance-orientated reforms.

Taking a closer look at time, it seems as if most countries adopted legislation in the 1990s. Though the legislative output already increased during the second half of the 1980s. As a matter of fact, the reform processes in most countries covered a wider time span starting in the second half of the 1980s or the first half of the 1990s. Only in a few countries like Norway, Sweden, Germany and the Flemish Community of Belgium a concentration of legislative measures in a very few years can be observed.

Most countries dealt with all three autonomy-related funding issues at stake – the question of responsibility for the internal allocation and use of financial resources as well as staff and facility management. Only a few examples exist, where legislation did not deal with all the three policy items. In Iceland, increasing the institutional autonomy on facility management did not seem to be an issue. The same was the case in Austria, Germany, Greece and the Flemish Community in Belgium. The case of Greece also stands out, as its reform activity was very limited compared to the other countries. A minor step towards more institutional autonomy was also taken in 1983, when the regulations on institutional management were reformed. But at which point in time were countries usually adopting reforms? If one considers the distribution of legislation across time, then it seems as if most countries were carrying out most reforms in the 1990s. Though some countries dealt with these issues

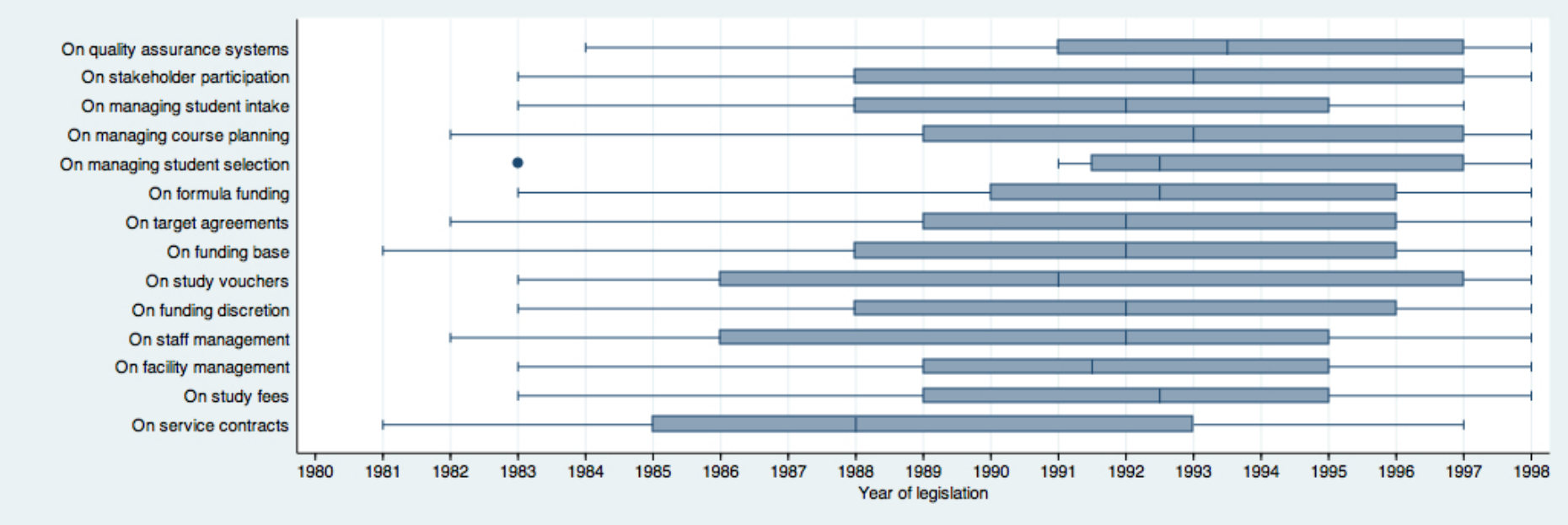
[79] Despite the claims of survey-based reports describing performance-orientated policies in Greece (cf. Felt 2003).

already in the 1980s, the majority of countries initiated reforms at the beginning of the 1990s.

At which point in time were countries usually adopting reforms aimed at cost sharing? Some countries dealt with these issues already in the second half of the 1980s (for example, the Netherlands or Spain). But if one considers the distribution of legislation across time, then it seems as though the legislative processes on cost-sharing policies spread relatively evenly across time. Though it seems as if policies on contract teaching concentrated in the 1980s – the median legislation on contract teaching was already reached in 1988 – whereas reforms on fee policies were more common in the 1990s.

A lot of countries followed a no-fees policy. From this point of view, it is not surprising that the potential number of countries adopting legislation remained low. On the contrary, all countries except Finland, Ireland and the Walloon Community of Belgium adopted legislation on contract teaching. Sometimes countries adopted only a few reforms on cost-sharing policies like in the case of Norway, Iceland, Ireland, Germany, Denmark and the Walloon Community of Belgium. But it seems as though most countries had been engaged in a constant way of reforming their higher education system in this policy area.

Figure 3-3: The timing of higher education legislation (across all countries)



Note: The horizontal box plot shows the timing of legislation on deregulating aspects of managing institutional supply adopted by each country between 1980 and 1998. Countries with no legislation adopted are not listed. The right (or upper) whisker indicates the year the latest legislation was adopted within the study period, whereas the left (or lower) whisker refers to the year of earliest legislation. The box covers the time span in which the middle 50% of events have been taking place. The right end (or top) of the box shows the years when the latest 25% of legislation were introduced, and the left end (or bottom) indicates when the earliest 25% of the total number of legislation was adopted in each country. The band within the box displays the year representing the median count of adopted legislation and splits the observation into half. Spots identify outliers (that means, legislation adopted more/less than 1.5 times of the interquartile range (IQR) (cf. Tukey 1977). Source: Own illustration and data (cf. Annex VIII).

Table 3-2: The adoption of performance-orientated legislation by policy item and year (across all countries)

Year / Policy item		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total
A1) Quality assurance system		0	0	0	0	1	1	0	1	1	2	0	2	6	1	2	4	0	6	3	30
A2) External stakeholder participation		0	0	0	1	1	0	0	1	2	1	0	1	1	2	1	1	0	6	1	19
B) Autonomy	B1) Intake	0	0	0	1	0	0	1	0	1	1	0	0	3	0	0	1	0	2	0	10
	B2) Courses	0	0	1	1	1	1	0	1	1	1	1	1	3	3	1	1	1	5	2	25
	B3) Selection	0	0	0	1	0	0	0	0	0	0	0	2	3	1	0	1	0	3	1	12
C1) Funding formula		0	0	0	1	0	1	3	0	1	0	4	2	2	5	1	0	3	2	3	28
C2) Target agreements		0	0	1	0	1	1	1	1	1	3	3	0	2	2	1	0	3	2	3	25
C3) Performance-based funding		0	1	1	1	0	0	4	0	1	0	4	2	2	5	1	0	3	2	4	31
C4) Study vouchers		0	0	0	1	1	0	2	0	1	1	0	2	1	0	2	1	0	1	2	15
D) Autonomy	D1) Funding	0	0	0	2	1	0	1	1	3	2	2	2	2	5	0	0	2	4	3	30
	D2) Staff	0	0	2	1	2	1	1	1	2	2	0	1	1	3	3	1	0	4	2	27
	D3) Facilities	0	0	0	1	0	0	0	0	3	2	0	3	1	2	1	2	0	2	1	18
E1) Study fees		0	0	0	1	1	0	1	1	0	1	0	2	2	2	2	2	0	2	1	18
E2) Contract services		0	1	0	2	1	3	1	1	4	1	0	1	0	2	1	1	1	2	0	22
Total		0	2	5	14	10	8	15	8	21	17	14	21	29	33	16	15	13	43	26	310

Note: The figure shows the absolute number of legislation across all policy items each country was formally adopting between 1980 and 1998. Source: Own illustration based on country reports (cf. Annex III).

Taking a look at the actual numbers of adopted legislation confirms the overall picture drawn from the previous box plots (cf. Table 3-2). Most of the legislation was passed in the 1990s. The number of adoptions was never falling below fourteen. The years with the highest legislative turnout was 1997 (43). But local peaks also took place in 1992 (29), 1993 (33) and 1998 (26). Relatively few events took place in the first half of the 1980s with only two events in 1981 and a maximum of fourteen events in 1983. The rate of adoption was much higher in the second half of the 1980s. Except for 1987 (8) all values were higher than in the first half of the 1980s. Most policy reforms in the 1980s took place in 1988 (21) and 1989 (17).

But the number of events did not only differ across time. The frequency of legislation was also policy-specific. The various policies were reformed at different times and frequencies. The policy issues that were most often reformed were external quality assurance systems (30), funding discretion (28), the performance-orientation of public funding (31), institutional responsibilities for staff management (27), course planning (25) as well as the used planning instrument (budget proposal versus target agreement) (25). Other issues like the responsibility for setting the student intake (10) of universities or student selection (12) were reformed less often. But what does this tell us about the probability for policy adoption over time?

3.5.2 On the Probability of Policy Adoption[80]

The dependent variable is the probability for adopting performance-orientated legislation on higher education. Technically, the dependent variable is measured by the so-called hazard rate (cf. Cleves, Gould and Gutierrez 2010). The hazard rate (or hazard function if considered over time) at a given point in time measures the probability of event occurrence in that time interval if the subject has survived until that time interval (that means the probability is conditional on its prior survival through all former time periods). The hazard ratio then is indicating the impact of the different covariates (or independent variables) on the chance for policy adoption in the current interval. [81]

[80] Note, I opt for dropping Belgium from the risk set both systems from the risk set after 1988 as the Belgian federal government conferred all responsibilities for higher education to the sub-national level in 1989 and as the data for constructing most of the independent variables for the sub-national is simply not available. That means the actual number of countries at risk dropped from 16 to 15 during the study period. Of course, the Flemish and the French Community of Belgium remained in the dataset as potential senders (cf. chapter three).

[81] Additional information on the technical aspects can be found in section 4.3.

Applied to the empirical case at hand the hazard rate indicates the chance for a country adopting legislation on higher education policies at a certain point in time as analysis time (that means the time at risk) is years, whereas the hazard ratio tells us how this risk varies with the different independent variables. Rather than predicting the outcome itself, the relative risk of an event to take place in case a subject has survived up to that point of time and how this risk for event occurrence varies with different covariates is examined. But before elaborating on the estimated hazard ratios and how the hazard rate varies with the different covariates in the following chapter, one has to consider how the so-called baseline hazard rate varies over time.

One of the advantages of EHM is the explicit modeling of duration dependency in data sets. And whereas parametric event history models make explicit assumptions about the underlying baseline hazard, the Cox model fits the baseline function according to the data. Still, one can consider the hazard function *expost*. This is necessary, as hazard ratios do not tell us about the form of the underlying baseline hazard, that means the risk of experiencing the event under consideration as a function of time (and not the covariates). So although the hazard ratios are interpretable by themselves, the overall process cannot be understood without knowing the underlying form of the estimated model's hazard function. Figure 3-4 presents the estimated baseline functions for each policy item.[82] These graphs illustrate the time dependency inherent in the data set (cf. Allison 2010a; Box-Steffensmeier and Sokhey 2010: 614).[83] Remember, the hazard function tells us how the hazard rate varies over time. That means, the function indicates how the risk of experiencing the event under consideration changes according to time (and not the covariates).

The different frequencies of adopting legislation on external quality assurance and stakeholder participation are also reflected in the estimated baseline hazard function. The probability for policy adoption regarding external quality assurance does not change over the first five years of analysis. As most reforms started in the second half of the 1980s, this finding is not really surprising. But afterwards, policy adoption becomes increasingly more likely. The risk for adopting legislation on external quality assurance systems is particularly growing and reaches its climax after fourteen years in the second half of the 1990s. The same patterns can be observed regarding

[82] I discuss the item-specific baseline hazards instead of the aggregated one due to the use of strata (cf. section 4.3).

[83] The estimated baseline survivor functions for each policy item can be found in Annex VI.E.1. The survivor and hazard function aggregated across all policy items are presented in Annex VI.E.4.

external stakeholder participation.[84] But the risk increased less dramatically with a first (local) peak after the first ten years. Considering the left truncation of our data with regard to external stakeholder participation the lower risk for policy adoption seems plausible too.

The probability for policy adoption on the deregulation of institutional autonomy in terms of student supply was steadily increasing since the mid-1980s. But after 1990 the risk for adopting legislation was rising even more and mounted in the mid-1990s. Interestingly, the processes on course planning and student selection developed proportionally. Despite these similarities, the probability for adapting reforms on course planning remained higher during the observance. Nevertheless, it seems plausible to assume that policy makers consider both issues as interrelated. The usual expectation would be that changing the conditions for student intake seems to have an impact on steering student selection procedures and vice-versa. But both processes developed differently. At the beginning of both adoption processes, deregulating the issue of student intake was more likely than providing more autonomy on student selection. But this relation reversed in the 1990s.

The item-specific baseline hazard function shows that the risk processes on formula funding, performance indicators and target agreement followed very similar patterns. This supports the argument that the policies are interrelated and that most governments prefer to adopt comprehensive reforms referring to all three aspects of public funding. Contrary, the risk for adopting legislation on study vouchers follows its own track. Similar to external quality assurance, the probability for policy adoption on these policy items does not change over the first five years of analysis. A plausible finding as most reforms started in the second half of the 1980s. In the following five to seven years, the probability for policy adoption steadily increases with a peak after thirteen years in the middle of the 1990s. The pattern is a little bit less pronounced for adopting legislation on target agreements. The baseline risk for policy adoption slightly decreases in the last few years of analysis. In the case of study vouchers, the relative risk for policy adoption was much lower than for the other policies and it remained fairly stable.

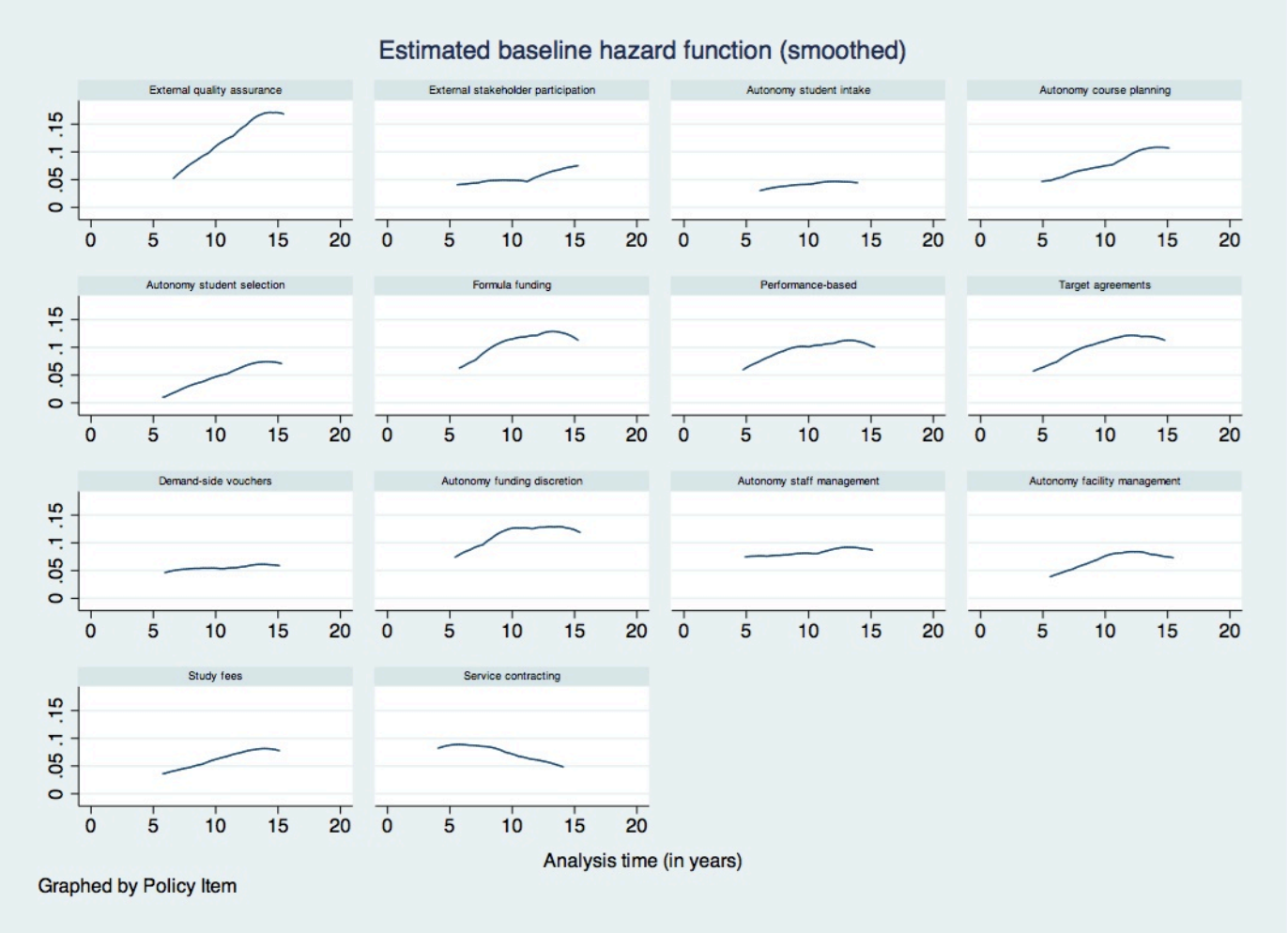
The probability for policy adoption on the steering of institutional resource management was steadily increasing since the mid-1980s, but with the 1990 years

[84] Note, this finding does not contradict the assumption that the overall risk for adoption increases steadily over time. The cumulative hazard function measures the total probability for policy adoption accumulated up to a specific point in time and it is increasing constantly (cf. Annex VI.E.2). Similarly, the baseline survivor (or survival) function is steadily decreasing (cf. Annex VI.E.1).

the risk for adopting was mounting. The baseline risk remained on a peak level until the mid-1990s. The processes on deregulating funding discretion and facility management followed a relatively similar pattern. Though pushing legislation on funding discretion was usually more successful than deregulating facility management. The probability for policy adoption was on a higher level throughout the study period. The probability for adopting legislation on staff management was also more likely than adopting legislation on the management of buildings and equipment. Compared to the other two policy items, the development of the reform processes concerning facility management remained rather constant over time with a relatively flat and stable baseline hazard throughout the 1980s.

The underlying baseline hazard for both cost-sharing policies developed quite differently. The probability for a country reforming its policy on study fees increased steeply over time with a peak in the mid-1990s. On the contrary, the probability for increasing the possibilities of a university to engage in contract teaching is very high at the beginning of the time period, but continuously sinks until the processes on study fees reaches their highest values. A plausible explanation might be that the public authorities increasingly discover study fees as an alternative and more effective instrument to reduce public expenditure on higher education. Alternatively, the decreasing popularity for adopting legislation on teaching contracts might relate to its facultative nature. The policy is about granting the (legal) possibilities for universities to become active as a service provider. In the case of study fees the public authorities are able to directly impose a policy on the universities.

Figure 3-4: Baseline hazard function for each policy item (fitted without covariates)



Note: Cox proportional hazard regression estimates (fitted without covariates). Source: Own illustration and data (cf. Annex VIII).

Overall, the European higher education policy between the years 1980 and 1998 was characterized by several developments that make it a valuable laboratory for studying policy diffusion. First, cascading effects and herding towards performance-orientated higher education policies can be observed along all policy items. As diffusion research established the examination of phenomena of policy clustering as standard approach it is a useful empirical source for testing this framework. The diffusion approach seems especially suitable here as effects based on interdependency seems most likely in case of policy spread rather than stagnation.

Second, that does not mean that common policies could not develop independently from each other. This problematic is already reflected in the theoretical framework formulated in the previous chapter. But it is rather an argument in support of the case under consideration as most-likely cases are normally examined for disconfirming theories (cf. Eckstein 1975). If the domestic explanations function better compared to the explanatory models based on cross-national interdependencies, then it sheds serious doubt on the usefulness of the diffusion approach for studying higher education policy.

Third, the observed spread of policies was not a universal effect. Several temporal, substantial and spatial differences existed. The question remains, what explains this variance across time, countries and policies? From this point of view, the complex empirical patterns observed render an explanatory framework necessary that combines assumptions on both country-specific as well as policy-specific factors. More specifically, the impact of cross-national interdependencies and its conditions as well as domestic factors seem highly plausible. This makes the consideration of European higher education such a promising case for testing the theoretical framework formulated in the previous chapter.

3.6 Summary

This chapter provides an overview on higher education legislation and the performance-orientated reforms in European higher education. The overall patterns described are based on performance-orientated legislation in 16 European countries between 1980 and 1998 along 5 policy components and 14 items. The empirical data shows that the European higher education systems under consideration are characterized by an increasing probability for policy adoption.

Policy adoption and modification disclosed several country-, policy- and time-specific characteristics. Most reforms took place in the late 1980s and during the 1990s. These patterns are most pronounced regarding legislation on external quality assurance systems, funding discretion, the performance-orientation of public funding, institutional responsibilities for staff management, course planning and target agreements. Other issues like the responsibility for setting the student intake of universities or student selection were reformed less often. Taking a look at country groups, one could identify countries characterized by very few or late reforms (for example, Germany, Austria, Greece, Ireland, and Iceland). Other countries are characterized by a relatively high legislative output (for example, the United Kingdom, the Netherlands, and Italy).

From this point of view, the complex empirical patterns observed require an explanatory framework combining assumptions on both country-specific as well as policy-specific factors. For example, like the theoretical framework framed in the previous chapter that combines assumptions on the impact of cross-national interdependencies, its conditions as well as domestic factors on national policy adoption. The question remains, how to explain this variance of legislative outputs across time, countries and policies. Chapter four deals with the explanatory tales underlying the (non-)adoption of policies.

4 Explaining Policy Diffusion in European Higher Education

As demonstrated in the previous chapter, the spread and adoption of performance-orientated policies is characterized by various spatial, temporal and issue-related patterns. Now this chapter deals with the empirical test of the theoretical framework provided in chapter three. It provides answers to the following empirical questions: First, what international factors cause and stimulate the adoption and modification of public policies in higher education? What explanatory factors determine the probability for national governments adopting and transferring a certain policy? Second, what international, national and policy-specific factors explain these differences? And third, how meaningful are the four (sets of) explanatory models developed in chapter two?

The first section deals with the operationalization of the explanatory factors. Each of the explanatory models shares some elements in how to measure the independent and conditional variables. A specific discussion of operational definitions and alternative measures is included in the individual sections on learning, socialization, externalities, and common response.[85] The second section elaborates on some alternative explanations for policy diffusion that are controlled for in the various explanatory models. The third section provides (additional) information on the methodological approach utilized for testing the hypothesis formulated in chapter two. This includes material on some specific aspects of cox regressions like time-varying covariates, but also information on the differences between testing interaction effects and simple additive regressions. Section four is about some methodological issues cutting across diffusion research. Diffusion research is still dominated by quantitative approaches, but several strategies have evolved to deal with the limitations of macro-quantitative approaches in terms of the missing micro-foundation.

The sections five to eight provide the individual cox regressions. The tests are structured according to coherent theoretical arguments. Each section consists of various statistical models testing the support for the individual hypothesis in a step-wise fashion. Based on these results, extensive explanatory models on learning, socialization, externalities, and common response are provided. The selection of individual explanatory factors is guided by the robustness of each factor in terms of statistical significance, the match between expected and observed relationships and

[85] Summary statistics and operational descriptions of the variables can be found in Annex IV.

the sensitivity to model changes. All models show mixed results regarding the individual covariates. The final section nine provides a comparative assessment of the various approaches. The section elaborates on of the synthesized models on learning, socialization, externalities, and common response. Overall, the common response model provides the most meaningful and robust results – both as specific explanatory framework, but also in the integrated test model comparing all the various diffusion mechanisms.

4.1 On the Operationalization of Explanatory Factors[86]

Some issues cut across all the four theoretical approaches tested. That refers to aspects like controlling for alternative explanations and the methodological approach, but also touches on measurement issues related to the construction of all explanatory factors. Firstly, students of policy diffusion are often experimenting with different time frames when constructing the independent variables to strengthen the causal arguments in terms of temporal order. Using time lags for constructing independent variables is also recommended in case of time-varying covariates to avoid simultaneity effects (cf. Box-Steffensmeier and Jones 2004). To strengthen the causal argument, the dependent variables are lagged by three years. That means the coding of the explanatory variables refers to the previous three years.

Some scholars lag independent variables by the pervious year (Elkins et al. 2006; Gilardi and Füglister 2008) or two years (Shipan and Volden 2008). Others construct moving averages (cf. Gilardi 2010; Lee and Strang 2006). I decided to use 3-year moving averages lagged by one year as this seems to reflect a realistic time horizon of policy makers and suits better in terms of causality (cf. Lee and Strang 2006).[87]

Secondly, to operationalize most independent variables of the diffusion approaches, one needs to know about the policies previously adopted by the other countries. To model independent variables, policies of countries are identified in their current state rather than the adoption of specific legislation (or their frequency). Countries often modify or update policies without substantially changing the scope of the policy. To better deal with the qualitative difference in the reform processes, senders are grouped according to the scope of performance-orientated policies. The underlying

[86] See Annex IV for operational definitions.

[87] I also experimented with 1-year and 5-year lags, but this did not substantially change the results in terms of the direction, strength and significance of the estimated effects.

assumption is that governments are influenced by the content of the policies adopted by other countries rather than the number of their legislative outputs.

Countries are grouped as adopters of a policy (or sender) if they formally adopted the policies (in case of learning its practical implementation is counted).[88] Furthermore, policies had to be obligatory (except of contract services which are by definition facultative) and required system-wide application. Pilots and facultative regulations are not counted. The underlying assumption is that the successful implementation of a policy requires the obligatory adoption to ensure the actual implementation of policies. In case the policies under consideration are implemented on a very limited scale, countries are not counted as potential senders (for example, budgetary discretion applied to minor parts of the budget like the overhead costs). This rather qualitative logic is used to account for the differences in scope of performance-orientated reforms in the various countries.[89]

Since 1989 Belgium is split into two units – the Flemish and the French Community of Belgium. Though Belgium is excluded from the risk sample in 1989, it is still included as a potential sender country. For analysing the impact of Belgian policies, Belgium is split into two cases then in 1989. I used the data for Belgium as a proxy for the Flemish and French Community of Belgium if the data for the sub-national level was not available. In case of student and graduate numbers as well as student flows, I weighted the proxies by 0.6 for Flanders and 0.4 for Wallonia to reflect the different ratios in terms of student and graduate numbers in 1996/97 (cf. EC 2000).[90]

Thirdly, in the case of Spain and Germany I only counted legislation involving the federal government for the operationalization of the dependent variable. In Spain, the central government was also involved in the coordinating University Council (*Consejo General de Universidades*). To determine the status of formal adoption of Germany I also counted the resolutions of the *Kultusministerkonferenz* as the body coordinating

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[88] The diffusion variables usually apply to formal policy adoption of sender countries, but learning is based on the question if other countries implemented the policy under consideration. Remember, the idea of learning is about the experience of others with specific policies. But gaining insights on the functioning of policies usually requires not only the formal adoption of a policy, but also the practical implementation of this policy.

[89] See also policy descriptions in Annex I and the country reports in Annex II.

[90] Earlier sub-national data on student and graduate numbers was not available. But the different ratios in terms of student and graduate numbers in 1996/97 is similar to the differences between these two communities regarding their economic power and their population. Both the ratios of the gross domestic product as well as the population between the Flemish and the French Community of Belgium remained relatively stable around 1.5 throughout the study period. As both macroeconomic variables seem to have an impact on the absolute numbers of students (and hence the graduate numbers) (cf. Huisman and Kaiser 2003), they might also serve an indicator for the stability of the sub-national distribution of student and graduate numbers.

sub-national higher education policies in Germany. But I only counted it as practical implementation if the majority of *Länder* implemented that resolution. The latter applied to Spain too.

Fourthly, the independent variables for the diffusion models are country-specific. That means the data on potential recipient is not used for constructing the variables on the diffusion variables. For example, for the construction of policy experience variable for Germany only the rest of the sample is included; in case of Austria all countries except for Austria were included and so on. This approach makes sense from a theoretical point of view. Policy-makers will separately include their own market position when making decisions on policies. Furthermore, although the repeated events approach can also deal with the modification of existing policies, it seems more plausible to exempt this information. First, including the country at risk too would implicitly carry the endogeneity problem. Second, diffusion focuses on external influences and not on international factors. Third, in case the covariates are not varying across countries anymore, EHM will run into difficulties due to collinearity.[91]

Fifthly, conditional variables can generally be operationalized as spatially lagged versions of the independent variables, or by including an interaction term into the regression equation. In cases where one can identify a lot of conditional variables as in the learning approach, the first option is preferred. Especially since modelling interaction terms always involves the question of how the variables interact. Therefore, modelling such effects complicates statistical analysis and often hinders a straightforward interpretation of the coefficients (cf. Kam and Franzese 2007). Furthermore, concerns about multicollinearity shed doubt on an excessive use of interaction terms (cf. Shipan and Volden 2006). The inclusion of interaction terms is therefore conducted with care and on behalf of theoretical reasoning rather than ad hoc and experimental choices. The intention is not to explore all kinds of possible relationships, but to test hypothesis according to theoretical claims (cf. Ibid.).

Last but not least, all independent (and conditional) variables are operationalized and constructed using indicators provided in existing data sets from international organizations and research groups. I am coming back to the discussion of the actual operational definitions in the following event history analyses.

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[91] For example, constructing regression coefficients as independent variable for policy experience (cf. subsection 4.5.1.2) on the information for the complete sample (that means country at risk-specific) would lead to the same regression coefficient for all countries. This approach would –first– blur the distinction between the experience of "others" and learning from its own past. Second, it produces no results as the operationalization creates missing standard errors when stratified by policy items. This is due to the circumstance that the covariates do not vary within event risk set (cf. Cleves 1999b).

4.2 Controlling for Alternative Explanations

The number of control variables is rather limited as the theoretical frameworks tested already cover a broad range of international, national and policy-specific factors. Similar to the independent variables, conditional variables are operationalized and constructed using indicators provided in existing data sets from international organizations and research groups. The control variables are referring to characteristics of the countries at risk. Also controls for diffusion effects are included in the case of the common response models.

Several controls are included in the analyses that deal with domestic politics. A veto player index (cf. Jahn et al. 2012) is included to account for the different reform capacities of the countries at risk. The index by Jahn *et al.* is chosen, because it is probably the most comprehensive attempt to measure a country's veto player potential (cf. Fuchs 2000a; Ganghof 2003; Jahn 2010; Tsebelis 2000). The index also covers changes in actors' preferences and institutional veto points. Similar data sets do not include all of the countries considered here (cf. Ha 2008). From this point of view, the index is very suitable for controlling the general probability for substantial policy change across countries. The usual expectation is that the probability for policy adoption decreases with a higher veto player potential (cf. Tsebelis 2000). In a similar vein, a binary variable is included in the analysis indicating shared responsibilities between the national and sub-national decision-making level in the country at risk (cf. Swenden 2001). I expect a lag effect through this variable as well due to the (often) lower problem-solving capacities of multi-level systems (cf. Scharpf 1997b).

Other measures dealing with other organizational levels of the political system are not considered due to data availability or missing country-variation. For example, indices measuring the efficiency of the national bureaucracy (cf. Auer, Demmke and Polet 1996; CIESIN 2003 ; Mbaye 2001; Schnapp 2004) are usually cross-sectional and cover only a few of the European countries. Some scholars point to the circumstance that the logarithm of GDP per capita is highly correlated with other measures of administrative capacity (cf. Hendrix 2010). Despite the fact that this indicator is available for all countries and times, it does not make sense to use it from a substantial point of view, as it is unclear what causal mechanisms underlie the impact of the logarithm of the GDP per capita.

Other controls are dealing with the domestic higher education systems. Including variables on the gross enrolment ratio of students as well as the share of the GDP spent on tertiary education spent by public authorities accounts for differences in the (previous) development of national higher education (cf. Huisman and Kaiser 2003). In case of high enrolment ratios, less policy adoption might be expected as the country at risk might already have reached the necessary level of educational participation at tertiary level. In case of higher investments into tertiary education by the public authorities, the adoption of performance-orientated policies should become more likely. Although another interpretation seems also plausible; in case of higher levels of public expenditure, pressure for policy reforms is lower and as a consequence, necessary policy reforms are delayed.

I also included a dummy variable indicating the legal recognition of private universities in a country at risk (cf. Lutran 2007) as some scholar are arguing that developments in the private higher education sector are often driving innovations and reform processes. The underlying assumption is that a parallel private sector also puts pressure on the public universities to adapt to this new competitor. Usually in terms of an increasing market-orientation to be able to compete with the allegedly more competitive sector (cf. Romero and Rey 2004). In other words, performance-orientated reforms in the public sector become more likely.

Furthermore, the implementation of (sub-)national pilot projects must be taken care of. It certainly influences subsequent legislation if a country conducted own experiments beforehand. Governments usually plan some sort of follow-up action (cf. Jónasson 2004). Therefore a dummy variable indicating the use of pilot projects is included as well. A positive effect on policy adoption seems likely.

Moreover, an event count variable indicates the ordering of events for which a country is at risk on adapting a specific policy. This tally accounts for the possibilities that the event number has an impact on policy adoption (cf. Boehmke 2009a: 244). Usually students of policy diffusion expect the probability for events to diminish over risk sequences.

In addition, two variables are supposed to control for diffusion effects in the common response model. One measure indicates that a critical mass of over 30% of the total sample has already adopted a specific policy (cf. Finnemore and Sikkink 1998; Püttcher 2008). Diffusion effects seem to become even more pronounced as soon as a critical mass is reached and the number of countries with a specific policy is higher

(cf. Sharman 2008; Simmons and Elkins 2004). As a consequence, a higher probability for policy adoption can be observed.

Another index serves as a proxy for the international interlinkages of a country at risk by counting the memberships of a country in international governmental organizations (IGOs) in a given year (cf. Pevehouse, Nordstrom and Warnke 2004). Countries are expected to be more susceptible to international affairs in case of a higher degree of international networking (Meyer et al. 1997b: 159). I expect the probability for policy adoption to correlate with a country's IGO memberships.

4.3 The Methodological Approach

Event history models are conducted (cf. Box-Steffensmeier and Jones 2004; Berry and Berry 2007; Mooney 2001; Gilardi and Füglister 2008).[92] This is due to the non-metrical structure of the dependent variable with the probability for policy adoption in a given year as explanans. In addition, there is an explicit interest in time-dependency. EHM as the standard approach in diffusion research seems most appropriate for estimating effects in terms of the timing and the probability for policy transfer between countries. Hence, EHM also fits a process-orientated approach like the one described in chapter two (cf. Box-Steffensmeier and Jones 2004, Plümper and Schneider 2009).

More specifically a Cox proportional hazard model is used for estimating the probability for policy adoption (cf. Box-Steffensmeier and Jones 2004; Cleves, Gould and Gutierrez 2002; Elkins et al. 2006; Gilardi and Füglister 2008).[93] I opt for the conditional on gap time- version of the Cox model as I examine not only the (first) adoption of policies, but also their reform and promotion (cf. Cleves 1999a; Box-Steffensmeier et al. 2007; Box-Steffensmeier and Zorn 2002). In other words, the repeated events approach allows studying both policy adoption as well as its modification at the same time.[94]

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[92] All the statistical analysis is carried out with Stata 12.

[93] Though several other ways of estimating EHMs exist, the Cox model is by far the most popular as it offers several advantages compared to parametric approaches (cf. Allison 2010a, Allison 2010b; Golub 2008). Other approaches like multilevel logistic regression (Gilardi 2010), the conditional shared frailty model (Box-Steffensmeier, De Boef and Joyce 2007) and SUR-models (Blake, Box-Steffensmeier and Woo 2010) or spatial regression (Franzese and Hays 2007; Neumayer and Plümper 2012) are not implemented in statistical standard software like Stata and other attempts often seem to lack reliability and/or efficiency.

[94] Another advantage of this approach is that countries can remain in the dataset during the whole study period as they do not have to be dropped from the analysis as they might not be at risk to adopt (or

In doing so, the Cox model seems to be the appropriate choice as there are actually no strong assumptions about the shape of the underlying hazard function in relation to time. Rather the baseline hazard is fitted to the existing data set (cf. Box-Steffensmeier and Jones 2004). Moreover, it is also able to handle tied data[95] and time-varying covariates (cf. Box-Steffensmeier and Jones 2004: 53; Allison 2010b).

The Efron method for tied events and robust standard errors are used for testing the different hypothesis. Robust standard errors on country-policy are supposed to avoid the negative impact of heteroskedasticity (cf. Volden 2006). Other statistical problems like multicollinearity seem to be a minor problem.[96]

Furthermore, each of the examined items serves as an indicator for activities in the broader policy area. That means adopting legislation dealing with one of the policy items serves as marker for performance-orientated policy reforms. Strata are used for the policy items to control for interdependencies between the multiple policy components/items (cf. Boehmke 2009a). That means the baseline hazard can vary across policy items, but the coefficients (and hazard ratios) remain the same.[97] This approach allows studying various components and policy-specific processes at the same time.[98]

As the main interest is on the hazard rate and how it varies over time and with covariates, the estimated hazard ratios (and their significance levels) are reported rather than the coefficients.[99] Remember, the hazard rate can be defined as the probability per time unit that a subject not having adopted the policy under consideration yet will adopt that policy during that time interval (that means the case will fail) (cf. Cleves et al. 2002). The reported hazard ratios then indicate how much the hazard rate varies with the different covariates.

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modify) the policies under consideration (cf. Boehmke 2009b). For example, I assume governments are always at risk of adopting legislation on external quality assurance. Even in case they already have implemented an external quality assurance system. To control for the possibility that the number of previous adoptions might influence subsequent legislation, a tally for the number of previous events is included in the analysis (cf. section 4.2).

[95] Tied data refers to the question how to deal with events that occur at the same time and the problem how to determine the order of events (cf. Box-Steffensmeier and Jones 2004).

[96] See Annex VI for diagnostics.

[97] Using fixed effects as another way of dealing with cross-sectional heterogeneity is not an option here as event occurrence is relatively rare and due to the binary structure of the dependent variable (cf. Gilardi 2010: 655).

[98] One problem in normal regression when dealing with several policy dimensions might stem from a lack in the normal distribution of items across the dependent variable. Using strata diminishes this problem as it allows for different baseline hazards.

[99] The hazard ratios can be obtained by the exponentiated individual coefficients (cf. Cleves et al. 2010: 131). See Annex V.

A hazard ratio above one implies a higher probability for policy adoption to take place – for example, a hazard ratio of 1.2 means that the probability for adoption increases by 20% if the dependent variable increases by one unit. This information also captures that one can expect – all other covariates being equal – shorter survival times (that means times where the policy under consideration will not be adopted). A value below one implies a lower chance (for example, a hazard ratio of 0.8 means that the risk for adoption at a certain point in time decreases by 20% if the covariate increases by one unit and the case has not yet experienced the event). In return, this implies – again all other things being equal – longer survival times.

A value of 2.00 for the hazard ratio does not imply that the probability of policy adoption is 200%. It rather signals that the underlying hazard rate is increasing by 100% in case the explanatory variable is increasing by one unit. In other words, we can expect a probability twice as high per one-unit change of the independent variable. If the explanatory variable would be the yearly unemployment rate in a country at risk, then a hazard ratio of 2.00 tells us that an increase in the unemployment rate by one percentage point increases the probability for policy adoption by 100%. If the baseline hazard would be 20%, then one could expect a twice as high probability for policy adoption that means 40%.[100]

When interpreting the Cox results, the unit of the covariate under consideration does not make any substantial difference when estimating the coefficients rather than the hazard ratios (cf. Allison 2010a; Cleves et al. 2002). Still, for interpreting the reported hazard ratios one has to consider the effects in terms of the different units measuring the covariates. For example, whereas the effect on the hazards of covariates measured in discrete units like dummy variables refers to a change from “0” to “1” (for example, in case of indicating a critical mass of policy adopters). Covariates measured on a metrical scale have to be interpreted differently. Regarding the effect of public expenditure, the hazard ratio refers to an increase by one percentage point (measured in % of GDP).

To strengthen the causal argument, the dependent variables are usually lagged by three years. That means the coding of the explanatory variables refers to the previous three years.[101] The possibilities of non-proportional effects of covariates are also examined (cf. Box-Steffensmeier and Zorn 2001, 2003). The Cox proportional

[100] Therefore, it is important to take a look at the baseline hazard too (cf. chapter three). But this is not necessary to compare the effects of the covariates.

[101] See Annex IV for operational definitions.

hazard model is based on the assumption that the effects of the explanatory variables are proportional across time. That means no significant interaction effect between a covariate and time exists. In case of a violation of this assumption, an interaction term between the problematic covariate and analysis time is included in order to account for non-proportionality. The test is based on Therneau and Grambsch (2000) for individual covariates.[102] In case these effects turn out to be significant a corresponding interaction term between the variable concerned and time (TVC) has been included in the regression models presented in this chapter (cf. Allison 2010b).[103]

Standard criteria for measuring the goodness-of-fit in event history modelling are usually not very informative (cf. Müller 2004). Especially in case of semi-parametric models like Cox regressions a direct computation of a goodness-of-fit measure like R^2 is usually not possible due to the censoring of observations. As a consequence the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are reported to compare and rank the overall fit of the various explanatory models (cf. Allison 2010b; Box-Steffensmeier and Jones 2004).[104] Both indicators compare the relative fit of different statistical models. AIC and BIC account for the number of covariates used thereby allowing the evaluation of models with different numbers of covariates included in the analysis. Models with lower values of AIC or BIC are usually preferred. Calculating *p*-values to evaluate the statistical significance of these differences is not possible (cf. Allison 2010a: 422). So how to determine when values indicate a significant statistical difference?

Based on simulation studies some authors' recommend specific thresholds to determine the statistical significance of the difference between two values, For example, a difference between two models regarding their AIC between 0 and 2.5 describes no significant difference between AIC levels, but a value higher than 2.5 speaks in favour of the model with the lower AIC value (cf. Hilbe 2011: 70).

Some of the conditional hypotheses formulated in section three are tested with interaction terms. But modelling such effects complicates statistical analysis and the

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[102] There is an on-going debate if one should focus on the global test or on the individual covariates (cf. Box-Steffensmeier and Jones 2004; Box-Steffensmeier et al. 2003: 36). I stick to evaluating individual covariates as evaluating the proportional hazard (PH) assumption again after correcting individual covariates (by adding time-varying covariates TVC) is not possible. Also note that the main effect for time cannot be included in a cox regression as it would be a perfect estimator (cf. Box-Steffensmeier et al. 2003).

[103] See Annex VI for the results of the PH-tests.

[104] Another option for examining the overall model fit is using Cox-Snell residuals, but this instrument is not very suitable for partial likelihood models like Cox regressions (cf. Allison 1995).

coefficients are not always easy to interpret (cf. Kam and Franzese 2007). Especially since modelling interaction terms always involves the question of how the variables interact. The integration of interaction terms can have different implications other than the coefficients from a strictly additive regression. Actually a lot of scholars ignore the fact that the main effects reported in interaction models only indicate the effect of the covariate in case the interacting covariate is zero (cf. Brambor, Clark and Golder 2005; Braumoeller 2004).

From this point of view, the estimates of a lower-order term (that means the hazard ratio of the covariates also included in the interaction term) should not be interpreted as very meaningful. Especially if the interacting variables actually never have the value of zero, these main effects have to be considered with caution.[105]

As the purpose of this section is to test the conditional hypothesis rather than the main effect, the analysis of the interaction models is mainly focussing on the performance of the interaction terms and the question if there is support for the conditional hypothesis at hand. The evaluation of the so-called lower-order effects is carried out separately as part of the unconditional explanatory models.

4.4 Tracking Policy Diffusion and its Effects[106]

Studying causal mechanisms is characterized by theoretical and methodological difficulties when it comes to trace the underlying processes; due to the latent characteristic of causal mechanisms one usually has to operate with proxies as independent variables (cf. Simmons and Elkins 2004; Gleditsch and Ward 2006). Though the majority of diffusion studies are following a quantitative approach (cf. Gilardi 2012; Meseguer and Gilardi 2005), this problematic applies to both quantitative and qualitative methods – even qualitative techniques like interviews do not allow us to observe and measure causal mechanisms directly (cf. Checkel 2006; Klotz and Lynch 2006: 361). This does not mean that econometrical designs often are falling shorter in this respect.

[105] Estimating marginal effects can help to examine the effects of covariates on the dependent variable across different values of the conditional variable. But this diagnostic is not used here to narrow down the analysis. Also the purpose of the interaction terms is to test the conditional hypothesis, rather than the main effect.

[106] This section is not about the technical aspects of tracing policy diffusion (cf. Franzese and Hays 2007), but mainly about conceptual issues.

Instead of testing the underlying causal chains and corresponding intervening variables (King et al. 1994), quantitative studies usually try to find (single) indicators for the actual functioning of diffusion mechanisms.[107] As a matter of fact, despite the claim to test causal mechanisms most diffusion studies are only modelling the influence of diffusion mechanisms in terms of estimating the impact of diffusion (or explanatory) variables on policy adoption. Rather than observing the effects of specific diffusion processes directly (cf. Gilardi and Füglister 2008: 418). For example, the experience of countries with a specific policy is used to estimate the probability for adopting that policy in another country.

Yet, recent attempts of other scholars have already demonstrated the usefulness of mechanism-based and comparative frameworks in statistical analysis (cf. Boehmke and Witmer 2004; Daley and Garand 2005; Dobbin et al. 2007; Schmitt 2011; Shipan and Volden 2008; Simmons and Elkins 2004).

Mechanism-based approaches are forcing scholars to explicitly deal with theory as it is based on spelling out the underlying causal chain rather than merely formulating assumptions on covariates (cf. Graham et al. 2012: 28; Demetriou 2009; Bunge 2004; Checkel 2006; Gerring 2010; Tilly 2001; Gerring 2007; Gerring 2010). More specifically, such an explanatory strategy gives different research designs and approaches a common theoretical ground. Furthermore, causal mechanisms do not only tell us about the intervening steps between a cause and effects. They are also based on a micro-foundation of causal relationships (cf. Coleman 1990). To put it differently, although the stimulus triggering an event to occur is often located on the macro-level of collective action,[108] theoretical assumptions also specify how these mechanisms operate through the individual level.

From this point of view, research designs based on mechanisms leave the possibility to focus on different analytical levels (for example, the micro- or macro-level) (cf. Kittel 2006) or different steps in a causal chain (cf. King et al. 1994; van Evera 1997).[109] Even if the original focus of a macro-quantitative study is based on correlational analysis, it helps future research to narrow down the universe of possible explanations (cf Ebbinghaus 2005). Essential for this cumulative research

[107] For concept formation in political science and the need to find observable and (preferably) distinct indicators see Gerring (1999) or Adcock and Collier (2001).

[108] Or meso-level in case of a multi-level perspective.

[109] That does not imply that a micro-foundation is a necessary condition for formulating a causal theory. For a more critical view on mechanism-based thinking see Reiss (2007) or Gerring (2010).

agenda though is a clear-cut formulation of theoretical expectations and its operationalizations (cf. Meseguer and Gilardi 2005).

In this regard, it seems essential to also test scope conditions and conditional variables (cf. Falleti and Lynch 2009). Otherwise disconfirming results could relate to omitted variables. Moreover, studies dealing with policy diffusion also face the problem of how to evaluate counter-factual explanations (for example, similar domestic problems)? Too often diffusion research ignores the risk of alternative explanations for the observance of policy clustering. Studies usually include controls for the characteristics of the adopting state (for example, the number of veto players as a proxy for the reform capacity of a political system), but they rarely conceptualize the possibilities of similar responses to domestic problems that might lead to same policy output independently from each other (cf. Elkins and Simmons 2005). A notable exception in this regard is coming from Volden, Ting and Carpenter who explicitly integrate the assumption that governments might learn from their own experience in past times (cf. 2008). Overall, theorizing and testing alternative pathways of policy diffusion fosters the robustness of the empirical findings.

The plausibility for explanations based on interdependency also benefits from tracing the effects of policy diffusion across multiple components of national policies (cf. Boehmke 2009a). Especially as it has been convincingly argued elsewhere that global frames and scripts usually will be adapted by actors to their domestic contexts rather than copied one-to-one (cf. Meyer et al. 1997b). A broader empirical scope helps to avoid selection biases and is supposed to increase variance (cf. Geddes 1990).

Furthermore, identifying diffusion effects seems to be more plausible if considering the adoption of pre-defined policy models or innovations (cf. Rogers 2003). This increases the plausibility of international explanations in cases where we find such developments. As some authors argue, natural solutions to policy problems are unlikely. Assuming that governments facing similar problems choose solutions independently from each other, the conditions for arriving at similar policies independently from each other are quite demanding. There have to be widely recognized beliefs on the cause-and-effect-chain linking the shared problem to a specific problem-solving approach (cf. Bennett 1991). From this point of view, the assumptions on policy diffusion seem more plausible regarding a pre-defined set of policy innovations.

Last but not least, causal analysis in diffusion research greatly benefits from the possibilities to consider information on the temporal order of events (cf. Box-Steffensmeier and Jones 1997; Box-Steffensmeier and Sokhey 2010). Spatial dependencies drive policy spread across countries, but after all it has an impact on the timing of policy adoption – just like a cause precedes an effect. Event history analysis can explicitly deal with this kind of information by estimating effects in terms of the timing and the probability for policy transfer between countries.

4.5 Tales of Learning

The notion of learning relates to situations, where governments and other political authorities utilize the experience made elsewhere to solve their own policy problems. The question remains, what information do policy makers care about? The first section deals with this issue. It presents and discusses the different operationalizations used for testing the various hypothesis based on learning assumptions.[110]

Overall five explanatory models based on learning assumptions are tested in the following subsections. The first subsection deals with purely rational models of learning. The model is based on the hypothesis that countries are learning from successful countries (diffusion hypothesis A1) and/or policy experience (diffusion hypothesis A2). This also includes a test of longer-term effects of learning (diffusion hypothesis A3a and 3b).

The second subsection deals with the question if learning is problem-driven. That means if learning effects are contingent on the degree of domestic problem pressure (conditional hypothesis A4). The following subsection discusses if learning effects are bounded by cognitive heuristics. Explanatory models are based on the assumptions that governments learn from their neighbours (secondary hypothesis A1), countries sharing historical origins (conditional hypothesis A2) or governments having a similar ideological disposition (conditional hypothesis A3).

The final subsection gives an overview on the statistical findings regarding the previously tested models. Which of the covariates are robust and significant? Do they show the expected relationships? And even more important, which of the diffusion and conditional hypotheses are supported by the empirical analysis? This discussion

[110] See Annex IV for full operational definitions.

includes an explanatory model synthesizing the previous results. The model consists only of covariates successfully passing the statistical tests. And it serves as a base for comparing the different theoretical approaches in the final section of this chapter.

4.5.1 Constructing the Learning Variables

The learning variables are constructed using different measures on the success of countries as well as their experience with the implementation [111] of various performance-orientated policies. The problem here is that cause-and-effect relationships were (and are) not always clear in higher education policies (cf. Harvey 2006; Heald and Geaughan 1994).[112]Hence, identifying the relevant performance indicators is complicated. Therefore, I opt to test the effects of several performance indicators available for the time period under consideration.

Generally, performance-orientated policies were supposed to improve the efficiency of universities and the higher education system in general – both in terms of cost containment as well as increasing outputs. For example, the instrument of lump sum (or block grants) for recurrent public funding at universities refers to awarding budgets rather than earmarked funds characterized by itemized budgets. So instead of describing on what to spend the budgets approved by the national ministries, the state universities can internally distribute the allocated budget within the rules of public sector finance. They become autonomous in how to spend the public money on different functions (for example for staff salaries or equipment). The underlying causal assumption is that lump sums provide a high degree of spending autonomy to the universities, finally enhancing academic freedom and efficiency (cf. Melck 1985; Darling et al. 1989; Savenije 1992). From this point of view, lump sum funding helps to better deal with phenomena like the 'mass university' and cuts in public funding (cf. Heinze and Knill 2008; Melck 1985).

The strategy for measuring experience and success is therefore twofold. Most European countries were facing two major challenges regarding higher education policies during the study period (cf. Carrier 1990; Eicher 1990; Lange and Schimank 2007): the expansion of higher education and a decrease in public budgets for higher education.

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[111] Instead of using the adoption of policies, learning deals with the experience governments make with specific policies. That means it is about the (practical) implementation of policies.

[112] And even if the causal relationships are clear, the recommendations are usually more complex.

First, beginning in the 1970s governments opened up the higher education systems to both female and working class students. There was a growing need of highly skilled workers. Universities had to keep up with the increasing demand for higher education. In addition, population growth required the expansion of higher education. Scholars describe this transformation as the move from elite- to mass-universities (cf. Schimank and Winnes 2001). Performance-orientated reforms helped to keep up and sustain growth in student numbers. The key to organize and manage student growth was to diversify the existing higher education system (cf. Teichler 2008). As the student population as well as the societal needs became more diverse more specific courses and training were needed. Granting more autonomy to universities was supposed to be a way of spurring institutional diversity. For example, in some countries universities were able to plan and design their own programs and course portfolios. Rather than having long-term state planning, universities became able to adapt more flexibly to student demands. Furthermore, by designing university funding in a more performance-orientated way, universities became more responsive and accountable to actual performances and services (cf. Winter-Ebmer and Wirz 2002).

Second, this development was accompanied by a decrease in public funds for higher education. Governments all throughout Europe tried to limit public spending (cf. Kaiser et al. 2001; Taylor 2005; Teixeira and Koryakina 2011; Vossensteyn 2004). Though budget cuts in higher education were not always introduced explicitly. At last it was the sheer number of students to deal with and the price developments both not being absorbed by budget increases, which led to severe budgetary constraints at universities. Performance-orientated policies were supposed to make universities more efficient and productive in their resource allocation.

Following these debates, the focus is on two aspects of higher education: the development of public expenditure and the changes in terms of the student population. Other measures indicating an effective higher education policy like staff-student-ratios, the academic unemployment or the income of academics are usually not available. Also using proxies like the general unemployment rate or labour productivity as performance indicators seems rather problematic. There are too many other variables not related to the field of higher education that have a potential impact on a country's socio-economic performance (cf. Aubyn et al. 2009).

Furthermore, I decided against the use of more sophisticated measurements. For example, one could measure efficiency of higher education systems in terms of a cost-benefit analysis relating to input-output ratios (cf. Higgins 1989; Katharaki and Katharakis 2010: 120). But measuring the efficiency of higher education systems in

terms of a cost-analysis seems not useful. First, the goal of this study is not to search for optimal learning strategies (cf. Lee and Strang 2006). Furthermore, empirical evidence on higher education usually points out that almost all higher education systems in Europe have potential for efficiency gains (cf. Agasisti 2009). And existing evidence in diffusion research supports the assumption that sophisticated data analysis is usually less important to governments (cf. Lee and Strang 2006: 895).[113] As a consequence, I decided using highly visible and available success indicators (cf. Simmons and Elkins 2004; Lee and Strang 2006).

4.5.1.1 Measuring Country Success

Learning from success is measured as comparative country performance. That means it is operationalized by the difference between a country's performances against the performance of the other countries having adopted the policy under consideration. The underlying assumption is that policy-makers take into the account the behaviour of adopters compared to their performance when deciding on their own course (cf. Elkins et al. 2006; Lee and Strang 2006).[114]

Often economic growth or the unemployment rate functions as an indicator to identify the most successful countries. Though the performance of higher education system also has an impact on economic success (cf. Huisman and Kaiser 2003), it is just one factor among many others that determines yearly growth rates of an economy. And factors like the unemployment rate do not tell anything about the success of the higher education system. In rural societies there can also be high employment, but that does not require much tertiary education. And even though these aggregated measures are linked to higher education, estimating their effect would still require a lot of alternative explanations like the degree of capital investments or a country's labour productivity to control for (cf. Aubyn et al. 2009).

Unfortunately, more specific indicators like the labour productivity of Academics or the unemployment rate grouped according to educational attainment are usually not

[113] I also experimented with some more complex measures on success. For example, the ratio between student and graduate numbers could serve as a measure to determine the productivity of a higher education system. Also I was calculating the relationship between financial efficiency in terms of public funding per student in relation to the yearly graduate numbers. But these measures were performing poorly. However, these measures were also problematic from a substantial point view as there is usually a time lag between the inputs of a system and its outputs, respectively outcome.

[114] To account for the differences in the scope of implementation of the various performance-orientated policies, I only counted countries as potential senders of information that adopted relatively far-reaching measures (cf. Annex IV.A).

available for that particular time period. For example, the rate of academic unemployment provided by the ILO only dates back to the 1990s and is not surveyed on a yearly base. Therefore, I opt for success indicators that are directly associated with the field of higher education.

International and comparative (aggregate) data of that time usually dealt with success indicators like student and graduate numbers, enrolment and completion ratios, the number of international students or public funding (usually measured as share of GDP) (cf. Higgins 1989; Williams 1992; Fielden and Abercromby 2001).

Following the previous discussion on the problems in European higher education during the 1980s and 1990s, I conceptualize country performance in terms of funding and student numbers. The underlying assumption then is that more successful higher education systems are characterized by higher completion ratios on tertiary education and are supposed to spend relatively less money per student.[115]

More specifically, I refer to the completion ratios on tertiary education of a country to measure the output of the higher education system. To measure the performance in financial terms, the average public funding (in terms of % of GDP) per one per cent enrolment is measured. It can be interpreted as a measure of the comparative effectiveness of public investments. Using the GDP as a base helps to control for differences in the price-levels and economic powers of the various countries. Furthermore, weighting expenditure with the enrolment ratio accounts for different levels of enrolment. Otherwise a higher share of public funding in terms of GDP could merely stem from a higher enrolment rate.[116]

The data on the funding patterns is mainly derived from UNESCO/UIS. The data on enrolment and completion ratios are taken from Barro and Lee (2010). Other sources for funding data like Eurostat, the OCED or Kaiser et al. (2001) are usually incomplete – both in terms of countries as well as time periods. The same applies to

[115] Of course, indicators causally linking the policy under consideration and its direct effect in terms of problem solving would be preferable, but usually such data is not available. For example, in times of stagnant (or even decreasing) public funds for universities, lump sum funding is supposed to contribute to a more effective assignment of resources. But to directly measure these effects we would need data of budget structures and the resource input in relation to the specific outputs a university is providing (for example, in terms of student numbers).

[116] This conceptualization of success comes close to an understanding of success in terms of effectiveness. Economic and political science literature often highlights the difference between the efficiency and the effectiveness of policies (cf. Aubyn et al. 2009). Similar to economic understanding, policy efficiency relates to the relationship between the policies implemented and the output generated with this policy. For example, in education policy, staffing policies can have a direct impact on the quality of teaching staff and -as a consequence- lead to better outputs in terms of graduate numbers or the quality of graduates. But in empirical analysis efficiency and effectiveness seem hardly distinguishable.

sources on student numbers like de la Fuente and Doménech (2002), the WDI or CNTS.

The data from UNESCO/UIS of that time has drawn some critical attention (cf. Descy, Nestler and Tessaring 2005; Godin 2005; Kaiser et al. 1992; Jakobi 2007; Jakobi 2006). Knowledge (and information on the experience of others) is usually time contingent. Future research might produce better and more reliable data on causal relationships and the performance of policies in solving problems. Therefore using performance indicators of that particular time period seems more realistic. Even a possible lack in the availability of complete and reliable performance data seems less of a problem here as diffusion theories are about the kind of information governments' are interested in. And policy makers have to deal with this kind of data too (or they have to face high transaction costs to obtain additional data).[117]

4.5.1.2 Measuring Policy Experience

Recently, authors started to measure the policy experience of other countries by regressing the policy under consideration with an indicator that is measuring its success (or failure) (cf. Gilardi 2010). That means the regression coefficient is used as a standardized measure for success. The question is then, what kind of indicators do policy makers care about? One way to find out about the data available in the 1980s and 1990s would be to consult reports of that time to learn more about the experiences made during that specific time period (for example, Williams 1992).

The experience on adopting performance-orientated policies is measured by regressing policy implementation with two success indicators (cf. Gilardi 2010): the yearly changes in total public funding per student at the tertiary level as well as the changes in total student numbers.[118] Just as in the case of learning from success, the indicators relate of the performance of countries relate to the two challenges of that time, that means the expansion of higher education and a decrease in public budgets for higher education (cf. Carrier 1990; Eicher 1990; Lange and Schimank 2007).

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[117] Future research might produce better and more reliable data on causal relationships and the effectiveness of policies in solving problems. But knowledge (and information on the experience of others) is usually time contingent. The public authorities also had to deal with these problems in the years 1980s and 1990s too.

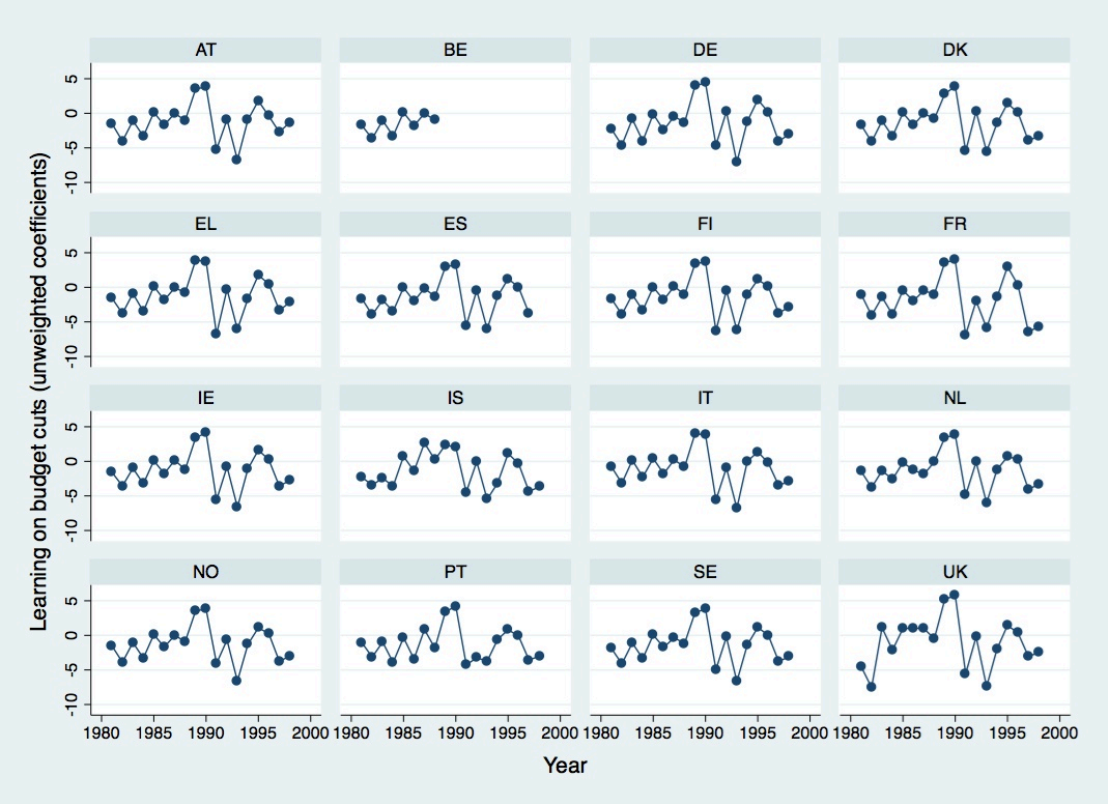
[118] Estimating yearly changes also takes into account the different starting points of countries. Some countries already have lower investments in higher education at the beginning of the examination period. The question remains if this is because they are more efficient in budget spending? Other reasons like the quality of higher education or cost factors like staff salaries are not taken into account.

The correlation coefficients function as a standardized measure for (successful) experience across countries, policies and time. They measure the relationship between the success indicators and the implementation of performance-orientated policies. That means the variables on learning from policy experience for each country at risk are obtained by regressing trends on the performance indicators with the implementation scope of performance-orientated policies.[119]

Exemplary, Figure 4-1 shows how the covariate varies across time and countries for the relationship between funding discretion and funding. In the case of the annual growth in public expenditures on higher education per student (in %) a negative coefficient means that a negative relationship exists between the variables. But it indicates positive experiences with performance-orientated policies. As performance-orientated policies are supposed to increase the efficiency of institutions, the expectation is that costs for tertiary education are growing slower (or even decrease) in countries having implemented performance-orientated reforms. A positive coefficient indicates increasing public expenditure per student despite performance-orientated policies. For example, considering the coefficient for Spain shows that the relationship between funding discretion and funding performance for all countries except for Spain was mostly positive – the coefficient indicated negative experiences only in the years 1989, 1990 and 1996.

[119] To achieve better results, I coded the regressor according to the scope of implementation (cf. Annex IV).

Figure 4-1: Learning from trends on public expenditure on tertiary education

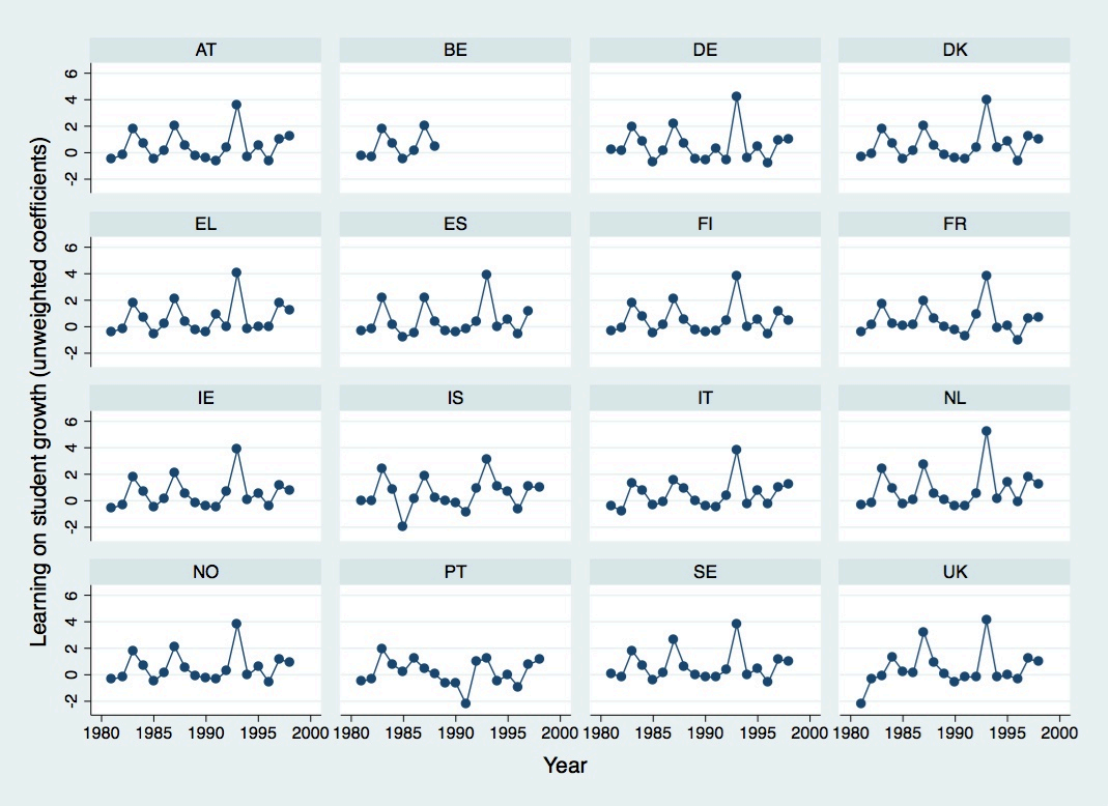


Note: Own illustration presenting the learning from experience variable (on budget cuts) for the country sample. The circles represent unweighted coefficients (for the policy item on lump sum funding).

Figure 4-2 shows the regression coefficients for the relationship between the funding discretion implemented in other countries and the yearly growth of the student population. Contrary to learning from funding, a positive coefficient also indicates a positive experience with the new policies. A negative coefficient describes negative experiences. The assumption is that policy-makers adopt performance-orientated policies to increase the number of students, rather than shrinking the university sector. Considering the coefficient for the relationship between funding discretion and student growth for most countries shows that the experience other countries had with lump sum funding was largely positive or neutral. Some years appeared to be outliers though – for example, considering the United Kingdom the coefficient indicated negative experiences only in the years 1981, 1982, 1990 and 1996.[120]

[120] To avoid biases due to outliers, the independent variable is constructed as 3-year moving averages (cf. section 4.1).

Figure 4-2: Learning from trends on growing student numbers



Note: Own illustration presenting the learning from experience variable (on student growth) for the country sample. The circles represent unweighted coefficients (for the policy item on lump sum funding).

4.5.2 Rational Versions of Learning

The first two explanatory models are relatively parsimonious. The models A1 and A2 only include learning variables (in various versions) and the control variables tested with every diffusion model. The results of the Cox models on rational learning are shown in Table 4-1 and Table 4-2. A look at the reported hazard ratios indicates that one can find evidence for and against the effects of learning variables. The results also highlight the importance of the added control variables.

The first statistical model A1 deals with rational learning in terms of diffusion hypothesis A1 (*learning from success*) and diffusion hypothesis A2 (*learning from experience*). The *learning from success* hypothesis is tested on behalf of two indicators measuring the comparative country performance between the country at risk and countries having implemented performance-orientated policies (diffusion hypothesis A1).

In the case of completion ratios I expect a positive relationship. That means if the difference between sender countries and the country at risk in terms of completion

ratios increases, learning from success becomes more likely. The underlying assumption is that governments have an interest in increasing the educational attainment among their population. And the comparative performance serves as indicator for the reform of national policies – if there is a need for reform, but also in terms of what policies to adopt. Do these countries have a higher performance in terms of completion ratios? Therefore, the hazard ratio indicating the changing probability for policy adoption should be above 1.0 for the comparative performance on completion ratios. The variable supports the *learning from success* hypothesis. It yields the expected effects. The probability for policy adoption increases by 3% with every average absolute difference percentage point in the completion ratios of sender countries and the country at risk. This effect is statistically significant at the 5% level.

On the contrary, the comparative performance on public expenditure should have the reverse effect. The variable indicates if sender countries spent more public money per enrolment percentage than the country at risk.[121] As I assume that public authorities look out for policies that help increasing the cost efficiency of universities, countries having implemented performance-orientated policies should have lower levels of public funding than the country at risk. Do those countries really spend less money per tertiary enrolment? In other words, a hazard ratio above 1.0 would indicate that the probability for policy adoption increases with lower levels of public spending per enrolment in the country at risk than in the other countries with performance-orientated policies. This would disconfirm the original hypothesis.

This effect is highly significant. But it is not showing the expected relationship. A better spending efficiency in the country at risk does not lead to an increase in policy adoption. This effect could be interpreted in terms of competition. If other countries can spent more money per student, then governments either need to increase their public funding or make their universities more performance orientated to keep up with the other countries. But testing this assumption would require additional analysis on the relationship between the various performance indicators. Another reason for this effect could be that governments actually do not aim for cutting costs.

Interestingly, the effect of this covariate is negative over time. The effect per year diminishes by around 0.7%. That means the effects becomes negative after seven

[121] Note, the comparative country performance on public expenditure has been multiplied by 100 to improve the presentation of the reported hazard ratio (cf. Simmons and Elkins 2004: 177). That means it indicates the public expenditure for tertiary education in percentage points of GDP spent per one hundreds percentage point of enrolment ratio.

years. One reason could be that the interest of governments changes over time. Moving away from a focus on guaranteeing sufficient funds towards more efficient funding, but this is rather speculative. At least in the light of the presented evidence, the *learning from success* hypothesis does not seem to work in terms of financial issues.

The *learning from experience* hypothesis is tested in model A1 too. Similar to the variable on the country performance, a negative relationship is expected in the case of the annual growth in public expenditures on higher education per student (in %). The underlying assumption is that performance-orientated policies are supposed to increase the efficiency of budget spending in institutions. Similar to the effects of country performance on public expenditure, the variable measuring the experience with budget cuts is also positive. Furthermore, its effect is not statistically significant.

Contrary to learning from funding, a positive effect of the relationship between performance-orientated policies and the yearly growth of the student population on the hazard ratio also indicates a positive experience with the new policies. A negative coefficient describes negative experiences. The assumption is that policy-makers watch out for policies helping to increase the student population and to better deal with an increasing number of students. That means governments are expected to adopt policies aiming at student growth, rather than shrinking the university sector. These expectations are confirmed by the cox regression. The variable on learning from student growth is highly significant and increases the probability for policy adoption by almost 90% in case the regression coefficient increases by one.

From this point of view, learning seems to be related to physical developments rather than financial issues. This makes sense from a substantial point of view. Funding is usually considered to be at the core of national responsibilities and often driven by the political factors rather than problem solving. As a consequence, learning does not seem to play a significant role in explaining the diffusion of performance-orientated policies.

Model A2 deals with the same variables, but it is based on variables averaged over a longer period of time. The model is based on the hypothesis that governments are considering a longer time period when learning from successful countries (diffusion hypothesis A3a) and/or policy experience (diffusion hypothesis A3b). The aim is to test the effects of different time horizons and longer-term goals. Usually the independent variables are three-years moving averages (diffusion hypothesis A3a and 3b). The effects of longer-term learning are simply measured by the same

independent variables used for the learning variables, though with moving averages over the previous seven years. The results for the versions *of longer-term learning* are rather largely insignificant and can therefore be removed from future estimations.

The results on *learning from success* in terms of public expenditure are largely the same. But learning from the relative performance in terms of completion ratios is statistically insignificant. The longer-term version on policy experience on funding matched the expected relationship, but is still not significant. The same applies to learning from student growth. The effect of the variable is much lower and also not significant. From this point of view, model A2 and primary hypotheses A3a and A3b are disconfirmed. The variables do not improve the explanatory power and mainly do not match the expectations.

The estimated hazard ratios for control variables and adopting state characteristics show many significant results (cf. Table 4-2). Only the effect of pilot projects – though as expected – is not statistically significant. These patterns are fairly stable across both models. The significance of the control variables does not differ between model A1 and its longer-term version model A2. Though the effects of most control variables are stronger in model A2, all effects are stronger than in model A2 except for the variables on shared responsibility and tertiary enrolment.

According to model A1, the impact of veto players on policy adoption is negative and significant at the 5% level. An increase of the left-right veto player range by one point decreases the probability for new legislation by 5.4%. Interestingly, the effect reverses over time. The negative effect diminishes by 0.5 percentage points per year. That means the effect is zero after ten to eleven years. This evidence might point to a diminishing influence of veto players in case countries face similar problems over longer periods of time.

In case of shared responsibilities between national and sub-national decision-making levels, the effects are highly significant at the 1% level with the baseline hazard multiplying almost four times. This effect fades rapidly over time though, by 14.5% a year. That means the control variable is still increasing the event risk at the end of the observation period.

This finding is remarkable, as the usual expectation is that the probability for policy change diminishes in case of a multi-level system (cf. Scharpf 1997b) – although one could interpret this factor differently in terms of the present results. For example, some scholars point to the case of consensual democracies where the necessity to find consensual decisions rather increases the reform capacities of political systems

than decreasing them (cf. Lijphart 1999). Another interpretation points to external policy developments empowering domestic actors (cf. Börzel and Risse 2003).

The level of tertiary enrolment in the country at risk also has a positive and significant effect (at the 5% level) on policy adoption. Every additional percentage of tertiary enrolment increases the risk for adopting reforms by 4.1%. This points to the circumstance, that higher levels of enrolment in tertiary education increase the need for performance-orientated reforms.

The highly significant and positive effect of public expenditure supports the assumption, that countries with higher funding levels also face a higher problem pressure. For every percentage point of GDP spent on tertiary education, the probability for policy adoption increases by 25.9%. This effect also diminishes over time. This could be a sign for relaxing financial conditions. The chances for policy adoption increase by 36.3% in case, private universities are recognized by the public authorities. This effect is also highly significant. Last but not least, the impact of the risk sequence is statistically significant. The probability for policy adoption decreases by 21.1% with every previous event. This variable is significant at the 5% level.

Overall, the two models support the assumption that policy makers are more interested in recent empirical developments. All variables in the seven-year-versions are insignificant except for the comparative performance on public expenditure. The corresponding hypotheses are disconfirmed (diffusion hypothesis A3a and A3b). Consequently, the variables on longer-term learning are dropped from the following analysis. But model A1 also seems to be slightly preferable compared to model A2 according to the AIC. The difference between the two models regarding their AIC is exactly 2.5. This value is indicating that there is almost a significant difference between the AIC levels (cf. Hilbe 2011: 70). The control variables highlight some additional explanations that seem to be important in case of learning processes. This applies to all variables except for the role of pilot projects.

One can find evidence for both learning hypothesis with regard to physical parameters like student numbers (inputs) or completion ratios (outputs). Learning on fiscal developments, however, is not supported. Public authorities seem to be *learning from success* (diffusion hypothesis A1) and there seems to be evidence for *learning from experience* (diffusion hypothesis A2) as well. The hypotheses dealing with long-term developments are not supported by the presented results (diffusion hypothesis A3a and A3b).

Table 4-1: Learning from others (part 1)

Explanatory variables	*Model A1* *Rational learning*		*Model A2* *Longer term learning*	
	Main	TVC	Main	TVC
Comparative country performance on				
Public expenditure	1.049*** (0.0182)	0.993*** (0.00248)	-	-
Completion ratios	1.030** (0.0151)		-	-
Policy experience on				
Budget cuts	1.018 (0.119)	-	-	-
Student growth	1.874*** (0.367)	-	-	-
Longer term comparative country performance on				
Public expenditure	-	-	1.047*** (0.0162)	0.993*** (0.00177)
Completion ratios	-	-	1.023 (0.0157)	-
Longer term policy experience on				-
Budget cuts	-	-	0.816 (0.136)	-
Student growth	-	-	1.116 (0.293)	-
Observations	3654		3654	
Number of Failures	284		284	
Time at Risk	3654		3654	
Wald $\chi 2$ (k)	68.30 (15)***		63.08 (15)***	
Log pseudolikelihood	-730.9		-732.2	
BIC	1585.0		1587.5	
AIC	1491.9		1494.4	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-2: Learning from others (part 2)

Control variables	*Model A1 Rational learning*		*Model A2 Longer term learning*	
	Main	TVC	Main	TVC
Veto players	0.946** (0.0234)	1.005*** (0.00177)	0.948** (0.0232)	1.005*** (0.00175)
Shared Responsibility	3.939*** (1.994)	0.855*** (0.0415)	3.853*** (1.994)	0.856*** (0.0423)
Tertiary education enrolment	1.041** (0.0213)	-	1.035** (0.0164)	-
Public higher education expenditure	1.259*** (0.0775)	0.977*** (0.00578)	1.257*** (0.0733)	0.978*** (0.00454)
Recognition of private universities	1.637*** (0.245)	-	1.727*** (0.254)	-
Pilot projects	1.865 (1.019)	-	1.942 (1.073)	-
Risk sequence	0.789** (0.0778)	-	0.773** (0.0776)	-
Observations	3654		3654	
Number of Failures	284		284	
Time at Risk	3654		3654	
Wald $\chi 2$ (k)	68.30 (15)***		63.08 (15)***	
Log pseudolikelihood	-730.9		-732.2	
BIC	1585.0		1587.5	
AIC	1491.9		1494.4	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.5.3 Problem-driven Learning

The learning framework predicts that governments are adopting policies that are successful in other countries and that fit to the domestic policy problems. From this point of view, the probability for learning effects is higher if the domestic problem pressure is increasing (conditional hypothesis A4). Interaction effects are modelled to test the assumption of *problem-driven learning*. The interaction term is based on the previously constructed learning variables and variables related to domestic problem pressure.

Similar to the construction of the learning variables, there is discussion on the definition of domestic problem pressure. The pressure for adoption and transfer of external models and policies does not only entail policy-specific problems as

discussed in the previous section on learning (for example, the overburdening public costs in higher education), but may also result from general problems restricting the state's capacities to solve policy problems (cf. Schmidt 2002).[122] To name a few, economic and fiscal factors like public debt, low economic growth or high unemployment rates might influence governments' susceptibility to learn.

Higher education research does not provide much guidance on the selection of plausible indicators related to higher education systems. Problem pressure seems to originate from a variety of aspects (cf. Witte 2006). As the study focuses on learning effects in terms of the fiscal and student-related performances of higher education systems, I focus on two macro-economic conditions that can have a direct spill over effect on these performances. One is measuring the yearly unemployment rate in a country and the other one measures fiscal constraints in terms of the gross government debt (cf. Baldacci, McHugh and Petrova 2010; Huisman and Kaiser 2003; Plümper and Schneider 2007). The data for both indicators is publicly available and it fits the previous approach of utilizing clear and visible indicators to construct the diffusion variables (cf. IMF 2011 WEO 2010).

The underlying assumption for linking performance-orientated policy reforms and fiscal constraints is, that governments will have a higher interest in measures reducing public costs in case of fiscal stress (cf. Vossensteyn 2004). Even though performance-orientated policies are supposed to increase the capabilities of universities for efficient budget spending, they also help to deal with general budget cuts. Performance-orientated policies like formula funding are not about the level of public funding provided, but they are determining how these resources are provided and allocated. That means, performance-orientated policies increase the scope for savings and give universities incentives and capacities to act more efficiently. To put it differently, governments are more likely to learn from others in case they are in need for policy solutions.

Indicators discussed for measuring fiscal stress and constrains are the daily interest rate for state bonds or the governmental need for current gross financing (cf. Baldacci et al. 2010). I use data on the general government debt instead (as % of GDP).[123] The data used to test the interaction effects with fiscal constraints stems from the IMF/WB Historical Public Debt Database.

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[122] The impact could also stem from sectorial interdependencies (cf. Bönker 2008).

[123] The use of yearly budgetary surpluses or deficits as indicator yields similar results.

Of course, this measure simplifies the fiscal situation of countries. The recent crisis of public budgets highlights the importance of global developments to determine the actual fiscal stress of a country. Whereas some countries have much higher debt rates than –for example– countries like Spain, for these countries it is much easier to acquire international capital to fund their deficits. Still these indicators catch long-term developments of public budgets and the soundness of their fiscal policy. Other indicators like tax revenues are usually not helpful. Usually tax income is constantly growing and it does not tell anything about the cost structure of a state. From this point of view, it is not meaningful in terms of indicating budgetary constraints.

The domestic situation in terms of unemployment seems to be more important regarding the student-related performance indicators.[124] The unemployment rate seems relevant for higher education policies as governments might target for an increase in student numbers to better deal with unemployment among the younger population. Increasing the share of the work-age population that is in college helps to diminish the unemployment rate (cf. Plümper and Schneider 2007). The data used is taken from the World Economic Outlook of the World Bank. The ILO also provides data on academic unemployment, but only after 1984 and usually not as time series data.

The models A3a to A3d deal with the question, if learning is problem-driven (primary hypothesis A4). Interaction effects are modelled to test this assumption (cf. Table 4-3). The theoretical expectation is that learning effects increase with domestic problem pressure. Model A3a and A3c deal with the impact of fiscal constraints on both funding-related learning indicators. The predication is that learning effects are more likely in cases of greater fiscal constraints. Model A3b and A3d test the interaction effects between learning and a country's unemployment level and if learning becomes more likely with more unemployment.

The comparison with explanatory model A1 is also interesting in that the learning variable on the potential for cost savings does not meet the expectations. In fact, the effect of learning changes depending on the domestic problem pressure. In both cases, the observed relationship is negative and therefore matching the expected relation. Though only the variable on learning from experience is statistically significant (at the 5%-level). The effects of policy experience on budget cuts decreases by 0.3% per one additional percentage point in general debt (measured in

[124] Note, the use of labour productivity or economic growth yields similar results. Considering that there is a strong economic relationship between all three factors it comes to no surprise.

% of GDP). That means in case the general public debt increases over the 50% threshold, the learning effects will become negative. It seems as learning from fiscal problems can only be understood if one also considers a country's fiscal situation.

A similar picture emerges in relation to the learning variables as a function of the unemployment rate (model A3b and A3d). The effects of learning from success are increasing with the level of the yearly unemployment rate. The effect of learning on the probability for policy adoption increases by 1.8% per 1% increase in the unemployment rate. This relationship is highly significant at the 1%-level and strongly supports the conditional hypothesis on *problem-driven learning* (conditional hypothesis A4). In case of *learning from experience* on student growth the effect is also positive, though only moderately significant at the 10%-level. The effect of the coefficient between the implementation of performance-orientated policies and the annual student growth on policy adoption increases by 2.7% per 1%-change in the yearly unemployment rate. Both findings support the hypothesis on the conditionality of learning effects.

What are the effects of the domestic problem pressure in case the learning variables are zero? The yearly unemployment rate has a similar effect. A one per cent change in unemployment is highly significant and increases the hazard rate by 3.4% in model A3b to 4.2% in model A3d. The main effect of fiscal constraints does not yield robust results. The variable remains insignificant in model A3a and has an unexpected, though significant effect in model A3c. From this point of view, variables on domestic pressure do not necessarily have to be integrated into the analysis of performance-orientated policies. But these results should not be overrated as a final evaluation of these variables would require a detailed analysis of the marginal effects (cf. Braumoeller 2004).

Not all estimated hazard ratios for the control variables are robust (cf. Table 4-4). There are some differences compared to the models tested in the previous subsection, but also across the models on problem-driven learning presented here.[125] A lot of the control variables are insignificant in this statistical model. Also some of the control variables are not showing the expected relation or have different effect sizes.

[125] This is not really surprising as the integration of interaction terms can have different implications than the coefficients in a strictly additive regressions (cf. Braumoeller 2004).

The impact of veto players on policy adoption is negative in accordance with results presented so far, but is only significant in the models testing the problem-driven learning from experience (model A3c and A3d). The negative effect diminishes over time. But this effect is also not stable across the various models. In case of shared responsibilities between national and sub-national decision-making levels, the effects are –again– all significant across all models (here at the 5% level). The positive effect on the hazard rate varies strongly between 2.6 and 4.7 times, depending on the estimated model. The effect of time-dependency points into the expected direction and remains relatively stable and significant. The overall findings shed serious doubt on the validity of this variable.

As opposed to the previous models, the effect level of tertiary enrolment in the country is not robust across the models based on problem-driven learning. It is significant in model A3c and its effect is even unexpectedly negative in model A3b. The highly significant effect of public expenditure could not be found in model A3A. A reason could be the missing integration of a TVC as it is the case in the models A3b, A3c and A3d. The effect of recognized private universities is also not robust. It is insignificant in model A3b on the impact of unemployment on learning from success. This effect is only highly significant and strongly positive in the other three models. The control variable on pilot projects is again insignificant and also has a hazard ratio above 1.0 as expected.

The effect of the risk sequence is again statistically significant. Similar to the models A1 and A2, the probability for policy adoption decreases between 19.2 and 25% with every previous event (depending on the explanatory model).

Overall, the findings highlight the importance of domestic problem pressure to understand learning dynamics in higher education. Though learning from success in terms of fiscal performances is not depending on the domestic problem pressure. Accordingly, model A1 and A2 are performing significantly better than model A3a in regarding their AIC. Model A3a on learning from success under fiscal constraints with an AIC of 1507.4 is also performing significantly less well than the models A3b, A3c and A3d. The models A3c and A3d dealing with problem-driven learning from policy experience do not differ significantly, whereas model A3b on learning from success under conditions of unemployment performs best in terms of the AIC. But the model A3b is also the more parsimonious compared to the other two models.

Table 4-3: Problem-driven learning (part 1)

Explanatory variables	*Model A3a* *Learning from success (driven by fiscal constraints)*		*Model A3b* *Learning from success (driven by unemployment)*		*Model A3c* *Learning from experience (driven by fiscal constraints)*		*Model A3d* *Learning from experience (driven by unemployment)*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Comparative country performance on								
Public expenditure	1.012 (0.0194)	-	1.009 (0.0112)	-	1.046** (0.0187)	0.993*** (0.00257)	1.058*** (0.0183)	0.992*** (0.00252)
Public expenditure × fiscal constraints	0.9998 (0.000268)	-	-	-	-	-	-	-
Completion ratios	1.029* (0.0160)	-	0.913*** (0.0306)	-	1.025 (0.0162)	-	1.038** (0.0160)	-
Completion ratios × unemployment		-	1.018*** (0.00384)	-		-		-
Policy experience								
Budget cuts	1.062 (0.118)	-	1.022 (0.110)		1.150 (0.155)	-	1.006 (0.115)	-
Budget cuts × fiscal constraints	-	-	-	-	0.997** (0.00121)	-	-	-
Student growth	1.968*** (0.384)	-	1.796*** (0.345)		1.797*** (0.357)	-	1.519* (0.360)	-
Student growth × unemployment	-	-	-	-	-	-	1.027* (0.0161)	-
Country-specific problem pressure								
Fiscal constraints	1.004 (0.00365)	-	-	-	0.974** (0.0102)	1.002*** (0.000750)	-	-
Unemployment	-	-	1.034** (0.0141)	-	-	-	1.042*** (0.0154)	-
Observations	3654		3654		3654		3654	
Number of Failures	284		284		284		284	
Time at Risk	3654		3654		3654		3654	
Wald $\chi 2$ (k)	49.45 (15)***		80.36 (15)***		81.88 (18)***		72.02 (17)***	
Log pseudolikelihood	-738.7		-724.2		-726.7		-726.8	
BIC	1600.5		1571.5		1601.1		1593.1	
AIC	1507.4		1478.4		1489.5		1487.7	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-4: Problem-driven learning (part 2)

Control variables	*Model A3a* *Learning from success (driven by fiscal constraints)*		*Model A3b* *Learning from success (driven by unemployment)*		*Model A3c* *Learning from experience (driven by fiscal constraints)*		*Model A3d* *Learning from experience (driven by unemployment)*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	0.969 (0.0233)	1.003** (0.00174)	1.007 (0.00875)		0.935*** (0.0234)	1.005*** (0.00181)	0.956* (0.0228)	1.005*** (0.00171)
Shared Responsibility	2.616** (1.245)	0.883*** (0.0413)	4.077** (2.248)	0.833*** (0.0461)	3.014** (1.525)	0.873*** (0.0429)	3.146** (1.597)	0.861*** (0.0424)
Tertiary education enrolment	1.008 (0.0150)	-	0.978 (0.0150)	-	1.045** (0.0211)	-	1.033 (0.0213)	-
Public higher education expenditure	1.021 (0.0402)	-	1.214*** (0.0623)	0.990*** (0.00268)	1.260*** (0.0835)	0.977*** (0.00631)	1.297*** (0.0820)	0.975*** (0.00593)
Recognition of private universities	1.547*** (0.228)	-	1.261 (0.209)	-	1.783*** (0.280)	-	1.518*** (0.230)	-
Pilot projects	1.948 (1.066)	-	2.616 (1.562)	-	1.937 (1.076)	-	1.900 (1.046)	-
Risk sequence	0.808** (0.0772)	-	0.750*** (0.0742)	-	0.763** (0.0826)	-	0.772*** (0.0771)	-
Observations	3654		3654		3654		3654	
Number of Failures	284		284		284		284	
Time at Risk	3654		3654		3654		3654	
Wald $\chi 2$ (k)	49.45 (15)***		80.36 (15)***		81.88 (18)***		72.02 (17)***	
Log pseudolikelihood	-738.7		-724.2		-726.7		-726.8	
BIC	1600.5		1571.5		1601.1		1593.1	
AIC	1507.4		1478.4		1489.5		1487.7	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.5.4 Bounded Versions of Learning

A strand of research on policy learning deals with the question if learning processes are bounded by cognitive heuristics. Conditional factors refer to the existence of shortcuts and bounded versions of learning that bias the evaluation of information. In other words, do governments collect and evaluate all possible information on cause-and-effect relationships or do actors' cognitively filter information? Several hypotheses on the role of inferential shortcuts have been formulated in chapter two. Three sets of explanatory models are presented here to test the assumption that

governments are *learning from neighbours* only (conditional hypothesis A1), countries sharing *similar university cultures* and ties (conditional hypothesis A2) or governments sharing ideological similarities (conditional hypothesis A3). To test these three conditional hypotheses, I use spatially lagged versions of the four independent variables used for tracing learning effects in the previous sections. With this operationalization, theoretical expectations remain the same. Learning from success is expected to have a positive impact on policy adoption in the case of completion ratios, but a negative when it comes to evaluating the level of public funding. The same applies to the variables on learning from policy experience. A negative relationship between performance-orientated policies and budget spending signals a positive experience. As the hazard ratio reports the effect of an increase in the independent variable by one unit, a negative effect is expected. In the case of student growth, a positive independent variable also indicates supportive experience for performance-orientated policies. Therefore, a positive relationship is expected between covariate and hazard ratio.

Learning from neighbours is based on the data of neighbour countries only. That means countries sharing a geographical border (cf. CIA 2009). The Operationalization of the learning variables is exactly the same as described in section 4.5.1 with the difference that all the information of non-neighbouring countries is excluded from the data for constructing the learning variables. For example, the regression coefficient used for measuring policy experience in its regional variant is exclusively based on the information from neighbouring countries.

Some scholars recommend the minimum distance between capitals instead of using a common border as indicator (cf. Gleditsch and Ward 2001). Though capital distances are a more fine-grained way of measuring the distances between the political power centres, it neglects the fact that higher education policies are often an element of regional policy-making (cf. Swenden 2001). Furthermore, capital distances within the European region are biased, because some of the countries considered here are extreme outliers (for example, Iceland and Greece). And if the dimension of "neighbourhood" is essentially qualitative, then it does not seem plausible to define it by the distances between capitals.

Different dimensions have been discussed in the literature in order to describe historical and cultural[126] characteristics of countries as well as similarities between

[126] Disentangling historical and cultural patterns is problematic. First of all, culture is a multi-dimensional concept and several factors like language, religion, values but also historical and institutional elements

them, including factors like the religious structure, the level of secularization (cf. Castles 1994), values (cf. Inglehart 1989), or policy styles (cf. Feick and Jann 1988). Another way of measuring cultural similarity is comparing the official languages in countries as the official languages of culturally similar countries belong to the same language (cf. Eff 2008; Grimes 2000). Sometimes the religious affiliation is used as cultural indicator (cf. Jepperson and Swidler 1994). But these factors usually have a rather indirect link to the policy field. Cultural factors more directly linked to higher education policy seem more plausible. Therefore, a common academic legacy is indicating the cultural similarity of countries (for example, Humboldt, Napoleonic or Market Model) (cf. Clark 1983). Similarly to the way the variables on neighbour effects are constructed, only countries sharing the same university traditions are used to construct these conditional versions of learning.

The effects of ideological short cuts are based on the independent variables lagged by the similarity between government ideologies in terms of a left-right scale (cf. Kim and Fording 2002). The Kim-Fording scale measures the government ideology on a 100-point scale that is used to "weigh" sender information. A value of 100 refers to a leftist government, whereas a value of 0 suggests a right ideological disposition. The similarity score is based on the absolute difference in the government ideology of the country at risk and the sender countries. A score of 100 indicates a full match of the ideological positions of the government in the country at risk and the potential sender country, a score of 0 describes a fully contrary government ideology. In case, the ideology index by Kim and Fording is identical, the information on the learning variables is fully included in the construction of the spatially lagged independent variable. Otherwise the information is only partially included. For example, the ideological similarity score is used to construct the correlation coefficient on policy experience. A similarity score of 50 indicates that governments differ by 50 points in terms of the ideology index. That would be the case if one government has an ideology index of 25 points and another an index of 75. In such a case, the performance indicator used for regressing trends with performance-related policy reforms is divided by two, that means the data used for constructing the learning from experience variable is weighted by 0.5. In other words, the experience of countries

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have been discussed in the literature to describe the cultural characteristics of countries (cf. Elkins and Simeon 1979; Friedkin 1993; Jepperson and Swidler 1994; Hall and Taylor 1996). Second, Clark himself did not only refer to traditions and historical legacies, but also cultural understandings and beliefs that shaped the relationship between Academia and the political system in each country (1983).

with ideologically dissimilar governments is counted only partially for constructing the final learning variables.

Another option would be to weigh the learning variables themselves. That implies that left-right governments interpret the country performance, respectively the regression coefficients measuring learning differently. But can it be that governments need to base their decision on the same information about others, but interpret them differently? Of course, evaluation reports are usually complex and party representatives often use information according to their purposes. But this is a different kind of hypothesis, as ideological shortcuts do not deal with deliberate decisions and strategies, but with differences in information processing capacities. In addition, weighting the learning variables rather than the specific information of the performance indicators results in a loss of information. In such a case, relational data between the country at risk and other countries cannot be included.

The models in Table 4-5 present the different variants of bounded-rational learning. Model A4a deals with regional shortcuts, model A4b with historically framed heuristics and model A4c with ideological shortcuts.

The spatially lagged learning variables dealing with completion ratios and growth in student numbers perform worse than their original counterparts. *Learning from success* on completion ratios remains statistically significant in the culturally, respectively ideologically lagged versions. In the regional variant, the variable points into the wrong direction and lacks statistical significance. The estimates on *learning from policy experience* on student growth also perform poorly. Only the results in models A4c on the ideological shortcuts are statistically significant at the 5%-level and point to a relatively strong effect hazard ratio of 1.555. In the other models, the variable lacks statistical significance.

Some of the bounded versions of learning support the learning hypothesis from fiscal performance. In case of regional effects, *learning from success o*n public expenditure has a negative effect of 15.2% per one hundreds per cent increase in the average difference between country at risk and sender countries in terms of funding efficiency. The effect is statistically significant at the 1% level, but diminishes by 1.2% per additional year. A similar pattern exists regarding *learning on policy experience* on budget cuts. In case the regression coefficient measuring the relationship between performance-orientated policies and budgetary growth increases by one, then the probability for policy adoption in the subsequent year falls by 12.6%. This

effect is highly significant, but also decreases over time. One additional year lowers the effect of regional learning by 1.5%.

The conditional learning effects on *funding developments* can also be found in case of culturally biased learning in model A4b. *Learning from success o*n public expenditure has a hazard ratio of 0.858 that is statistically significant at the 1-% level. The effect of time is positive and decreases the negative effect by 1.7% per additional year.

These findings are contrary to the rational learning assumptions tested in model A1, where learning on funding patterns does not match the theoretically expected relationship. The ideological version of learning does not work in either cases of learning. *Learning from success* on public expenditure of ideologically similar countries is statistically significant, but does not match the theoretical expectations. And *learning from policy experience* on budget cuts is also problematic. The hazard ratio points into the expected direction, but is not statistically significant. In addition, learning from the policy experience of culturally similar countries is highly significant at the 1-% level, but does not point into the right direction. It has a positive impact on policy adoption. One reason for this observation could be that cultural dispositions determine the preference of governments. This argument somewhat relates to socialization and the role of cultural peers. The question is, if governments aim for cutting budgets or if they prefer to increase the investments in higher education. The hitherto presented evidence sheds some doubts on the assumption that governments act cost-oriented.

The question is what determines governmental preferences? Do governments only learn on strategies and policy instruments or do they also adapt their goals according to the performance and experience in other countries? Another reason for the different results on *learning from success* and *learning from policy experience* might stem from the difference between budget cuts (understood in terms of the level of public funding) and relative costs (understood as costs per student or enrolment ratio). The former matches the operationalization of policy experience, whereas the latter is more closely related to the country performance on public expenditure. Policy makers might aim for an overall decrease of public expenditure, while preferring an increase in the per capita investments on students. The different results for the ideologically weighted learning variables do not disconfirm this assumption, but rather point to the contingency of preferences according to ideological similarities.

The temporal contingency of learning effects can also be explained by a change in the preferences of governments. An original focus on cutting deficits and increasing funding efficiency might be superseded by the need to increase higher education funding. This interpretation seems most plausible in the case of regional shortcuts. In case of regional competition, following budget cut policies seems counter-productive in the long run. If neighbouring countries adopt performance-orientated policies and expansive policies, than the pressure to catch up with these financially better-equipped countries should drive policy adoption rather than delaying it.

In terms of AIC and BIC, both model A4a and A4b have lower values and are statistically different from the original model A1. Model A4c with an AIC of 1493.9 is not statistically different from model A1. But evidence for bounded learning is not robust across all explanatory models. Bounded learning seems to be policy-specific. The variables dealing with funding patterns benefit most from the conditional operationalization of the learning variables. They perform much better than the ones on student-related indicators like the completion ratio and the growth in student numbers. From that point of view, conditional hypothesis A1 on regional shortcuts and conditional hypothesis A2 on cultural shortcuts holds the test in relation to fiscal performance indicators only. Conditional hypothesis A3 can only be confirmed by the estimates on student-related indicators like completion ratios and growth in student numbers. From this point of view, bounded rationality cannot be the natural choice for examining learning processes, but rather depends on the specific interest of the researcher and its theoretical priors.

Table 4-5: Cognitive heuristics (part 1)

Explanatory variables	*Model A4a Regional shortcuts*		*Model A4b Historical shortcuts*		*Model A4c Ideological shortcuts*	
	Main	TVC	Main	TVC	Main	TVC
Neighbours' comparative performance on						
Public expenditure	0.848*** (0.0334)	1.012*** (0.00334)	-	-	-	-
Completion ratios	0.998 (0.0181)	-	-	-	-	-
Policy experience of neighbours on						
Budget cuts	0.874** (0.0505)	1.015*** (0.00429)	-	-	-	-
Student growth	0.986 (0.0281)	-	-	-	-	-
Historical peers' comparative performance on						
Public expenditure	-	-	0.858*** (0.0337)	1.017*** (0.00347)	-	-
Completion ratios	-	-	1.052** (0.0250)	-	-	-
Historically-weighted policy experience on						
Budget cuts	-	-	1.082*** (0.0295)	-	-	-
Student growth	-	-	1.019 (0.0459)	-	-	-
Observations	3654		3654		3654	
Number of Failures	284		284		284	
Time at Risk	3654		3654		3654	
Wald $\chi 2$ (k)	77.85 (16)***		93.47 (16)***		69.79 (15)***	
Log pseudolikelihood	-724.3		-725.5		-731.9	
BIC	1579.9		1582.2		1586.9	
AIC	1480.7		1482.9		1493.9	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The results for the control variables are as follows (cf. Table 4-6). Some of the estimates for the control variables are fairly stable across all three models, but most control variables lack robustness across the various models on bounded learning. The covariates on veto players and the risk sequence are among the relatively robust

control variables. The patterns on the control for pilot projects is also largely stable across the models, but its positive effect on the risk for policy adoption does not pass the statistical significance test in any of the three models.

The effect of the veto player index with a negative effect of -4.0 in model A4b to -6.2% per unit in model A4a at the beginning of the risk process is similar across all three models. The significance level differs across the different test models though. It is highly significant at the 1%-level for the model A4a on regional shortcuts, but is less significant in the regressions on cultural and ideological shortcuts. Similar to the cox regressions run in the previous sections, effects are diminishing over time (by around 0.5% per year) with the effect that the impact of veto players becomes positive over time.

The estimates on the impact of the risk sequence are also fairly robust across all three models. Though the significance level is only at the 5%-level in model A4b on the cultural shortcuts and A4c on ideological shortcuts. The effect is negative and varies between -24% in model A4a and -20% in model A4b per additional event.

The other control variables perform considerably worse than in the explanatory models on rational and problem-driven learning. The impact of shared responsibilities between national and sub-national decision-making levels is also time-dependent. Originally its effect is strongly positive between 3.5% in model A4a, 5.5% in model A4b to 7.5% in model A4c, but it decreases yearly by 21.6% in model A4a, 17.8% in model A4b and 14.1% in model A4c. This factor remains statistically significant across all three models, but its strongly varying effect does not indicate robustness. The impact is very sensitive to the different model configurations. Furthermore, it does not match the theoretical expectation. Rather than delaying policy adoption, shared responsibilities strongly increase the probability for chance.

The strength of the positive effect stemming from the enrolment ratios at tertiary education is also contingent on the model configuration. In the model A4c on ideological short cuts effects is statistically insignificant. The time-varying effect is also not robust.

The estimates for the level of public expenditure are also significant in model A4b and A4c only. In case of regional shortcuts no significant effect exists. Also the strength of the effect per one per cent change of GDP spent on tertiary education varies. The effect remains positive across all models, but the probability for policy adoption varies between 2.3% and 29.4% per additional percentage point (though with a negative time-varying effect in model A4c).

Finally, the effect of private universities is highly significant in model A4a and A4c, but not in model A4b. In the latter model, one also has to account for the time-dependency of the coefficient.

Table 4-6: Cognitive heuristics (part 2)

Control variables	*Model A4a Regional shortcuts*		*Model A4b Historical shortcuts*		*Model A4c Ideological shortcuts*	
	Main	TVC	Main	TVC	Main	TVC
Ideology-weighted comparative country performance on						
Public expenditure	-	-	-	-	1.070*** (0.0254)	0.992** (0.00303)
Completion ratios	-	-	-	-	1.041** (0.0189)	-
Ideology-weighted policy experience on						
Budget cuts	-	-	-	-	0.926 (0.118)	-
Student growth	-	-	-	-	1.555** (0.319)	-
Veto players	0.938*** (0.0229)	1.006*** (0.00171)	0.960* (0.0239)	1.003* (0.00182)	0.948** (0.0251)	1.005** (0.00189)
Shared Responsibility	5.527*** (2.764)	0.822*** (0.0390)	7.560*** (3.528)	0.784*** (0.0369)	3.531** (1.804)	0.859*** (0.0423)
Tertiary education enrolment	1.146*** (0.0386)	0.990*** (0.00250)	1.082** (0.0373)	0.994** (0.00252)	1.023 (0.0187)	
Public higher education expenditure	1.023 (0.0203)	-	1.058*** (0.0230)	-	1.294*** (0.0806)	0.978*** (0.00572)
Recognition of private universities	1.942*** (0.263)	-	0.912 (0.304)	1.072** (0.0294)	1.675*** (0.238)	-
Pilot projects	1.693 (0.967)	-	2.081 (1.084)	-	1.930 (1.056)	-
Risk sequence	0.760*** (0.0765)	-	0.800** (0.0812)	-	0.788** (0.0753)	-
Observations	3654		3654		3654	
Number of Failures	284		284		284	
Time at Risk	3654		3654		3654	
Wald $\chi 2$ (k)	77.85 (16)***		93.47 (16)***		69.79 (15)***	
Log pseudolikelihood	-724.3		-725.5		-731.9	
BIC	1579.9		1582.2		1586.9	
AIC	1480.7		1482.9		1493.9	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.5.5 Summary

Several conclusions can be drawn from testing the various explanatory models on learning (cf. Table 4-7 and Table 4-8). First, the hypothesis testing shows mixed results for the various learning hypothesis. Among the hypotheses supported by the empirical evidence and the estimated cox regressions, learning on completion ratios and student growth stand out. The results are highly consistent with the theoretical expectations on diffusion hypothesis A1 and A2. Diffusion hypothesis A3a and A3b on longer-term effects have been disconfirmed. Interaction effects between domestic problem pressure and the various learning variables are fully supported by evidence on student-related learning variables (that means on completion ratios and student growth). These estimates could not be confirmed in the case of comparative performances on public expenditure and the *learning from success* hypothesis. But the results should be taken with caution as these variables show a mixed record in general. From this point of view, the conditional hypothesis A4 on the conditioning effect of domestic problem pressure cannot be disconfirmed.

Conditional hypothesis A1 on *learning from neighbours* is confirmed for the learning variables related to fiscal trends and funding performances, whereas conditional hypothesis A3 on ideological similarities is confirmed for learning on completion ratios and student growth. Conditional hypothesis A2 on *similar university cultures* is only supported in terms of *learning from success*. Again, though conditional effects are essential for understanding learning processes, empirical evidence also highlights the multi-dimensional nature of contingency.

Second, evidence shows that the learning effects are not always proportional across time. This raises the question of how to deal with the time-varying coefficients? A first answer is that it depends on the effects and plausibility of the TVC. For example, the diminishing effect of the regional performance on public expenditure in model A4a makes sense from a theoretical point of view. At the beginning of the diffusion process countries seem to be more likely to imitate policies aimed at cost reductions as a kind of short-term measure to deal with the regional differences in funding levels. But in the long run the effect diminishes and finally has a positive effect due to learning from the (possibly) dysfunctional effects in these countries. Another interpretation could be that the effects vary over time due to a changing *Zeitgeist*. But these speculations question the stability of governmental preferences as well as the original disposition of governments. Are cost-saving policies really universal goals or do we need explanations more closely related to policy preferences (cf. Mastenbroek and Keulen 2006)?

Third, learning is policy-specific in the sense that funding-related information does not work in the purely rational version of learning. One reason could be, that it depends on the interest (or ideology) of governments. Left-wing governments might have an interest in increasing funding on education, whereas right wing governments pursue cost-saving policies. Alternatively, cultural dispositions might influence actors' preferences. In this regard –fourth– learning in relation to funding only works in its regional variant.

Fifth, controlling for characteristics of the higher education systems and the political system is indispensable. Even though the findings on learning reveal that the effects of most control variables are not robust. Furthermore, some variables like shared responsibilities on higher education policies show unexpected effects that render additional inquiries necessary. Veto players and the risk sequence are the only control variables convincingly supported across all explanatory models based on learning assumptions.

Table 4-7: Overview of findings on assumptions dealing with learning (Part 1)

Model	Explanatory variables	Relationship				Hypothesis supported	Robust (Model A5)
		Expected	Observed	Significant	NPH		
A1	*Comparative country performance on*						
	• Public expenditure	Negative	Positive	Yes	Negative	No	N/A
	• Completion ratios	Positive	Positive	Yes	N/A	Yes	Yes
	Policy experience on						
	• Budget cuts	Negative	Positive	No	N/A	No	N/A
	• Student growth	Positive	Positive	Yes	N/A	Yes	Yes
A2	*Longer-term country performance on*						
	• Public expenditure	Negative	Positive	Yes	Negative	No	N/A
	• Completion ratios	Positive	Positive	No	N/A	No	N/A
	Longer-term policy experience on						
	• Budget cuts	Negative	Negative	No	N/A	No	N/A
	• Student growth	Positive	Positive	No	N/A	No	N/A
A3a, A3c	*Country-specific problem pressure (fiscal constraints)*						
	• Comparative country performance	Negative	Negative	No	N/A	No	N/A
	• Policy experience	Negative	Negative	Yes	N/A	Yes	N/A
A3b, A3d	*Country-specific problem pressure (unemployment)*						
	• Comparative country performance	Positive	Positive	Yes	N/A	Yes	N/A
	• Policy experience	Positive	Positive	Yes	N/A	Yes	N/A

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use of non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check in the comprehensive model. This category does not apply to all explanatory variables, as they might not have passed the statistical tests conducted in the previous subsections. "N/A" generally indicates if a category does not apply.

Table 4-8: Overview of findings on assumptions dealing with learning (Part 2)

Model	Explanatory variables	Relationship				Hypothesis supported	Robust (Model A5)
		Expected	Observed	Significant	NPH		
A4a	*Neighbours' comparative performance on*						
	• Public expenditure	Negative	Negative	Yes	Positive	Yes	N/A
	• Completion ratios	Positive	Negative	No	N/A	No	N/A
	Policy experience of neighbours on						
	• Budget cuts	Negative	Negative	Yes	Positive	Yes	Yes
	• Student growth	Positive	Negative	No	N/A	No	N/A
A4b	*Historical peers' comparative performance on*						
	• Public expenditure	Negative	Negative	Yes	Positive	Yes	Yes
	• Completion ratios	Positive	Positive	Yes	N/A	Yes	N/A
	Historically-weighted policy experience on						
	• Budget cuts	Negative	Positive	Yes	N/A	No	N/A
	• Student growth	Positive	Positive	No	N/A	No	N/A
A4c	*Ideology-weighted comparative country performance on*						
	• Public expenditure	Negative	Positive	Yes	Negative	No	N/A
	• Completion ratios	Positive	Positive	Yes	N/A	Yes	N/A
	Ideology-weighted policy experience on						
	• Budget cuts	Negative	Negative	No	N/A	No	N/A
	• Student growth	Positive	Positive	Yes	N/A	Yes	N/A

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use of non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check in the comprehensive model. This category does not apply to all explanatory variables, as they might not have passed the statistical tests conducted in the previous subsections. "N/A" generally indicates if a category does not apply.

The comprehensive explanatory model of learning (A5) is based on the previously tested models and its significant (on a minimum of 5%) and correctly predicted covariates. A variable is dropped in case a covariate is not significant and/or matching the theoretically expected relationship. The results for the synthesized

model on learning largely confirm the pervious findings (cf. Table 4-9). Furthermore, the AIC of 1475.0 shows that model A5 is significantly different from the entire previous model.

The comparative performance on completion ratios has a positive impact on policy adoption. The hazard ratio is 1.029. That means the effect is slightly lower than the hazard ratio of 1.049 in the basic model A1. And the statistical significance is only on the 5%-level as opposed to the 1%-level previously estimated. Also the time-varying effect is missing. From this point of view, the lower hazard ratio as an average value for the whole time-period under observation makes perfect sense. The variable on policy experience with student growth remains highly significant in model A5 and shows a similar positive effect size. The estimated values for regionally biased policy experience on budget cuts are also very similar to the previously run model A4a. The same applies to the culturally weighted variable on learning from success regarding expenditure patterns estimated in model A4b.

The estimated hazard ratios for control variables and adopting state characteristics in model A5 show similar results compared to the initial learning model A1. The effect of pilot projects – though as expected – remains statistically insignificant. The impact of veto players on policy adoption is again negative and significant on the 5% level. An increase of the left-right veto player range by one point decreases the probability for new legislation by 6%. Just like in model A5, the negative effect diminishes by 0.5 percentage points per year. In case of shared responsibilities between national and sub-national decision-making levels, the effects are highly significant at the 1% level with the baseline hazard multiplying almost 4.5 times. However, this effect drops relatively quickly over time by 16.9% a year. Though that means the control variable is still increasing the event risk at the end of the observation period. The level of tertiary enrolment in the country at risk also has a positive and highly significant effect (at the 1%-level) on policy adoption. Every additional percentage of tertiary enrolment increases the risk for adopting reforms by 11.6%. The positive effect of public expenditure is again significant – albeit only at the 5-% level. Furthermore, the effect size is much smaller. For every percentage point of GDP spent on tertiary education, the probability for policy adoption increases by 4.1% (compared to 25.9% in model A5). But this could relate to the missing TVC. The chances for policy adoption again increase in case the public authorities recognize private universities. The effect size is similar and this effect is still highly significant. Finally, the impact of the risk sequence also remains statistically significant at the 5%-level. The probability for policy adoption decreases by 20.1% with every previous event.

Table 4-9: Learning

Explanatory variables	*Model A5 Learning*	
	Main	TVC
Comparative performance on		
Completion ratios	1.029** (0.0144)	-
Policy experience on		
Student growth	1.826*** (0.324)	-
Policy experience of neighbours on		
Budget cuts	0.880** (0.0520)	1.014*** (0.00431)
Historical peers' comparative performance on		
Public expenditure	0.863*** (0.0333)	1.015*** (0.00319)
Veto players	0.940** (0.0251)	1.005*** (0.00189)
Shared Responsibility	4.534*** (2.279)	0.831*** (0.0402)
Tertiary education enrolment	1.116*** (0.0354)	0.992*** (0.00230)
Public higher education expenditure	1.041* (0.0226)	-
Recognition of private universities	1.873*** (0.293)	-
Pilot projects	1.793 (0.999)	-
Risk sequence	0.799** (0.0773)	-
Observations	3654	
Number of Failures	284	
Time at Risk	3654	
Wald $\chi 2$ (k)	107.6 (16)***	
Log pseudolikelihood	-721.5	
BIC	1574.3	
AIC	1475.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.6 Tales of Socialization

Following the socialization model governments are supposed to follow norms and rules shared in a group or community. Overall six explanatory models based on assumptions dealing with socialization are tested in the following section.[127] The first subsection deals with socialization effects stemming from networks. This mainly relates to the membership in international organizations, but also deals with the impact of future memberships on policy adoption. The first model is based on the hypothesis that countries are adapting to the policies of countries that share common memberships in intergovernmental organizations (diffusion hypothesis B1a) and/or supranational organizations like the EU (diffusion hypothesis B1b). This also includes a test of effects related to an EU membership perspective (diffusion hypothesis B2). The second cox model deals with the question if network socialization depends on the ideological similarity between the linked actors (conditional hypothesis B1).

The second subsection discusses the effects of socialization related to peer influence. Explanatory models are based on the assumptions that it is socially rewarding for governments to follow the decisions of their peer countries. The question is what defines a peer? To test a broad scope of possibilities, the impacts of policies from several reference groups are tested: regional peers (diffusion hypothesis B3a), ideological peers (diffusion hypothesis B3b) and cultural peers (diffusion hypothesis B3c). In addition, the theoretical assumption on countries adapting to international norms and commonly accepted policies rather than specific peers is tested (diffusion hypothesis B4). In other words, this hypothesis expects governments to follow a critical mass of countries instead of identifying country-specific peers. Governments might not distinguish different peers, but align their policy choices with the sheer number of countries adopting a specific policy.

Furthermore, several cox models deal with the conditional nature of peer socialization. The effects of two conditional variables on peer socialization are tested on behalf of interaction effects: domestic problem pressure (conditional hypothesis B2a) and political uncertainty (conditional hypothesis B2b).

The final subsection gives an overview on the statistical findings regarding the previously tested models on network and peer socialization. It summarizes which of the covariates are robust and significant and if they show the expected relationships. Which of the hypothesis on diffusion and/or conditional effects does the empirical

[127] See Annex IV for full operational definitions.

evidence support? This discussion also includes a synthesized cox model based on the previous results and covariates successfully passing the previous statistical tests. This model also serves as a base for comparing the different theoretical approaches in the final section of this chapter.

Some authors argue that diffusion mechanisms like socialization need time to take effect. Although I agree that the internalization of norms and values is a process usually taking longer compared to reactions to –for example– competition. Though I cannot find a good reason why a time frame of 7-years should be more plausible than a 3-year time frame (cf. Shipan and Volden 2008). Sometimes it might take 10 years or even longer to develop a common group-adherence. But the (initial) effects of this adaption process should be observable much earlier. Actors are usually conforming to the expectations within a group, even if they have not internalized a specific norm yet. From this point of view, one has to relax the assumption on the difference between emulation and socialization. Instead of thinking about distinct causal mechanisms with emulation being driven by conformity pressures and socialization requiring the adoption of practices, interests and identities. Emulation understood as simple response to the environment shall rather be treated as a first step in a sequence leading to norm internationalization (cf. Checkel 2005).

Note, as hazard ratios are unit-dependent, I standardized most of the diffusion variables on socialization. Rather than counting the absolute number of policy adopters, I am using the relative shares of reference countries.

4.6.1 Network Socialization

Several proxies are used to test network socialization. Networks are channels of diffusion that stabilize and sustain interaction and information flows between actors. Eventually common norms and ideas develop and spread within these networks. The basic assumption is that countries sharing the same networks influence each other in their policy choices. These countries will increasingly adopt similar policies. Diffusion hypothesis B1a deals with the role of *intergovernmental organizations* as a pathway for socialization. In the case, those countries are connected within the same IGO networks, mutual adjustments become more likely. In a similar vein, *EU member states* are expected to converge according to diffusion hypothesis B1b. If an increasing number of EU member states is adopting a specific performance-orientated policy like demand-side vouchers then networks can function as platforms for policy transfer.

Basically, the number of policy adopters among the various membership groups is used for estimating the effects of network socialization on policy adoption. These values serve as proxies indicating altering norms and the (change of) group behaviour. That means the policies adopted by other countries have to be weighted by an indicator signalling the common membership in a network. Depending on the type of network and the corresponding diffusion hypothesis, two diffusion variables are constructed.

First, to examine the impact of memberships in international organizations, an indicator is used on the common membership of country dyads in individual IGOs. I used data from the correlates of war-project (COW-2/ cf. Pevehouse et al. 2004). Authors like Hughes et al. (2009) provide similar data with their INGO Network Country Score. Unfortunately, data is only available for the years 1978, 1988 and 1998, whereas COW-2 provides time-series data.

The common membership score is used to weigh the policies of other countries in terms of network interaction. The dyadic relationship between country at risk and sender countries – that means those other countries having adopted a specific performance-orientated policy – serves as a proxy for the relative influence of other countries in the total number of networks. A higher value indicates a higher degree of interaction in the same IGOs and therefore a higher probability for social influences is expected. I row-standardize the variable to the maximum number of IGO memberships of a country at risk, as I am interested in the relative importance of the bilateral exchange. Hence, the value for the policies of other IGO members indicates the average share of other countries with a specific performance-orientated policy according to their bilateral interlinkages with the country at risk. The transformation of the variable to represent percentage shares also increases the comparability with other covariates. A value of 100 would mean that all other countries adopted the performance-orientated policy and that these countries are also members in all of the IGOs the country at risk participates in. I expected a higher probability for policy adoption with increasing values.

Second, a dummy variable on the common EU membership is used to identify socialization effects within the EU networks (cf. Jahn 2006). Similar to the operationalization of IGO policies, values for the policies of other EU member states are row-standardized.[128] That means the value indicates the average share of other

[128] Note, there is a difference compared to the operationalization of the policies of EU member states. The percentage share for IGO countries refers to the complete number of countries considered as all

EU member states that have adopted a performance-orientated policy. A value of 70 describes that 70% of EU member states adopted the policy (except for the country at risk). Once again, I expect a higher probability for policy adoption with increasing values.

Unfortunately, no data on issue-specific networks related to higher education are at hand. Wächter provides a handbook listing European-wide organizations dealing with higher education (2000). Though this handbook is a valuable source of information for any practitioner it is suffering from several drawbacks that make it difficult to use the handbook for the study's purpose. For example, the data is relatively sketchy. The handbook is not very specific on organizational members and its resources. Sometimes policy objectives and area of action remain unclear. And usually it does not provide information on country-and time-specific data on memberships. Also it largely deals with institutional and student-related interest group organizations.

Another option is to use a dummy variable indicating the common membership in the European student exchange program ERASMUS as a proxy for specific higher education networks. The ERASMUS program is an EU action program on academic mobility (mainly in terms of student exchange). Participating universities are required to implement organizational platforms at their departments, whereas student flows are not necessarily linked to formal institutional structures at universities. From the point of network socialization a proxy measuring formal and institutional exchange structures would be more plausible than less formalized interactions.

I experimented with this measure, but there was a high correlation with the variables on the policies of IGO partners and EU member states. Almost all EU member states in this sample also belong to the ERASMUS network. That means a high correlation exists between both factors. Furthermore, the variable does not yield the expected results. Neither the expected relationship is matched nor does it pass the statistical significance tests. Therefore, I dropped the variable from this research design.

Furthermore, diffusion hypothesis B2 formulates theoretical assumptions about another channel of network socialization. Students on Europeanization often refer to the socialization effects caused by an EU membership perspective (cf. Kelley 2004). In case a country is one of the *EU accession candidates*, emulating the policy choices of the countries that already belong to the group of EU member states can

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sample countries share IGO memberships, In the case of EU member states, the base for calculating the percentage share is only the number of EU member states among the population.

be socially rewarding if there is a normative affinity and identification with the European Union (cf. Sedelmeier 2011: 15ff).

To check for this assumption too, the policies of EU member states are taken into account in case a candidate country is being at risk. The operationalization is similar to the one on the policies of EU member states described in one of the previous paragraphs, though the measure applies to a different group of countries at risk. That means the policies of EU member states are expected to have an impact on EU accession candidates only. According to the theoretical expectation formulated in diffusion hypothesis B2, higher values should increase the likelihood for policy adoption.

In terms of network socialization and conditional effects, I expect that similar values and identities make network socialization more likely. Governments with similar ideological preferences should develop similar ideas and values more easily. This assumption is formulated in conditional hypothesis B1 on the *ideological similarity* between network members. To account for this conditional effect of common values I use the government ideology index by Kim and Fording (2002) again and weigh the share of policy adopters by the ideological similarity.

I decided to use the similarity in government preferences as a proxy for the heterogeneity within the networks. Of course, the individuals representing the various countries within the networks are not always sharing the same views as their governments. But then it is the government of a country that usually determines the course of policies. From this point of view, the effects of the policies adopted by countries with a common network membership seem more likely in case of similar (partisan) ideologies of the interlinked countries. A positive and significant relationship with policy adoption indicates if the assumed relationship holds.

Table 4-10: Network socialization (part 1)

Explanatory variables	*Model B1* *Network socialization*		*Model B2* *Similar beliefs*	
	Main	TVC	Main	TVC
Common networks				
Policies of international Partners	1.135** (0.0686)	0.992* (0.00458)	-	-
Policies of EU partners	0.991*** (0.00346)	-	-	-
EU candidate effect				
Policies of EU members	1.004 (0.00447)	-	-	-
Ideology-weighted policies of				
International partners	-	-	1.061*** (0.0224)	-
EU partners	-	-	0.987*** (0.00422)	-
EU members	-	-	1.039*** (0.0127)	0.997*** (0.00107)
Observations	3878		3878	
Number of Failures	286		286	
Time at Risk	3878		3878	
Wald $\chi 2$ (k)	66.17 (14)***		74.93 (14)***	
Log pseudolikelihood	-738.1		-735.0	
BIC	1592.0		1585.7	
AIC	1504.3		1498.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-10 presents the results on network socialization. Model B2 deals with the conditional version of network socialization. That means it tests the spatially lagged independent variables. Model B1 estimates the hazard ratios for the original diffusion variables.

According to model B1, policies of countries that are members in the same intergovernmental organization have a positive impact on policy adoption that is statistically significant at the 5%-level. If a performance-orientated policy is adopted by an additional percentage point of the other IGO members, the probability for policy adoption in the country at risk increases by 13.5%. This effect decreases slightly by 0.8% over time. That means the effect becomes negative at the very end of the

observation period in 1998. Hence, the diffusion hypothesis B1a on *intergovernmental organizations* cannot be rejected.

Turning to the effect of an EU membership on policy adoption. The estimated value does not match the theoretical expectations. Though the hazard ratio for the policies of other EU member states is highly significant at the 1%-level, it somewhat decreases the likelihood for policy change by 0.9%. This effect is only marginal, but according to the empirical test the diffusion hypothesis B1b on *EU member states* must be rejected.

But why is there a negative EU effect? For example, Sissenich challenges the assumption that EU integration strengthens the horizontal channels between national actors (2008). She shows that it is not the nation states that are acting as gatekeepers. It is rather the EU that controls the flow of communication. Therefore, the assumption that the EU boosts transnational networking seems questionable. Given the actual limits the EU sets on cross-border communication. Although non-state actors could access the national state and EU actors, it is usually cross-border action among national actors that is kept down and therefore remains low. From this point of view, EU membership might have a negative impact on the probability of horizontal effects. In other words, the policies of other EU members might decrease the probability for policy adoption. But this is speculation that needs further analysis into the effects of the EU polity on horizontal diffusion processes.

The conditionality effect in terms of an EU membership perspective points into the right direction. The hazard ratio is above 1.0 indicating a positive relationship between the diffusion variable and policy adoption. But this effect is not statistically significant. Hence I also reject diffusion hypothesis B2 on the impact of a country's status as an *EU candidate*.

Model B2 provides slightly different estimates. Taking the ideological beliefs of governments into consideration leads to better results. The effect of the policies of EU member states on the risk for policy adoption in countries with an accession perspective is statistically significant at the 1%-level. The variable is statistically insignificant in the unweighted version. The other variables measuring network socialization yield similar results when constructing ideologically lagged diffusion variables. The hazard ratio of 1.061 on the policies of other IGO members with similar ideologies is only half the size of the ratio of its unconditional version. The weaker effect is plausible as model B2 is not based on a TVC. That means the

presented effect is the average hazard ratio across the observation period, whereas the variable in model B1 indicates the initial effect only.

The empirical evidence largely supports the assumption that network socialization is conditional on ideological similarities between actors. Moreover, the AIC of 1498.0 indicates that the fit of model B2 dealing with the similar prior beliefs is superior to the original model B1 on network socialization. Hence, the conditional hypothesis B1on *ideological similarity* and network diffusion cannot be rejected.

Table 4-11: Network socialization (part 2)

Explanatory variables	*Model B1* *Network socialization*		*Model B2* *Similar beliefs*	
	Main	TVC	Main	TVC
Veto players	0.955* (0.0260)	1.004** (0.00190)	0.955* (0.0245)	1.004** (0.00185)
Shared Responsibility	4.933*** (2.683)	0.835*** (0.0422)	4.946*** (2.656)	0.831*** (0.0419)
Tertiary education enrolment	1.011 (0.0102)	-	1.015 (0.0103)	-
Public higher education expenditure	1.204*** (0.0514)	0.986*** (0.00297)	1.220*** (0.0539)	0.987*** (0.00300)
Recognition of private universities	2.134*** (0.306)	-	2.454*** (0.358)	-
Pilot projects	1.992 (1.116)	-	1.937 (1.077)	-
Risk sequence	0.808** (0.0776)	-	0.826** (0.0762)	-
Observations	3878		3878	
Number of Failures	286		286	
Time at Risk	3878		3878	
Wald $\chi 2$ (k)	66.17 (14)***		74.93 (14)***	
Log pseudolikelihood	-738.1		-735.0	
BIC	1592.0		1585.7	
AIC	1504.3		1498.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Among the controls that pass the statistical significance test are the variables on the public higher education expenditure, and the number of previous events as well as veto players in the country at risk (cf. Table 4-11).

The variable on public higher education expenditure is highly significant at the 1%-level and matched the theoretical expectations. The probability for policy adoption increases by 20.4% in model B1 and 22% in model B2 per one hundreds percentage point of GDP used for the public funding on higher education. This initial effect is decreasing over time and becomes negative after roughly fifteen years. The time-dependent effect is -1.4% in model B1 and -1.3% in model B2. The TVC might stem from relaxed fiscal constraints or form a change in the preferences of responsible actors. But similarly to the EU effect, additional tests are needed to answer this question.

The risk sequence is significant at the 5%-level and is pointing into the predicted direction. The negative effect on policy adoption is similar in both models. The additional adoption of legislation on one of the policy items decreases the probability for subsequent legislation on this item by 19.2% in model B1 and 17.4% according to model B2.

The initial negative effect of veto players is only significant at the 10%-level. The hazard ratio of 0.955 is the same in both models B1and B2. Over time, the coefficient becomes positive. The initial negative effect diminishes yearly by 0.4% and becomes positive after approximately 11 years.

In case of shared responsibilities between national and sub-national decision-making levels, policy adoption becomes almost 5 times more likely. The effect of shared responsibility breaks down by 16.5% a year according to model B1. The corresponding value of 16.9% is similar in model B2. Due to the high initial effect, shared responsibilities still has a positive impact by the end of the observation period in 1998. This control variable is highly significant at the 1%-level, but the sign of the coefficient – similar to the cox regression estimated in the previous section – does not fit the expected direction.

The other control variables on tertiary education enrolment recognized private universities and pilot projects are not statistically significant and seem to play no role in relation to diffusion processes based on network socialization.

4.6.2 Peer Socialization

Governments might track reputational cascades. I expect governments to adopt policies previously adopted by its peers. Hence, the first three diffusion hypotheses on peer socialization basically refer to emulating the behaviour of reference countries

(or groups). Three types of peer countries can be distinguished: ideological, cultural, and regional peers.

I use some of the indicators used for constructing the spatially lagged independent variables for learning to test the diffusion hypothesis B3a on *regional peers* and the diffusion hypothesis B3b on *ideological peers*. This time though it is the number of adopters that has to be weighted instead of a performance indicator like in the learning example. Neighbouring countries sharing a common border with the country at risk qualify as regional peers. To account for the conditional effect of common values I use the government ideology index by Kim and Fording (2002) again.

One way to measure the policies of peer groups is to simply count the number of policy adopters from that particular type of reference countries. In that case the coefficient – or the hazard ratio -- tells us about the impact of one additional adopter on the probability for subsequent policy adoptions. But that does not tell anything about the relative spread of a policy.

Therefore I row standardize the variables for peer behaviour to avoid biases. For example, the absolute number of maximum regional peers would be biased as the periphery has usually less neighbours. But the theoretical argument is about the kind of peer and not necessarily about their absolute numbers. Therefore, I will average the number of adopters on behalf of the maximum number of neighbours. Diffusion variables can also be transformed to tell us about the impact of an increase in percentage shares of peer countries having already adopted the policy (cf. Cleves et al. 2010: 134). For example, to account for the different number of neighbours, the diffusion variables measuring the policies of neighbours are row-standardized. That means the value indicates the average share of neighbours that already adopted a specific performance-orientated policy.

A value of 75 for external quality assurance systems indicates that 75% of all countries sharing a common border with the country at risk belonged to the country group previously adopting an external quality assurance system. In other words, the independent variables tell us what percentage of a country's peers has adopted a specific policy. That means peer policies are also adapted to relative spread of policies (similar to the variables on network socialization).

The similarities in terms of government ideology serve as a proxy for partisan peers (cf. Volden 2006). To account for the conditional effect of common values I use the government ideology index by Kim and Fording (2002) again and weigh the share of policy adopters by the ideological similarity. The similarity score is based on the

absolute difference between the index values for the country at risk and each sender country. Again, the similarity score weights the number of policy adopters. That means a value of 70 indicates that 70% of the ideologically similar countries have adopted a specific policy innovation. An increase by 10% can mean that the ideological similarities between the country at risk and the other countries increased by an average of 10% or that – in case the ideological orientations remain stable – additional countries have adopted the new policy.

Choosing an indicator for identifying cultural peers basically faces the same problems already discussed in conjugation with the learning models and the need to measure cultural similarities. Contrary to the learning models, cultural similarity is measured by a dummy indicating that populations in the countries at risk and the previous policy adopters share the same values. The similar university culture as proxy for indicating cultural peers was dropped as it is highly correlated with the other variables on peer socialization. Also social values remain fairly stable across time. Therefore, the map of cultural zones is used to identify cultural peers (cf. Inglehart and Welzel 2005). The map is based on data from the World Social Value Survey. The actual variable measuring the percentage share of cultural peers with a specific performance-orientated policy is constructed analogously to the variable on regional peers. Low values on peer policies indicate that only few of the peer countries have adopted a specific performance-orientated policy. Hence, higher values are expected to go along with a higher probability for policy adoption.

Furthermore, according to diffusion hypothesis B4 on *international norms* governments tend to follow widely accepted norms and policies. That means the construction of the diffusion variables also requires an indicator on the development of widely accepted norms and common policies. A dummy variable indicating that a minimum of 30% of the sample has already adopted the policy under consideration measures the impact of peer pressure through common norms and widespread policies. Usually authors assume that a critical mass above a threshold of 30% of policy adopters is necessary for a substantial boost on policy spread (cf. Finnemore and Sikkink 1998; Sharman 2008).

Peer socialization is supposed to be more likely in times of uncertainty and crisis. Conditional hypothesis B2a deals with the impact of domestic problem pressure on socialization effects, whereas conditional hypothesis B2b assumes that political uncertainty accelerates socialization effects.

In order to test the conditional hypothesis on problem-driven peer socialization and the impact of domestic problem pressure, interaction effects with the variable on unemployment are estimated. The approach chosen here is similar to measuring domestic problem pressure and political uncertainty in the section on learning. I use unemployment as an indicator since economic downturn is often used to measure the general need for policy adjustments (cf. Schmidt 2002), but also in relation to higher education (cf. Plümper and Schneider 2007).

I believe that it is a highly visible indicator for domestic problem pressure. In a similar vein, the average electoral volatility is used as a proxy to measure the effects of political uncertainty (cf. Carmignani 2003). Again, the conditional effects are tested by integrating an interaction term between the variables on peer socialization and the electoral volatility in the country at risk (cf. ibid.). Increases in both variables– domestic problem pressure and political uncertainty – should make socialization effects more likely. That means a hazard ratio above 1.0 is expected.

The empirical findings on the effects of peer socialization question the majority of theoretical assumptions on peer influence (cf. Table 4-12). The effect of common policies matches the theoretical prior formulated in diffusion hypothesis B4, but does not pass the significance test. The same applies to the policies of neighbouring countries. Diffusion hypothesis B3a predicts that countries align their policy choices with *regional peers*. The hazard is slightly positive with a value of 1.001, but the effect is not significant even at the 10%-level.

The policies of culturally similar countries have statistically significant effect at the 5%-level. But diffusion hypothesis B3c on *cultural peer* has to be rejected too, as the empirical findings do not match the theoretical expectation on the relationship between the diffusion variable and policy adoption. Rather than increasing the probability for subsequent policy adoptions, the hazard ratio indicates a negative relationship between the policies adopted by countries from the same cultural zone and the likelihood for policy adoption. This effect reverses eventually after about 13 years of risk time, but the time-varying effect of -0.1 per year is relatively low. This TVC might indicate that (some) socialization effects only evolve over longer periods of time.

Diffusion hypothesis B3b on the role of *ideological peers* is the only hypothesis on peer socialization that is supported by the results presented in model B3. The probability for policy adoption is 3% higher in case the spread of policies among

countries with ideologically similar governments increases by one percentage point. This effect is only statistically significant at the 10% level though.

The poor performance of variables on peer socialization is also reflected in the high values on the AIC and the BIC. With an AIC of 1514.0 model B3 performs significantly worse than – for example – the regression models on network socialization.

Table 4-12: Peer socialization

Explanatory variables	*Model B3* *Peer socialization*	
	Main	TVC
Policies of		
Regional peers	1.001 (0.00177)	-
Ideological peers	1.030* (0.0176)	-
Cultural peers	0.987** (0.00547)	1.001** (0.000431)
International norms		
Policies of other countries (30%)	1.038 (0.489)	-
Veto players	0.959 (0.0261)	1.004** (0.00194)
Shared Responsibility	4.510*** (2.414)	0.835*** (0.0426)
Tertiary education enrolment	1.009 (0.0101)	-
Public higher education expenditure	1.169*** (0.0432)	0.989*** (0.00279)
Recognition of private universities	1.782*** (0.225)	-
Pilot projects	2.050 (1.140)	-
Risk sequence	0.834* (0.0823)	-
Observations	3878	
Number of Failures	286	
Time at Risk	3878	
Wald $\chi 2$ (k)	65.13 (15)***	
Log pseudolikelihood	-742.0	
BIC	1608.0	
AIC	1514.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The estimates for the control variables in model B3 show mixed results (cf. Table 4-12). Among the controls that do not pass the statistical significance test are the veto player index, the level of tertiary enrolment and the existence of pilot projects in the country at risk. The variable measuring shared responsibilities in higher

education policy is highly significant at the 1%-level, but contradicts with the theoretical expectations. The hazard ratio indicates a positive impact on policy adoption though the time-varying coefficient point into the right direction. The effect on shared responsibility decreases by 16.5% per additional year.

The effect of the level of public funding on higher education in the country at risk is also highly significant. The hazard ratio correctly points into the expected direction, though the initial effect fades over time. Initially an additional one hundreds percentage point of public funding on tertiary education (measured as share of GDP) increases the probability for passing new legislation by 16.9%. This effect decreases by -1.1% per year and becomes negative after 15 years of risk time.

The effect of an additional private university sector in the country at risk is also highly significant at the 1%-level. The probability for policy adoption is 78.2% higher than in countries with a public university sector only.

Last but not least, the role of risk sequences in peer socialization is statistically significant at the 10%-level. An increase in the tally on previous events by one decreases the probability for subsequent legislation by 16.4%.

The integration of conditional effects into the statistical model sheds additional light the conditional nature of peer socialization (cf. Table 4-13). The models B4a through B4d deal with the relationship between domestic problem pressure and the domestic influence of peer behaviour. Domestic problem pressure is measured in terms of the yearly unemployment rate in the country at risk. According to the conditional hypothesis B2a, the effects of peer socialization are increasing with higher problem pressure. In other words, the estimated interaction term between the diffusion variables and the unemployment rate should be positive. I expect governments to adopt to peer influences more easily in case of higher problem pressure.

This assumption is disconfirmed by the cox results. The interaction terms on the contingent effect of reference group policies are usually statistically significant at the 5%-level for the problem-driven influence of regional (model B4a), respectively cultural peers (model B4c). The conditional effect is only significant at the 10%-level in case of partisan peers in model B4b. The yearly unemployment rate does not play a role in case of common policies. Contrary to the theoretical priors, the interaction effects are negative in all models dealing with *problem-driven peer socialization*.

The results fuel speculations about a different causal relationship between domestic problem pressure and peer socialization. The unexpected results in terms of the causal direction of the conditional effects supports the argument that domestic

factors have a stronger impact on policy adoption than explanations based on diffusion variables. This assumption is also supported by the main effect of the yearly unemployment on policy adoption. The estimated hazard ratios indicate that the effect of unemployment on policy adoption is highly significant at the 1%-level in case the variables on peer socialization are zero. An increase in the unemployment rate by one per cent leads to a higher probability for policy adoption. This effect is relatively stable across the models presented in Table 4-13. The hazard rate increases by 8% in model B4a, 8.5% in model B4b, 8.6% in model B4c and 6.8% in model B4d.

Certainly, this situation is a rare case in this study. The policy spread among potential peers is usually not zero at the start of the observation period. An exception is the spread of external quality assurance systems.

The AIC supports the use of interaction terms when dealing with peer socialization. All four models have a value on the AIC that is more than 2.5 points lower than the AIC of model B3. This indicates a significant difference in the model fit of the various models. Hence, the conditional models are preferable to the unconditional version. But these results should not obscure the fact that the theoretical predications failed. That means for the time being conditional hypothesis B2a has been disconfirmed.

Changing the configuration of model B3 towards interaction terms does not substantially change the results on the control variables (cf.

Table 4-14). Compared to model B3 the same controls do not pass the statistical significance test. This applies to veto player effects, the level of tertiary enrolment and the previous existence of pilot projects in a country at risk. The variable measuring shared responsibilities in higher education policy is remains highly significant at the 1%-level and is contradicting the theoretical expectations.

The effect of the level of public funding on higher education in the country at risk is also highly significant at the 1%-level. The hazard ratio is relatively stable with values between 1.17 in model B4a, 1.175 in model B4b, 1.164 in model B4c and 1.177 in model B4d. The TVC remains identical with a negative effect of -1.1% per year and becomes negative after 15 or more years of analysis time.

The effect of recognized private universities in a country at risk is also highly significant at the 1%-level. The probability for policy adoption is significantly higher than in countries with a public university sector only. The estimated effect differs between 61.5% and 72.3%.

Last but not least, the role of risk sequences in peer socialization is statistically significant at the 5%-level (in model B4a only at the 10%-level). The risk for policy adoption decreases between 17.7% and 18.2% in case the number of previously adopted legislation is one count higher.

Table 4-13: Problem-driven peer socialization (part 1)

Explanatory variables	*Model B4a* *Problem-driven regional peer influence*		*Model B4b* *Problem-driven ideological peer influence*		*Model B4c* *Problem-driven cultural peer influence*		*Model B4d* *Problem-driven international norm influence*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Policies of								
Regional peers	1.009** (0.00375)	-	1.001 (0.00175)	-	1.002 (0.00191)	-	1.001 (0.00176)	-
Regional peers × unemployment	0.999** (0.000433)	-		-		-		-
Ideological peers	1.036** (0.0180)	-	1.042** (0.0189)	-	1.034* (0.0178)	-	1.030* (0.0173)	-
Ideological peers × unemployment	-	-	0.998* (0.000777)	-	-	-	-	-
Cultural peers	0.989** (0.00530)	1.001** (0.000419)	0.986*** (0.00529)	1.001** (0.000421)	1.006 (0.00504)		0.986*** (0.00528)	1.001** (0.000424)
Cultural peers × unemployment	-	-	-	-	0.999** (0.000461)	-	-	-
International norms								
Policies of other countries (30%)	1.120 (0.520)	-	1.183 (0.548)	-	1.328 (0.606)	-	1.753 (0.976)	-
Policies of other countries (30%) × unemployment	-	-	-	-	-	-	0.953 (0.0284)	-
Domestic problem pressure								
Unemployment	1.080*** (0.0245)	-	1.085*** (0.0295)	-	1.086*** (0.0268)	-	1.068*** (0.0246)	-
Observations	3878		3878		3878		3878	
Number of Failures	286		286		286		286	
Time at Risk	3878		3878		3878		3878	
Wald $\chi 2$ (k)	75.35 (17)***		75.90 (17)***		71.46 (16)***		74.61 (17)***	
Log pseudolikelihood	-736.8		-738.2		-738.6		-738.6	
BIC	1614.2		1616.9		1609.5		1617.7	
AIC	1507.7		1510.4		1509.3		1511.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-14: Problem-driven peer socialization (part 2)

Explanatory variables	*Model B4a* *Problem-driven regional peer influence*		*Model B4b* *Problem-driven ideological peer influence*		*Model B4c* *Problem-driven cultural peer influence*		*Model B4d* *Problem-driven international norm influence*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	0.970 (0.0253)	1.003* (0.00185)	0.968 (0.0254)	1.004* (0.00186)	0.970 (0.0257)	1.003* (0.00191)	0.968 (0.0252)	1.003* (0.00186)
Shared Responsibility	3.472** (1.841)	0.839*** (0.0433)	3.742** (2.017)	0.838*** (0.0439)	3.413** (1.873)	0.839*** (0.0455)	3.794** (2.010)	0.838*** (0.0432)
Tertiary education enrolment	1.002 (0.0109)	-	1.006 (0.0108)	-	1.000 (0.0108)	-	1.004 (0.0106)	-
Public higher education expenditure	1.170*** (0.0444)	0.989*** (0.00281)	1.175*** (0.0442)	0.989*** (0.00279)	1.164*** (0.0466)	0.990*** (0.00289)	1.177*** (0.0441)	0.989*** (0.00279)
Recognition of private universities	1.615*** (0.203)	-	1.717*** (0.218)	-	1.648*** (0.206)		1.723*** (0.220)	-
Pilot projects	2.249 (1.291)	-	2.217 (1.243)	-	2.452 (1.406)		2.168 (1.205)	-
Risk sequence	0.823* (0.0826)	-	0.812** (0.0810)	-	0.815** (0.0788)		0.813** (0.0808)	-
Observations	3878		3878		3878		3878	
Number of Failures	286		286		286		286	
Time at Risk	3878		3878		3878		3878	
Wald $\chi 2$ (k)	75.35 (17)***		75.90 (17)***		71.46 (16)***		74.61 (17)***	
Log pseudolikelihood	-736.8		-738.2		-738.6		-738.6	
BIC	1614.2		1616.9		1609.5		1617.7	
AIC	1507.7		1510.4		1509.3		1511.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The test of interaction effects between peer socialization and political uncertainty produces slightly different results than presented in the previous table on problem-driven socialization (cf. Table 4-15). Overall, conditional hypothesis B2b has to be rejected. In the case of regional peers, conditional hypothesis B2b on the role of *political uncertainty* is not even passing the statistical significance test. Furthermore, the interaction effects have a different effect than expected. Increasing political uncertainty decreases rather than increases socialization effects. This contradicts the assumption that socialization becomes more likely in situations of political uncertainty.

This raises the question if national policy makers are really benefitting from following international policies. The results rather support the assumption that policy makers do not necessarily increase their electoral payoffs when following global developments (cf. Hellwig and Samuels 2007; Kayser 2007). The highly significant and positive effect of electoral accountability also points into that direction. In case the variables on peer socialization are zero, the effect of electoral accountability is positive with a hazard rate varying between 1.098 in model B5b (and a TVC of 0.995), 1.063 in model B5b, 1.054 in model B5c and 1.062 in model B5d. In situations where the political situation at the domestic level is unsecure, policy makers seem to avoid following external templates.

Table 4-15: Uncertainty-driven peer socialization (part 1)

Explanatory variables	*Model B5a* *Uncertainty-driven regional peer influence*		*Model B5b* *Uncertainty -driven ideological peer influence*		*Model B5c* *Uncertainty -driven cultural peer influence*		*Model B5d* *Uncertainty-driven international norm influence*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Policies of								
Regional peers	1.001 (0.00380)	-	1.000 (0.00178)	-	1.000 (0.00181)	-	1.000 (0.00179)	-
Regional peers × political uncertainty	0.99996 (0.000241)	-	-	-	-	-	-	-
Ideological peers	1.036** (0.0183)	-	1.046** (0.0197)	-	1.037** (0.0183)	-	1.035** (0.0178)	-
Ideological peers × political uncertainty	-	-	0.999* (0.000449)	-	-	-	-	-
Cultural peers	0.999 (0.00238)	-	0.999 (0.00229)	-	1.005 (0.00446)	-	0.999 (0.00229)	-
Cultural peers × political uncertainty	-	-	-	-	0.999* (0.000312)	-		-
International norms								
Policies of other countries (30%)	1.110 (0.508)	-	1.062 (0.481)	-	1.071 (0.486)	-	1.772 (0.897)	-
Policies of other countries (30%)× political uncertainty	-	-	-	-	-	-	0.960** (0.0156)	-
Political uncertainty								
Electoral accountability	1.098*** (0.0191)	0.995*** (0.00170)	1.063*** (0.0159)		1.054*** (0.0131)		1.062*** (0.0132)	
Observations	3878		3878		3878		3878	
Number of Failures	286		286		286		286	
Time at Risk	3878		3878		3878		3878	
Wald $\chi 2$ (k)	78.13 (16)***		73.51 (15)***		74.45 (15)***		76.69 (15)***	
Log pseudolikelihood	-734.6		-737.4		-737.4		-736.4	
BIC	1601.3		1598.7		1598.7		1596.8	
AIC	1501.1		1504.7		1504.8		1502.9	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The patterns for the control variables yield similar results as the previous estimates (cf. Table 4-16). Among the variables with robust effects are the level of public expenditure on higher education, the recognition of private universities and the event sequence considered in the country at risk. Effect sizes and TVCs are also confirming the previous results. The impact of shared responsibilities in higher

education still increases the probability for policy adoptions. Furthermore, the controls on pilot projects, enrolment ratios at the tertiary level and veto players still do not pass the statistical significance test. And the effects of veto players are proportional over time in the models on *uncertainty-driven peer socialization*.

Despite the similarity in terms of testing the interaction effects, the models on uncertainty-driven peer socialization are performing significantly better in terms of the AIC than the conditional models on the impact of domestic problem pressure. Model B5a with an AIC of 1501.1 is even significantly different from the synthesized model B6. But as a consequence of the contradictory theoretical predictions, AIC/BIC values are not meaningful.

Table 4-16: Uncertainty-driven peer socialization (part 2)

Explanatory variables	*Model B5a* *Uncertainty-driven regional peer influence*		*Model B5b* *Uncertainty -driven ideological peer influence*		*Model B5c* *Uncertainty -driven cultural peer influence*		*Model B5d* *Uncertainty-driven international norm influence*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	1.005 (0.00943)	-	1.000 (0.00941)	-	1.001 (0.00939)	-	1.001 (0.00941)	-
Shared Responsibility	3.037** (1.710)	0.861*** (0.0471)	3.117** (1.736)	0.865*** (0.0469)	3.181** (1.741)	0.865*** (0.0465)	2.978* (1.670)	0.868*** (0.0474)
Tertiary education enrolment	1.009 (0.0105)	-	1.010 (0.0102)	-	1.011 (0.0104)	-	1.009 (0.0104)	-
Public higher education expenditure	1.198*** (0.0498)	0.988*** (0.00296)	1.175*** (0.0458)	0.990*** (0.00282)	1.169*** (0.0451)	0.990*** (0.00279)	1.176*** (0.0459)	0.990*** (0.00280)
Recognition of private universities	1.905*** (0.259)	-	1.847*** (0.248)	-	1.799*** (0.239)	-	1.854*** (0.248)	-
Pilot projects	1.930 (1.101)	-	2.041 (1.161)	-	1.993 (1.140)	-	1.967 (1.117)	-
Risk sequence	0.811** (0.0841)	-	0.799** (0.0794)	-	0.801** (0.0808)	-	0.789** (0.0773)	-
Observations	3878		3878		3878		3878	
Number of Failures	286		286		286		286	
Time at Risk	3878		3878		3878		3878	
Wald $\chi 2$ (k)	78.13 (16)***		73.51 (15)***		74.45 (15)***		76.69 (15)***	
Log pseudolikelihood	-734.6		-737.4		-737.4		-736.4	
BIC	1601.3		1598.7		1598.7		1596.8	
AIC	1501.1		1504.7		1504.8		1502.9	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.6.3 Summary

As in the case of learning, the synthesis on socialization is also based on robust variables only. Also the selection is guided by integrating covariates that are statistically significant at least at the 5%-level. If the significance level is lower in the previously tested models it is dropped in the extended explanatory model.[129] Overall, the models based on socialization perform relatively poorly. Most hypotheses could

[129] The policies of partisan peers are not included. The original effect in model B3 is only statistically significant at the 10%-level. Furthermore, the initial inclusion of this covariate into model B6 did not provide robust results. As the final model comparison in section 4.9 is based on significant covariates only, it was already dropped from the analysis carried out here.

be disconfirmed (cf. Table 4-17). The only hypotheses that could not be rejected are diffusion hypothesis B1a on *intergovernmental organizations* and conditional hypothesis B1 on *ideological similarity* dealing with network socialization. Though the latter hypothesis is only confirmed for the socialization effects on EU accession candidates.

The final evaluation of the interaction effects on peer socialization is problematic due to the fact that most socialization variables perform poorly. Many interaction effects pass the statistical significance test – though usually not on the highest significance level. Most interaction terms are significant at the 10%- or the 5%-level. But the interactions do not match the theoretical expectations. The domestic factors expected to support successful socialization are actually decreasing the impact of the variables measuring peer influence. One plausible explanation might be that governments tend to think more domestically under unsecure conditions. In other words, external norms and policies become less legitimate in case of increasing domestic problem pressure and political uncertainty.

Of course, many of the used proxies are not fully convincing. The data used for socialization here comes closer to the notion of "state socialization" where states internalize norms from the international system (cf. Alderson 2001). Data on specific networks of policy makers dealing with higher education policy would have been more meaningful. The hypotheses formulated in chapter three are not necessarily higher education specific though.

Also the usefulness of single macro-variables on interaction as a proxy to trace network socialization effects is heavily debated (cf. Checkel 2005). Interaction is only one step in the causal process leading to social influence and/or norm internalization. Of course, usually some kind of interaction is required to develop a group identity (cf. Abdelal et al. 2006). But the causal chain to arrive from interaction at successful socialization is usually quite long and includes various steps like communication, arguing and persuasion (cf. Finnemore and Sikkink 1998; Hooghe 2005).[130]

The control variables are relatively robust in the socialization models. Among the domestic factors that seem to play a significant role in all the socialization processes are the level of public expenditure on higher education, the recognition of private

[130] The mechanism-based hypotheses are all derived from assumptions on micro-behaviour and highly aggregated data might not catch the necessary information for tracing socialization effects. Of course, this question requires additional data inquires – if not a different and new research design – and points to the general question if macro-quantitative approaches are suitable for testing theories based on micro-foundations. See also section 4.4.

universities and number of previously adopted legislation in the country at risk. Other factors like veto players, pilot projects and enrolment levels have no significant influence on policy adoption. The impact of shared higher education responsibilities is highly significant in all socialization models, but unexpectedly increases the probability for policy adoptions rather than delaying legislation. Though this effect decreases over time.

Overall, time-varying effects are relatively rare in the tested socialization models. It mainly applies to the significant variables. Control variables with a TVC are the public expenditure level for higher education and the recognition of private universities. Furthermore, the effect of shared responsibilities is time-dependent. Among the diffusion variables with a TVC are the robust variables on the policies of partners in IGO networks and the impact of EU member states on accession candidates. Still the effects of TVC are relatively moderate across time. That means the initial effect of the covariates only slowly changes across time.

Table 4-17: Overview of findings on assumptions dealing with socialization

Model	Explanatory variables	Relationship				Hypothesis supported	Robust (Model B6)
		Expected	Observed	Sign.	NPH		
B1	*Common networks*						
	• Policies of international partners	Positive	Positive	Yes	Negative	Yes	Yes
	• Policies of EU partners	Positive	Negative	Yes	N/A	No	N/A
	EU candidate effect						
	• Policies of EU members	Positive	Positive	No	N/A	No	N/A
B2	*Ideology-weighted policies of*						
	• International partners	Positive	Positive	Yes	N/A	Yes	N/A
	• EU partners	Positive	Negative	Yes	N/A	No	N/A
	• EU members	Positive	Positive	Yes	Negative	Yes	Yes
B3	*Policies of peers*						
	• Regional peers	Positive	Positive	No	N/A	No	N/A
	• Ideological peers	Positive	Positive	Yes	N/A	Yes	
	• Cultural peers	Positive	Negative	Yes	Positive	No	N/A
	International norms						
	• Policies of other countries (30%)	Positive	Positive	No	N/A	No	N/A
B4a-B4d	*Unemployment and*						
	• Policies of regional peers	Positive	Negative	Yes	N/A	No	N/A
	• Policies of ideological peers	Positive	Negative	Yes	N/A	No	N/A
	• Policies of cultural peers	Positive	Negative	Yes	N/A	No	N/A
	• Policies of other countries (30%)	Positive	Negative	No	N/A	No	N/A
B5a-B5d	*Electoral accountability and*						
	• Policies of regional peers	Positive	Negative	No	N/A	No	N/A
	• Policies of ideological peers	Positive	Negative	Yes	N/A	No	N/A
	• Policies of cultural peers	Positive	Negative	Yes	N/A	No	N/A
	• Policies of other countries (30%)	Positive	Negative	Yes	N/A	No	N/A

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use of non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check in the comprehensive model. This category does not apply to all explanatory variables, as they might not have passed the statistical tests conducted in the previous subsections. "N/A" generally indicates if a category does not apply. *The policies of partisan peers are not included as the original effect in model B3 is only statistically significant at the 10%-level and as the initial inclusion of this covariate into model B6 did not provide robust results.

The ideologically weighted version of IGO member policies has not been included in the final model B6 due to linearity reasons (cf. Table 4-18). For the covariates integrated into the synthesis, previous results are broadly confirmed. Contrary to model B1, the policies of other IGO members are only significant at the 10%-level. The previously estimated effects are significant at the 5%-level. But the effect is similar. An additional percentage point of other IGO member adopts a specific performance-orientated policy increases the probability for policy adoption by 12.1% compared to 13.5% in model B1. The time-dependency of -0.8% per additional year of this effect is confirmed as well. From this point of view, diffusion hypothesis B1a on the effect of *intergovernmental organizations* cannot be rejected.

The results on the impact of the policies of ideology similar EU members on the policy choices of EU accession candidates are also confirmed. The effect remains highly significant at the 1%-level. Model B2 describes a higher initial hazard ratio of 1.039, but this effect was not proportional across time. Its effect diminishes by 0.8% per additional analysis time. As the hazard ratio in model B6 reflects the average value over the total observation period, the hazard only increases by 1.5% per additional percentage point in terms of the policy spread among ideology similar EU member states. Keeping in mind that Cox models are only providing efficient estimators in case the proportionality assumption holds, conditional hypothesis B1 on the effects of *ideological similarity* on network socialization cannot be rejected.

The effects of the veto player index are stable across the explanatory models B1, B2, B3 and B4a through B4d. But the statistical significance is missing. The same applies to the control variables on student enrolment ratios and pilot projects.

The effect of shared responsibility is statistically significant at the 1%-level across all socialization models, but does not match the theoretical expectations in any of the estimated models on socialization. The initial effect varies between models. The hazard rate in model B6 multiplies by around 4.5 times and in model B1 by almost 5 times. The lowest value is estimated for model B5d on *uncertainty-driven peer socialization*. The TVC on this control variable is also robust across model specifications. The effect decreases by 16% per year according to model B6.

The effect of public higher education expenditure remains significant at the 1%-level. The hazard ratio is 1.189. That means the value is relatively stable across the various socialization models. The same applies to the TVC. The effect of different expenditure levels decreases by 1.2% per year.

The effect of recognized private universities is similar. The effect is relatively stable across the estimated models. According to model B6 the hazard rate increases by 88.5% in countries with recognized private universities.

The effect of the risk sequence is again statistically significant at the 5%-level. The effect is also similar compared to the previously estimated models. An event count increasing by one has a negative effect on policy adoption. More specifically, the probability for policy adoption decreases by 20.1%.

Interestingly, model B3 on the ideological versions of network socialization with its AIC of 1498.0 is statistically different from both model B1 and B6. Model B1 has an AIC of 1504.3 and the AIC value of model B6 is 1504.3. I assume that the low number of just two diffusion variables in model B6 is responsible for the low performance of the model in terms of the AIC /BIC values.

Table 4-18: Socialization

Explanatory variables	*Model B6 Socialization*	
	Main	TVC
Common networks		
Policies of international partners	1.121* (0.0672)	0.992* (0.00454)
Ideology-weighted EU candidate effect		
Ideology-weighted policies of EU members	1.015*** (0.00476)	-
Veto players	0.959 (0.0256)	1.004* (0.00188)
Shared Responsibility	4.524*** (2.410)	0.840*** (0.0418)
Tertiary education enrolment	1.006 (0.0100)	-
Public higher education expenditure	1.189*** (0.0494)	0.988*** (0.00294)
Recognition of private universities	1.885*** (0.235)	-
Pilot projects	1.967 (1.096)	-
Risk sequence	0.799** (0.0795)	-
Observations	3878	
Number of Failures	286	
Time at Risk	3878	
Wald $\chi 2$ (k)	65.74 (13)***	
Log pseudolikelihood	-739.7	
BIC	1586.8	
AIC	1505.4	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.7 Tales of Externalities

Overall four explanatory models based on assumptions dealing with externalities are tested in the following section.[131] According to the models based on externalities, policy transfer is driven by competitive and/or cooperative interdependencies. The

[131] See Annex IV for full operational definitions.

first subsection deals with an explanatory model that is testing if governments adopt policies known to drive the international attractiveness of higher education systems (diffusion hypothesis C1). Furthermore, policy makers usually consider the policies of competitor states (diffusion hypothesis C2). I also expect governments to adapt to the most competitive higher education system (or country) (diffusion hypothesis C3). An alternative form of externalities stems from the risk of "losing" domestic students to other higher education systems in terms of a *brain drain* (diffusion hypothesis C4). The following two subsections deal with conditional factors. The influence of competition usually depends on the domestic problem pressure (conditional hypothesis C1) as well as the international openness of the higher education system (conditional hypothesis C2) under consideration.

4.7.1 Competitive and cooperative interdependencies

Political decision-makers usually chose the most *competitive policies* according to diffusion hypothesis C1. Despite the case sensitivity of problem contexts I argue that it is especially the international competitiveness of national higher education systems that needs further consideration when dealing with the adoption of performance-orientated policies. The international attractiveness of university sectors can relate to various performance indicators encompassing inputs and outputs of single higher education systems. Some government might worry mainly about the low international attractiveness of their university sectors – for example in terms of the share of foreign students as well as researchers or academic mobility, drop out rates or the duration of studies (cf. Hackl 2001). Often international student flows serve as proxy to identify university quality and the leading and most competitive policies and countries (cf. Bouwel and Veugelers 2010; Grigor and Viktoriya 2009).[132] Hence I focus on the developments in terms of foreign students numbers.

Just as in the case of learning and policy experience, I construct a measure that links the experience of countries (that means the indicator signalling the status of a country as competitive or not) and the (non-) adoption of performance-orientated higher education policies. That means I am using a regression coefficient that is measuring the relationship between higher education policies and the performance indicator. That is the yearly percentage change in total foreign student numbers. The

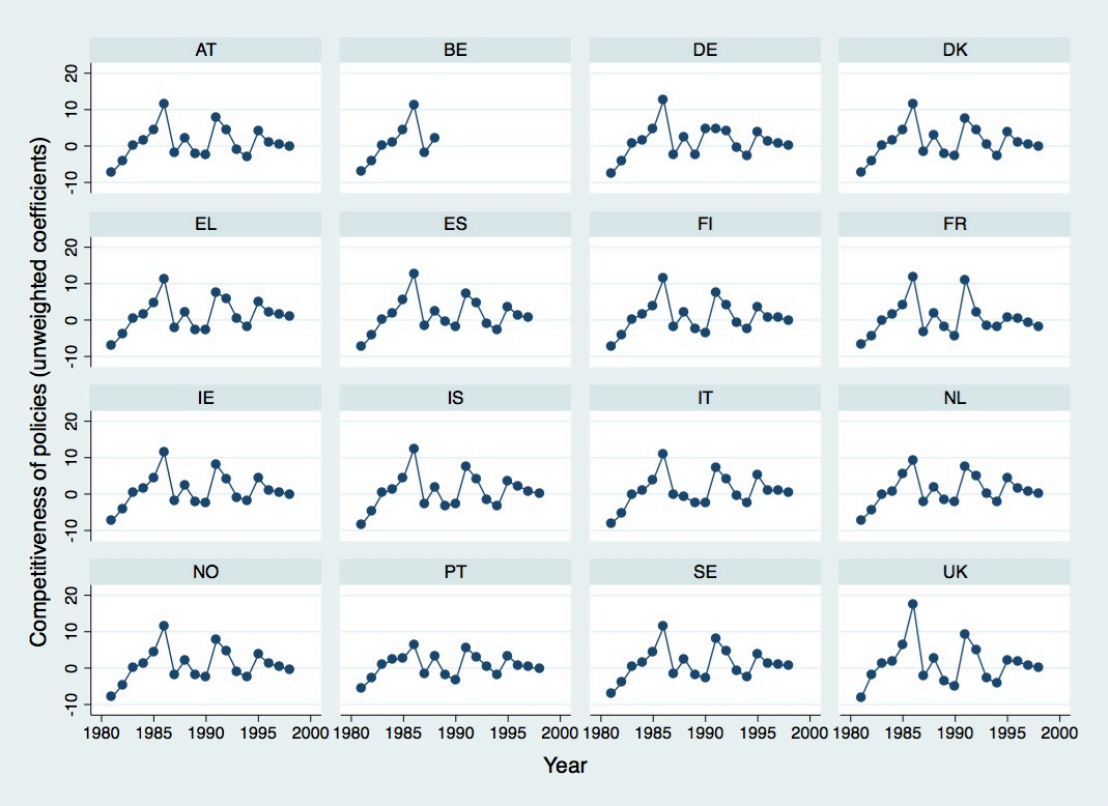
[132] Using international student flows as performance indicator reveals a certain bias towards English speaking countries (cf. Bouwel and Veugelers 2010). But this can also be considered as another reason for the competitive advantage of countries.

data on international student flows is derived from UNESCO/UIS as the standard source for this kind of data in the 1980s and 1990s (cf. Barnett and Wu 1995; Chitoran and Nicolae 1988).[133] Similar to the operationalization of policy experience, I perform a regression with policy adoption as explanatory and this indicator of competitiveness as dependent variable. The resulting regression coefficient can be interpreted as a measure for the competitiveness of policies (cf. Figure 4-3).

Unfortunately, more encompassing international and comparative measures of competitiveness are not available. The first regular international academic rankings came up in the 1990s and skill assessments like TIMMS and PISA for students even later (cf. Howie and Plomp 2005). Other indicators signalling a higher international competitiveness like foreign doctoral students or researchers are simply not available. And indicators dealing with research-related performances like the percentage of gross domestic expenditure on research and development that is financed by foreign sources (cf. OECD 2012a) are no alternative. These indicators are heavily influenced by the specific institutional structures. For example, in France and Germany top-research is often carried out outside of the universities, therefore making up a large part of funding.

[133] More recent attempts like the Project Atlas by the Institute of International Education Network that measures global patterns of student mobility started only recently.

Figure 4-3: Regressing trends on international student numbers



Note: Own illustration presenting the competitive policies variable for the country sample. The circles represent unweighted coefficients (for the policy item on funding discretion).

To test diffusion hypothesis C2 on the influence of the *policies of competitors* one must answer the question what is a competitor. Do countries compete with all others in the same way? Or are governments weighting the influence by the policy choices of other countries? For example, are France and New Zealand's economy competing with each other in the same way as France and Germany do? In economic terms the competitive interdependencies between the latter two countries seem much higher. They are located in the same region, have a similarly developed economy and they both export a major part of their goods and services to other European countries (cf. CIA 2009).

Usually diffusion studies determine if two countries can be considered as competitors in terms of the structural (or sectorial) similarity of their economies (cf. Elkins et al. 2006). The underlying assumption is that governments tend to align their policies with other countries having similar economies as their competitor states. In terms of higher education, these countries usually compete for the same kind of workforce (for example, in terms of their educational track record and skills) (cf. Hall and Soskice 2001; Taylor 2004). This is due to the circumstance that their industries are in need

of a similar kind of workforce. Correspondingly, I expect governments to adopt policies to be found in countries having similar economies. The similarity then is comparing the share that each industrial sector contributes to the GDP of the countries at risk and the sender (cf. OECD 2012b). The overall similarity between two countries is based on the Bray-Curtis formula (cf. Benedictis and Tajoli 2007). These similarity scores are then used to weigh the number of policy adopters. More specifically, the percentage of countries among the population having adopted a specific performance-orientated higher education policy is weighted by the sectorial similarity between the country at risk and the other countries with performance-orientated policies. In other words, the variable indicates the average sectorial similarity between the sender and the country at risk. For example, a value of 70 indicates that the adopters' sectorial structure matches 70% of the recipient's economic structure. In case of absolute equal structures, the value would indicate that 70% of the competitors have adopted the policy.

Alternatively, scholars use the similarity in terms of the level of socio-economic developments (for example, as GDP per capita). Assuming that the level of development determines the degree of tertiary education needed in a society. That means a higher level of development requires and leads to higher levels of tertiary education. But using this indicator instead does not substantially change the results. Another way of identifying competitors is coming from the discussions on the different variants of capitalist systems and various country groups identified (cf. Hall and Soskice 2001). The first attempts to categorize countries were usually based on qualitative discussions, but the ways of identifying similar capitalist systems have been further developed over the last couple of years. For example, Schneider and Paunescu (2012) provide alternative measurements for different (or similar) types of capitalism. Unfortunately the data provided is not covering all countries under consideration.

Higher education-specific data on the structural similarities of the higher education system makes less sense. For example in terms of the student distribution across fields, such a weight does not indicate if countries compete for the same workforce. It can simply mean that universities do not provide the education needed by the domestic economy. Furthermore, time-series data on this type of data is usually not available.

Diffusion hypothesis C3 is based on the assumption that the relative *competitiveness of* countries and their *higher education system* determines the risk for policy adoption. I use the share of foreign students a country can attract within the sample

population to determine its relative competitiveness. More competitive higher education systems should attract more foreign students than others. The final variable measures the average absolute difference percentage between countries at risk and other countries with performance-orientated policies in terms of their shares of foreign students on the total student population.

In diffusion research dealing with trade competition, countries attracting a lot of foreign investments are usually copied (cf. Elkins et al. 2006; Simmons and Elkins 2004). Another option to measure the competitiveness of a higher education system is to estimate the share of a country on the total market for foreign students. How many of the students studying abroad are going to a particular country. This indicates the share of countries on the international students market. But this measure is not used as this indicator is strongly influenced by other factors like language or the credentials of the higher education system (cf. Bouwel and Veugelers 2010).

According to diffusion hypothesis C4, externalities can render the adoption of policies introduced in connected higher education systems and countries attractive. The most famous example is probably the California effect. Other US states and countries were adapting to Californian environmental standards, because it was beneficial to companies to cooperate than losing access to this market (cf. Vogel 1997). Interlinkages are usually measured in bilateral trade linkages by calculating export and import flows. Trade flows serve as a proxy for competitive interlinkages, but this measure does not directly relate to higher education. Student flows serve as a more suitable indicator for measuring interdependencies between higher education systems.

The strength of interdependencies in higher education can be measured by the sum of the bilateral student flows between two countries compared to the overall exchange patterns of each of these countries. A bigger share of bilateral students flows compared to the overall number of in- and out-going foreign students indicates the strength of the bilateral partnership (cf. Barnett and Wu 1995). But diffusion hypothesis C4 is not about the total bilateral connection. The expectation is that governments adopt their policies to the countries attracting most of their own student population. Hence it is about structural imbalances between countries at risk and the sender countries. Domestic students are leaving their home countries to study elsewhere. In case of performance-orientated reforms, the probability for adapting policies should increase with the number of a country's outgoing students that is attracted by sender countries. That means a higher value indicates that a bigger

share of domestic students has been going to countries with performance-orientated policies to study abroad.

Weighing the share of policy adopters with the relative share of student outflows to other countries describes the "loss" of students to other countries having adopted performance-orientated policies. This measure serves as a proxy for domestic policy makers' need for reforms. To reflect the relative performances in terms of international student flows I opt for using the share of students a sender country attracts from another country in terms of the total student outflows of that country. This would indicate where –for example– Spanish or Dutch students prefer to study. In other words, which foreign country is more successful in attracting students from the country at risk? Also this operationalization controls for differences between the student populations of the countries under consideration (for example, in terms of the general ability to go abroad).

Table 4-19: Competition and cooperation

Explanatory variables	*Model C1 Interdependencies*	
	Main	TVC
Competitive interdependencies		
Policies of competitors	1.188*** (0.0755)	0.986*** (0.00441)
Competitiveness of higher education system	1.105 (0.0858)	-
Competitiveness of higher education policies	1.049 (0.0592)	-
Cooperative interdependencies		
Brain drain effect	1.001 (0.00296)	-
Veto players	0.946* (0.0269)	1.005*** (0.00199)
Shared Responsibility	4.447*** (2.405)	0.833*** (0.0426)
Tertiary education enrolment	1.012 (0.0103)	
Public higher education expenditure	1.175*** (0.0457)	0.988*** (0.00285)
Recognition of private universities	1.899*** (0.254)	-
Pilot projects	2.136 (1.207)	-
Risk sequence	0.783** (0.0744)	-
Observations	3654	
Number of Failures	284	
Time at Risk	3654	
Wald $\chi 2$ (k)	58.70 (15)***	
Log pseudolikelihood	-733.6	
BIC	1590.3	
AIC	1497.3	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The evidence for the theoretical assumptions on the role of competitive and cooperative interdependencies is limited (cf. Table 4-19). The estimated hazard ratio for the policies of competitors is highly significant at the 1%-level. In case the average spread of a policy among competitors increases by 1% (or the average

similarity between the country at risk and the other economies increases by 1%), then the probability for policy adoption increases by 18.8%. And an additional spread of 10% multiplies the baseline hazard by 5.64.[134] The effect slightly diminishes per year. According to the TVC the effect of competitive interdependencies in terms of structural similarities slows down by 1.4% per year. That means the main effect of competitor states becomes zero after roughly fifteen years. Therefore, diffusion hypothesis C2 on the *policies of competitors* is confirmed, but the other explanatory factors cannot be confirmed.

The average performance differences between countries at risk and sender countries also have the expected coefficient sign. The hazard ratio is above 1.0 and has therefore a positive impact on policy adoption. But the covariate is not statistically significant. The variable measuring the experience between performance-orientated policies and the yearly growth in international student numbers is also showing the expected direction. But the variable does not pass the statistical significance test. The effect of countries attracting a lot of students from the countries at risk is almost zero. Furthermore, the variable on cooperative interdependencies is also not passing the statistical significance test.

The control variables provide better estimators. Among the controls playing a significant role in reform processes influenced by externalities are the number of veto players, the issue of joint decision-making and the level of public expenditure in the country at risk. Other controls with a significant impact on policy adoption are the recognition of private universities as well as the number of previous legislations adopted in the potential recipient countries. The level of tertiary enrolment and the issue of pilot project seem to play no role in terms of performance-orientated policy reforms.

The veto player index has a negative impact. An additional point on the left-right veto player range decreases the probability for policy adoption by -5.4%. This effect decreases slightly over time. The negative effect of the veto player index decreases by 0.5% per year. That means the effect becomes positive after eleven years. This effect is similar to previously tested models. In case of shared responsibilities between national and sub-national decision-making level the baseline hazard multiplies by almost four-and-a-half times. This positive effect also seems to play a significant role in all of the previously tested explanatory models. This effect also

[134] The formula for calculating the hazard ratio for a 10% step is $\exp(\beta_1 * 10)$. Note, the effect of unit changes is nonlinear (cf. Cleves et al. 2010: 134).

weakens over time. The effect drops by 16.7% per year. The level of public expenditure is positive too. For every percentage point of GDP spent on tertiary education, the probability for policy adoption increases by 17.5%. This effect diminishes slightly over time too. The probability decreases by 1.2% per additional year at risk. Private university sectors also support the introduction of performance-related policy reforms. The chances for policy adoption increase by 89.9%. Contrary to this effect, the probability for policy adoption decreases by 21.7% with every previous event. The question remains, if the integration of conditional factors increases the explanatory power of the models.

4.7.2 Differential Externalities

Conditional hypothesis C1 deals with competitive pressure as driver for policy adoption. Politicians become increasingly aware of the value of higher education systems in terms of economic growth and competitive economies. Especially knowledge-based economies are in constant need of a highly skilled workforce. Hence the question is if competition is driven by domestic problem pressure. Similar to the previously tested models on learning and socialization I fall back on using the yearly unemployment rate as common indicator for measuring domestic problem pressure.

Alternatively a country's labour productivity can be used as a proxy for the competitive pressure in a country (cf. Agasisti 2009; Huisman and Kaiser 2003). Lower labour productivity of the working population indicates less competitive countries and therefore a bigger need to catch up with its competitors. But measuring the relationship between higher education policies on socio-economic outcomes is problematic due to the complexity of policy issues. Usually several factors determine the final outcome. For example, labour productivity is only indirectly related to the higher education system. Many additional factors like the technological development or capital investments determine the actual level of labour productivity (cf. Aubyn et al. 2009). The underlying causal chain is usually too long. Time Lags can be expected and alternative (or additive) explanations have to be considered.

Following the arguments in the World Economic Forum and the Global Competitiveness Report, I stick to the unemployment rate as a highly visible indicator for domestic problem pressure. The World Economic Forum assesses the quality of

education systems by asking if the system meets the needs of the national economy (cf. WEF 2010).[135] Gathering data related to the performance of the higher education system – for example, in terms of the employability and skills of graduates – is difficult. The ILO did not start to provide data on the educational background of unemployed people before the end of the 1980s. And yearly data is still not fully available. Data on the labour productivity of highly skilled workers was collected even later. Therefore, the total unemployment rate has to serve as a proxy for the domestic problem pressure again. More specifically, interaction terms with the variables on competitive interdependencies are modelled. Model C2a deals with the interaction effect on the policies of competitors, model C2b with the conditional effect of the relative country performance and model C2c examines the contingency of the experience on the competitiveness of policies.

The conditional effect of the yearly unemployment rate in a country at risk is not really passing the statistical significance test (cf. Table 4-20). This finding is contrary to most of the previously tested interaction models. A statistical significance exists only for the estimate on the policies of competitors. And this interaction term is significant at the 10%-level only. From this point of view, the conditional hypothesis C1 has to be rejected.

The policies of competitors remain statistically robust across all the three interaction models. Correspondingly, the AIC also shows no statistical difference between the three models. Only model C2a is significantly different from model C1. This is due to slightly significant interaction terms (at the 10%-level) and the statistical significance on the variable measuring the yearly unemployment rate. The effect of unemployment in case the interacted variable on competitive policies is zero is statistically significant and positive. The effect varies according to the interaction model. With a positive effect of 7.5% per additional percentage point of unemployment it is largest in model C2a (at the 1%-level). The other two models fall behind in term of the statistical significance level (10%-level in model C2b and 5%-level in model C2c) and the effect size (2.9% in model C2b and 3.6% in model C2c).

The results for the control variables are also not convincing (cf. Table 4-21). The same controls as in model C1 miss statistical significance. But it is also the estimator on veto players that is statistically insignificant. The other controls also perform worse. The control variable on shared responsibility is not keeping up its high level of

[135] The data collection is based on an executive opinion survey.

significance. In model C2a the effect is only significant at the 5%-level (as opposed to the 1%-level in the other two interaction models). Also the TVC is not robust. The same applies to the variable on public expenditure levels. Though the variable is highly significant at the 1%-level across all three models, it is the TVC that is not robust. Even though the main effect of the control on the hazard rate remains relatively similar between 16% and 18.2%. The time-varying effect is simply missing in model C2b. The only control variable that provides robust results is the measure of the risk sequence. It remains statistically significant at the 1%-level with a positive effect ranging between 25.7% in model C2a and 22.9% in model C2c.

Overall, it has to be acknowledged that integrating conditional effects of domestic problem pressure is not adding much explanatory power to tales based on externalities here.

Table 4-20: Problem-driven competition (part 1)

Explanatory variables	*Model C2a* *Problem-driven influence of competitors*		*Model C2b* *Problem-driven influence of other countries' competitiveness*		*Model C2c* *Problem-driven influence of competitive policies*	
	Main	TVC	Main	TVC	Main	TVC
Competitive interdependencies						
Policies of competitors	1.217*** (0.0780)	0.985*** (0.00443)	1.194*** (0.0769)	0.986*** (0.00450)	1.208*** (0.0781)	0.984*** (0.00454)
Policies of competitors × unemployment	0.999* (0.000751)	-	-	-	-	-
Competitiveness of higher education system	1.079 (0.0855)	-	1.036 (0.100)	-	1.077 (0.0844)	-
Competitiveness of higher education system × unemployment		-	1.006 (0.00774)	-		-
Competitiveness of higher education policies	1.049 (0.0640)	-	1.042 (0.0603)	-	1.101 (0.0802)	-
Competitiveness of higher education policies × unemployment	-	-	-	-	0.995 (0.00403)	-
Country-specific problem pressure						
Unemployment	1.075*** (0.0297)	-	1.029* (0.0156)	-	1.036** (0.0151)	
Observations	3654		3654		3654	
Number of Failures	284		284		284	
Time at Risk	3654		3654		3654	
Wald $\chi 2$ (k)	66.18 (17)***		62.48 (16)***		64.86 (17)***	
Log pseudolikelihood	-729.7		-731.9		-730.5	
BIC	1598.9		1595.1		1600.5	
AIC	1493.5		1495.9		1495.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-21: Problem-driven competition (part 2)

Explanatory variables	*Model C2a* *Problem-driven influence of competitors*		*Model C2b* *Problem-driven influence of other countries' competitiveness*		*Model C2c* *Problem-driven influence of competitive policies*	
	Main	TVC	Main	TVC	Main	TVC
Veto players	0.959 (0.0256)	1.005** (0.00188)	0.956 (0.0267)	-	0.958 (0.0257)	1.005** (0.00188)
Shared Responsibility	3.634** (1.902)	0.837*** (0.0415)	4.122*** (2.238)	1.005** (0.00194)	4.037*** (2.071)	0.831*** (0.0406)
Tertiary education enrolment	1.006 (0.0109)	-	1.006 (0.0104)	0.829*** (0.0434)	1.003 (0.0106)	-
Public higher education expenditure	1.160*** (0.0452)	0.990*** (0.00290)	1.182*** (0.0463)	-	1.162*** (0.0451)	0.990*** (0.00290)
Recognition of private universities	1.068 (0.347)	1.050* (0.0282)	1.848*** (0.249)	0.988*** (0.00285)	1.086 (0.357)	1.048* (0.0287)
Pilot projects	2.076 (1.154)	-	2.293 (1.317)	-	2.021 (1.152)	-
Risk sequence	0.743*** (0.0770)	-	0.771*** (0.0753)	-	0.746*** (0.0780)	-
Observations	3654		3654		3654	
Number of Failures	284		284		284	
Time at Risk	3654		3654		3654	
Wald $\chi 2$ (k)	66.18 (17)***		62.48 (16)***		64.86 (17)***	
Log pseudolikelihood	-729.7		-731.9		-730.5	
BIC	1598.9		1595.1		1600.5	
AIC	1493.5		1495.9		1495.0	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Conditional hypothesis C1 deals with the international openness of higher education systems as a condition for the impact of externalities. The ratio between international student flows (in- and outgoing) and the domestic student population in a country is used to determine the openness of a higher education system. The effects of the conditional variables on the previously tested proxies for externalities are modelled through interaction terms as well.

Usually, theories based on competition assume that more open economic system experience stronger impacts of ignoring competitive pressure. That means open countries are more susceptible to externalities. Usually this is measured by the trade flows of a country with higher trade flows indicating a more open economic system

(cf. Elkins et al. 2006). To adapt this argument to higher education I measure the openness of a higher education system by the number of in- and outgoing students compared to the overall student numbers in a country.

The AICs are statistically different from model C1. Model C3b and C3d have the lowest AIC and have a better fit than model C3a and C3c. Also the interaction terms here perform well compared to the case of domestic problem pressure (cf. Table 4-22). Conditional hypothesis C1 cannot be rejected in case of the policies of competing states, as the conditional effect is highly significant at the 1%-level. It increases the probability for policy adoption. More specifically, a one-percentage point increase in the ratio between student flows (in- and out-going) and the domestic student population leads to an increase in the effect of the policies of target countries by 0.2%.

Conditional effects can also be found in the case of brain drain effects. The interaction term is significant and positive at the 1%-level. An increase in the ratio between student flows (in- and out-going) and the domestic student population leads to an increase in the effect of the policies of countries attracting students from the country at risk by 0.1%. The brain drain effect on policy adoption becomes positive as soon as the ratio measuring the openness of a higher education system climbs up to the 10% threshold.

Conditional effects cannot be confirmed in case of the variable measuring the relative competitiveness of countries. The interaction effect is significant at the 10%-level, but points into the wrong direction. The conditional variable decreases the main effect by 3.1% rather than enhancing the impact of the diffusion variable.

Overall, the effect of competitor states' policies is largely robust across all the four interaction models. Though the effect is only significant at the 5%-level in model C3a, whereas it is highly significant in model C3b through 3Cd. But the effect is relatively stable. In model C3b it is lowest with an increase of 15.2%. The strongest effect is estimated for model C3d with an additional probability for policy adoption of 16.7% (per additional percentage point of competitors with a performance-orientated policy). The TVC is similarly robust with a decreasing impact per year of -1.3%.

The main effect of the openness of the higher education system in the country at risk is also not robust across the models. In model C3b and C3c a TVC is needed to account for the missing proportionality across time. This could be a reason for the unexpectedly negative interaction term in model C3b and its missing statistical significance in model C3c.

Table 4-22: International openness of higher education systems (part 1)

Explanatory variables	*Model C3a* *International openness (influence of competitors)*		*Model C3b* *International openness (influence of other countries' competitiveness)*	
	Main	TVC	Main	TVC
Competitive interdependencies				
Policies of competitors	1.153** (0.0710)	0.987*** (0.00427)	1.152** (0.0696)	0.988*** (0.00423)
Policies of competitors × international openness of higher education system	1.002*** (0.000726)	-	-	-
Competitiveness of higher education system	1.102 (0.0847)	-	1.235* (0.135)	-
Competitiveness of higher education system × international openness of higher education system		-	0.969* (0.0171)	-
Competitiveness of higher education policies	1.045 (0.0621)	-	1.046 (0.0643)	-
Competitiveness of higher education policies × international openness of higher education system	-	-	-	-
Cooperative interdependencies				
Brain drain effect	1.000 (0.00300)	-	1.000 (0.00292)	-
Brain drain effect × international openness of higher education system	-	-	-	-
International openness of higher education system	0.913** (0.0331)	-	0.853** (0.0597)	1.012** (0.00473)
Observations	3654		3654	
Number of Failures	284		284	
Time at Risk	3654		3654	
Wald $\chi 2$ (k)	48.55 (17)***		53.45 (18)***	
Log pseudolikelihood	-729.0		-725.9	
BIC	1597.4		1599.5	
AIC	1492.0		1487.8	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-23: International openness of higher education systems (part 2)

Explanatory variables	*Model C3c* *International openness (influence of competitors)*		*Model C3d* *International openness (brain drain effect)*	
	Main	TVC	Main	TVC
Competitive interdependencies				
Policies of competitors	1.161** (0.0699)	0.987*** (0.00424)	1.167** (0.0707)	0.987*** (0.00425)
Policies of competitors × international openness of higher education system	-	-	-	-
Competitiveness of higher education system	1.091 (0.0833)	-	1.080 (0.0817)	-
Competitiveness of higher education system × international openness of higher education system	-	-	-	-
Competitiveness of higher education policies	1.035 (0.0647)	-	1.052 (0.0630)	-
Competitiveness of higher education policies × international openness of higher education system	1.003 (0.00779)	-		-
Cooperative interdependencies				
Brain drain effect	1.000 (0.00297)	-	0.991** (0.00391)	-
Brain drain effect × international openness of higher education system	-	-	1.001*** (0.000448)	-
International openness of higher education system	0.849** (0.0607)	1.011** (0.00477)	0.910*** (0.0329)	-
Observations	3654		3654	
Number of Failures	284		284	
Time at Risk	3654		3654	
Wald $\chi 2$ (k)	49.93 (18)***		53.25 (17)***	
Log pseudolikelihood	-727.2		-726.1	
BIC	1602.1		1591.7	
AIC	1490.4		1486.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The picture concerning the control variable does not change substantially compared to the previous interaction models on the role of domestic problem pressure (cf. Table 4-24). The controls do not yield the expected results nor do they pass the

statistical significance test except for the variable on the risk sequence. Its effect is negative and highly significant across all four models. The effect varies only slightly. The maximal negative effect is -26.8% in model C3a and the lowest with -24.2% in model C3c.

Table 4-24: International openness of higher education systems (part 3)

Explanatory variables	*Model C3a* *International openness (influence of competitors)*		*Model C3b* *International openness (influence of other countries' competitiveness)*		*Model C3c* *International openness (influence of competitors)*		*Model C3d* *International openness (brain drain effect)*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	0.962 (0.0230)	1.005*** (0.00175)	0.961* (0.0235)	1.005*** (0.00177)	0.957* (0.0232)	1.005*** (0.00176)	0.960* (0.0231)	1.005*** (0.00176)
Shared Responsibility	2.125* (0.936)	0.878*** (0.0376)	1.658 (0.722)	0.892*** (0.0375)	1.731 (0.742)	0.891*** (0.0372)	2.016 (0.888)	0.883*** (0.0379)
Tertiary education enrolment	0.997 (0.0113)	-	1.004 (0.0116)	-	1.002 (0.0115)	-	1.001 (0.0114)	-
Public higher education expenditure	1.014 (0.0206)	-	1.008 (0.0198)	-	1.012 (0.0197)	-	1.013 (0.0203)	-
Recognition of private universities	0.636 (0.209)	1.086*** (0.0302)	0.550* (0.190)	1.107*** (0.0326)	0.526* (0.181)	1.107*** (0.0327)	0.606 (0.202)	1.088*** (0.0303)
Pilot projects	1.744 (0.946)	-	1.769 (0.952)	-	1.714 (0.921)	-	1.791 (0.974)	-
Risk sequence	0.732*** (0.0756)	-	0.749*** (0.0772)	-	0.758*** (0.0793)	-	0.740*** (0.0771)	-
Observations	3654		3654		3654		3654	
Number of Failures	284		284		284		284	
Time at Risk	3654		3654		3654		3654	
Wald $\chi 2$ (k)	48.55 (17)***		53.45 (18)***		49.93 (18)***		53.25 (17)***	
Log pseudolikelihood	-729.0		-725.9		-727.2		-726.1	
BIC	1597.4		1599.5		1602.1		1591.7	
AIC	1492.0		1487.8		1490.4		1486.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.7.3 Summary

Most hypotheses on the diffusion effect of externalities and their conditional variables cannot be confirmed (cf. Table 4-25). The only variable that remains robust across all of the models presented in this section is the measure on the policies of competitors. This covariate is highly significant across all explanatory models. This result supports diffusion hypothesis C2.

Furthermore, evidence exists for the conditional hypothesis C2 on the conditional effect of the *international openness of a higher education system*. The effect is very low with a positive effect of 0.1% per one-percentage point increase in the ratio between student flows (in- and out-going) and the domestic student population on the policies of target countries, but it is highly significant at the 1%-level. Therefore, conditional hypothesis C1 cannot be rejected for the brain drain effect. The conditional effect of an open higher education system is also significant in case of the relative competitiveness of the country at risk. But the interaction effect is not matching the theoretically expected relationship. The interaction term has a negative effect on policy adoption. Also this effect is significant at the 10%-level only.

The control variables like the level of tertiary enrolment, the dummy on pilot project or a joint decision-making and the level of public expenditure in the country at risk seem to play no significant role in reform processes influenced by externalities. Among the significant controls, the variable on shared responsibility and the estimators on veto players are not robust for the interaction models on domestic problem pressure and/or the openness of the higher education system. The only control variable that provides robust results for both the simple additive as well as the interaction models is the measure of the risk sequence.

Table 4-25: Overview of findings on assumptions dealing with externalities

Model	Explanatory variables	Relationship				Hypothesis supported	Robust (Model C4)
		Expected	Observed	Significant	NPH		
C1	*Competitive interdependencies*						
	• Policies of competitors	Positive	Positive	Yes	Positive	Yes	Yes
	• Competitiveness of higher education system	Positive	Positive	No	N/A	No	N/A
	• Competitiveness of higher education policies	Positive	Positive	No	N/A	No	N/A
	Cooperative interdependencies						
	• Brain drain effect	Positive	Positive	No	N/A	No	N/A
C2a-c	*Country-specific problem pressure on*						
	• Policies of competitors	Positive	Negative	Yes	N/A	No	N/A
	• Competitiveness of higher education system	Positive	Positive	No	N/A	No	N/A
	• Competitiveness of higher education policies	Positive	Negative	No	N/A	No	N/A
C3a-d	*International openness of higher education system on*						
	• Policies of competitors	Positive	Positive	Yes	Negative	Yes	N/A
	• Competitiveness of higher education system	Positive	Negative	Yes	N/A	No	N/A
	• Competitiveness of higher education policies	Positive	Positive	No	N/A	No	N/A
	• Brain drain effect	Positive	Positive	Yes	N/A	Yes	Yes

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use of non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check in the comprehensive model. This category does not apply to all explanatory variables, as they might not have passed the statistical tests conducted in the previous subsections. "N/A" generally indicates if a category does not apply.

The synthesized model is based on the variables being correctly predicted and robust (at least significant at the 5%-level in the formerly tested models). The

previous findings are largely confirmed in model C4 (cf. Table 4-26). The diffusion variable on the policies of competitor states is again fully supported. The variable is highly significant at the 1%-level. The effect remains similarly high. An additional percentage point in the adoption of performance-orientated policies among competitors increases the probability for policy adoption by 16.9%. This effect diminishes slowly by 1.3% per year. The interaction effect of the openness of higher education systems with the brain drain effect is also robust. The effect remains statistically significant at the 1%-level. That means the brain drain effect becomes positive when higher education systems have an openness-ratio of at least 10%.

The same applies to the control variables. The results are virtually identical with the previously tested interaction models. It seems as if the control variables do only work in simple additive regressions like in model C1. The only control factor with a robust significant and correct effect is the discrete variable on the event count per country-policy-item.

Still the AIC for model C4 on *externalities* is not statistically different from the initial model C1. This is due to the lacking robustness of the control variables. From this point of view, explanations based on externalities do not seem to work very well. At least in case of attracting international students, interdependencies in terms of competition and cooperation do not play a significant role. That does not necessarily mean that governments do not follow a competitive logic when deciding on higher education policies. But it seems, as if this motivation is not primarily driven by tertiary education. Maybe the comparative test yields better results for the remaining tales on externalities?

Table 4-26: Externalities

Explanatory variables	*Model C4* *Externalities*	
	Main	TVC
Competitive interdependencies		
Policies of competitors	1.169*** (0.0679)	0.987*** (0.00411)
Cooperative interdependencies		
Brain drain effect	0.991** (0.00378)	-
Brain drain effect × international openness of higher education system	1.001*** (0.000431)	-
International openness of higher education system	0.912*** (0.0314)	-
Veto players	0.963 (0.0232)	1.005** (0.00179)
Shared Responsibility	1.845 (0.815)	0.892*** (0.0380)
Tertiary education enrolment	0.999 (0.0113)	-
Public higher education expenditure	1.013 (0.0205)	-
Recognition of private universities	0.615 (0.212)	1.083*** (0.0310)
Pilot projects	1.722 (0.928)	-
Risk sequence	0.754*** (0.0789)	-
Observations	3878	
Number of Failures	286	
Time at Risk	3878	
Wald $\chi 2$ (k)	50.18 (15)***	
Log pseudolikelihood	-733.9	
BIC	1591.8	
AIC	1497.9	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.8 Tales of Common Responses

Last but not least, the common response model focuses on domestic variables like policy-specific problems and party politics. The explanations largely follow the assumption, that decision-making is still mainly driven by domestic factors. That does

not imply, that governments do not adapt to external developments and stimuli. But the conceptualization of the policy process does not consider interdependencies as the main driving factor for policy choices. The expectation is rather that public policies cluster as governments face similar problems and conditions and as they share specific policy preferences. These similar circumstances can lead to the adoption of analogous policies. Overall five explanatory models based on assumptions dealing with common responses are tested in the following section.[136]

According to diffusion hypothesis D1 on *domestic problem solving*, governments adopt performance-orientated policies in case they increasingly face problems in higher education. The bigger the policy-specific problems in a country at risk, the more likely the adoption of performance-orientated policy reforms will be. Diffusion hypothesis D2 deals with the *historical legacy* followed by countries. A mismatch between the original policy approach and market-orientated policies can seriously hinder the spread of performance reforms. Both hypotheses are tested in the subsection on problem solving and path dependency. In addition, the conditional effect of domestic problem pressure is tested in conditional hypothesis D1.

But governments can also draw the same conclusion to solve problems if it is in their interested to do so. According to diffusion hypothesis D3, policy adoption depends on the *government preferences*. If governments are following a market-orientated ideology, then the adoption of performance-orientated policies seems more likely. In a similar vein, diffusion hypothesis D4 formulates the assumption that governments are rather vote- than policy seeking. Hence, governments follow the *voter preferences* rather than their own as their underlying motivation is to stay in office. According to conditional hypothesis D2a and D2b, both effects depend on the electoral accountability of governments. I expect that a higher political uncertainty drives governments to follow voters rather than their own ideological policy preferences.

4.8.1 Parallel Problem Solving

For measuring the independent variables dealing with parallel problem solving I fall back on some of the previously mentioned indicators dealing with learning (cf. subsection 4.5.1). I use the same indicators as the common response approach

[136] See Annex IV for full operational definitions.

presented here follows a similar logic as applied for the learning models. For example, governments might follow general problems characterizing a specific policy (cf. Schmidt 2002). Following the theoretical discussion on learning, sector-specific problems like low completion ratios or inefficient funding patterns are examined. In addition, domestic policy-makers might also distinguish policy-specific problems when it comes to reforming higher education. Again, following discussions on learning effects, this relates to a country's own experiences in terms of dealing with budget cuts or increasing student numbers.[137]

Of course, a major difference remains. According to the common response approach one expects that governments choose policy solutions independently from each other. That does not imply that interdependencies between governments or international actors do not exist. The general knowledge about which policies work or are helpful to deal with various problems probably represents a necessary condition for policy clustering, but is definitely not sufficient for explaining policy adoption. To test this assumption, the indicators used to measure *learning from success* and *learning from experience* are used.

That means policy-specific problems are conceptualized in terms if higher education funding and student-related performance indicators. Of course, the operationalization only refers to indicator values for the countries at risk. The learning variables are measured as the relative performance of countries or the overall relationship between higher education policies and performance indicators (in case of policy experience). The previously used indicators for constructing these measures are now used to figure out the level of policy-specific problems and to test diffusion hypothesis D1.

The country performance is based on the completion ratios on tertiary education of a country. To measure the performance in financial terms, the average public funding (in terms of % of GDP) per one per cent enrolment is measured. It can be interpreted as a measure of the comparative effectiveness of public investments. The yearly changes in total public funding per student at the tertiary level as well as the changes in total student numbers deal with the yearly experience of countries. The indicators relate to the performance of countries with regard to the two challenges of that time, that means the expansion of higher education and a decrease in public budgets for higher education (cf. Carrier 1990; Eicher 1990; Lange and Schimank 2007). High

[137] Contrary to the learning variables (cf. subsection 4.5.1.2), a country's own policy experience is not measured as regression coefficient, but simply as average yearly percentage changes.

values on student related indicators signal a high performance in the country at risk and are expected to have a negative impact on policy adoption. In case of the funding indicators, the theoretical expectations are different. Higher values indicate a lower performance in terms of funding efficiency. Therefore, a positive impact on adopting performance-orientated policies is expected.

Furthermore, the indicator on national university cultures is used to provide a proxy in order to examine the impact of historical legacies and for testing the diffusion hypothesis D1 on path dependencies. I create a dummy variable indicating if historically academia was following the Market model or the Humboldt and the Napoleonic instead (cf. Clark 1983).

Table 4-27: Parallel problem solving

Explanatory variables	*Model D1* *Domestic problem-solving and historical legacies*	
	Main	TVC
Country performance on		
Public spending	1.006 (0.00713)	-
Completion ratios	0.967* (0.0166)	-
Country experience on		
Budget cuts	1.039 (0.0306)	0.993*** (0.00258)
Student growth	0.947*** (0.0191)	-
Historical legacy	0.208*** (0.119)	1.119*** (0.0467)
Veto players	1.005 (0.00881)	-
Shared Responsibility	3.628** (2.010)	0.865*** (0.0459)
Tertiary education enrolment	1.012 (0.0147)	-
Public higher education expenditure	-	-
Recognition of private universities	0.240*** (0.129)	1.149*** (0.0450)
Pilot projects	2.011 (1.130)	-
Risk sequence	0.796** (0.0795)	-
International norm	1.504 (0.676)	-
International interlinkages	1.058*** (0.0157)	0.996*** (0.00106)
Observations	3654	
Number of Failures	284	
Time at Risk	3654	
Wald $\chi 2$ (k)	94.68 (18)***	
Log pseudolikelihood	-719.3	
BIC	1586.2	
AIC	1474.6	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Model D1 provides mixed results for the two diffusion hypotheses on parallel problem solving and path dependency (cf. Table 4-27). The results on diffusion hypothesis D1 and the role of domestic problem solving are rather modest. The only variable fully convincing is the development of student numbers in the country at risk. The yearly student growth is highly significant at the 1%-level. An additional percentage point of growth in student numbers diminishes the likelihood for policy adoption by 5.3%. This effect is proportional across time. In addition, completion ratios are significant at the 10%-level. In case, the country at risk has a completion ratio that is 1% higher, then the probability for adopting performance policies decreases by 3.3%. Similar to the learning approach, it seems as if the diffusion hypothesis (D1) holds for developments related to student numbers and graduates. But this is not the case in funding-related developments. Both the variables on higher education funding are pointing into the expected directions. A higher public expenditure level per tertiary enrolment increases the probability for policy adoption. The same is true for an increase in the public funds per student. Both covariates –however– are not statistically significant. And diffusion hypothesis D1 has to be rejected for problems regarding funding on higher education.

Contrary, diffusion hypothesis D2 on the *historical legacy* cannot be rejected. The covariate on the domestic historical legacy is highly significant at the 1%-level. Countries with a Humboldtian or Napoleonic tradition in higher education have a lower probability for adopting performance-orientated policy reforms. The likelihood for reforms decreases by 79.2% compared to countries historically following the Market model. One should not overlook, however, that this effect decreases by a substantial 11.9% per year. After seven years, the effects of the historical legacy become positive. That means the initial negative effect reverses and the probability for policy adoption even increases for the Humboldtian or Napoleonic countries. One plausible explanation for this temporal effect is that problem pressures constantly increase over time. Eventually the increasing returns associated with the traditional problem-solving approach are outweighed by the costs caused by sticking to the status quo.

As already mentioned in the introduction to this chapter, the common response models are extended by two control variables. The dummy variable on common policies is not passing the statistical significance test. But the control on the IGO memberships of the countries at risk does. The covariate is highly significant at the 1%-level. The additional membership of a state in an IGO increases the probability

for policy adoption by 5.8%. This effect diminishes by 0.4% per year. That means the effect becomes negative after roughly 14.5 years.

The findings regarding shared responsibilities do not differ substantially from the previously tested models. The dummy indicating a shared responsibility between national and sub-national decision-making level is also significant, but only at the 5%-level. The effect is positive and multiplies the probability by roughly 3.6 times. This effect fades away over time. It decreases 13.5% per additional year at risk.

The controls on the risk sequence and the recognition of private universities are also significant. Every additional event decreases the probability for policy adoption by -20.4%. This effect is statistically significant at the 5%-level and matches the expected relationship.

Countries with legally recognized private universities have a probability for policy adoption that is 76% below higher education without that feature. This effect is highly significant at the 1% level, but opposes all the previously tested models. Furthermore, theoretical priors point to a positive impact. Private university sectors are supposed to increase the adaptive pressure on public sector reforms in higher education rather than diminishing them. This effect reverses rapidly though. The covariate effect becomes positive after roughly 5 years of risk time. One reason for the negative impact at the beginning of the study period could be the initial resistance of the public sector against reform impulses coming from the private sector.

The veto player index, the level of tertiary enrolment and the existence of pilot projects do not pass the statistical significance test and can be excluded from the analysis of parallel problem solving and path dependency. The control on the level of public expenditure is excluded from the models as there is a large overlap with the variable on the country performance on public expenditure.

Despite the few significant results regarding the country's completion ratios, student growth and the historical legacy, the AIC of 1474.6 is relatively low if considered against the previously tested models on learning, socialization and externalities. From this point of view, evidence shows that parallel problem solving is quite important.

4.8.2 Domestic Problem Pressure

The role of domestic problem pressure has already been highlighted when discussing problem-driven learning in subsection 4.5.3. To test the conditional impact

of domestic problem pressure formulated in conditional hypothesis D1 I use the same indicators on economic performance and fiscal constraints. Depending on the actual policy problem considered I test the effects of the yearly unemployment or the general public debt. The measures for unemployment are used in interaction terms for developments related to student numbers and graduates. That means regarding the completion ratios and the yearly growth in student numbers. The general public debt is used as a proxy for fiscal constraints to determine the domestic problem pressure escalating the effects of funding patterns. This relates to the level of public expenditure per enrolment rate and the yearly changes in public funding per student.

The results for the interaction models on domestic problem pressure are rather disappointing (cf. Table 4-28). A significant interaction effect can only be found in terms of the completion ratios in the countries at risk. But both interaction terms on the interplay between the measures on problem solving and the yearly unemployment mismatch the expectations. According to the theoretical prediction, the (main) effect of a country's completion ratio on policy adoption is negative. A higher completion ratio indicates a better performance of the higher education system as the share of people graduating from higher education institutions increases. As a consequence the necessity for reforms and higher achievements decreases.

This effect is expected to be lower in situations that are characterized by higher levels of problem pressure. The higher the domestic problem pressure in terms of the yearly unemployment rate, the lower the negative effect of completion ratios. That means a positive effect of the interaction term must be expected. Hence, the empirical evidence contradicts diffusion hypothesis C1. Even though the interaction term with the completion ratio in the risk country actually diminishes the impact of the (positive) main effect, the estimated effects have to be put into perspective. The main effect of the completion ratio is positive. From that point of view, the negative interaction effect of -2% per unemployment percentage indicates that the impact of the completion ratio becomes negative if countries have an unemployment rate of roughly 5.5% (or higher). But why should the necessity for policy reforms become less necessary in case the unemployment rate rises? Rather a more qualified workforce and hence a higher completion ratio seems to be necessary to deal with the unemployment problem.

The opposite relationship is expected for the variables on fiscal problems. The positive effect of low fiscal performances is supposed to be higher with increasing domestic problem pressure. In other words, the effects of the diffusion variables are

expected to increase with the level of public debt. The link between increasing costs and a higher probability for performance-orientated policies should be stronger. This is the case for both. The two interaction terms have a positive impact. But the conditional hypothesis D1 has to be rejected anyway as the interaction terms do not pass the statistical significance test – contrary to the conditional impact of unemployment. (Some) significant effects can be traced, but the theoretical expectations do not match the estimated hazard ratios.

The covariates not included in interaction terms show largely similar results as in model C1. The effect of the completion ratios in the country at risk remains negative and statistically significant at the 5%-level in model D2a, D2c and D2d. The same applies to the policy experience on student growth. The effect is negative and significant at the 1%-level (model D2a) or 5%-level (D2b and D2c). The results on the other two covariates dealing with fiscal developments (in terms of public expenditure performance and budget cuts) are not robust. They either do not pass the statistical significance test and/or do not match the theoretical expectations. The effects stemming from historical legacy are statistically significant through three of the four explanatory models. The significance level varies slightly between the 1%-level in model D2a and D2c and 5%-level in model D2d. Similarly, the negative effect is lower in model D2d. The different effect size in model D2b can be explained by the missing TVC, but the covariate is not significant in this model anyway. Overall, the dummy variable on policy legacies performs very well.

But the conditional hypothesis D1 on the mediating impact of domestic problem pressure has to be rejected. Processes driven by problem solving and policy legacies are not accelerated by the problem contexts of the countries at risk. An impact in terms of sectorial interdependencies (cf. Bönker 2008) seems questionable for diffusion driven by common responses.

Table 4-28: Domestic problem-pressure (part 1)

Explanatory variables	*Model D2a* *Problem-solving and fiscal constraints*		*Model D2b* *Problem-solving and unemployment*		*Model D2c* *Problem-solving and fiscal constraints*		*Model D2d* *Problem-solving and unemployment*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Country performance on								
Public spending	0.989 (0.0258)	-	1.010 (0.00621)	-	1.005 (0.00739)	-	1.007 (0.00742)	-
Public spending × fiscal constraints	1.0003 (0.000376)	-	-	-	-	-	-	-
Completion ratios	0.964** (0.0173)	-	1.103** (0.0432)	-	0.966** (0.0168)	-	0.962** (0.0177)	-
Completion ratios × unemployment		-	0.980*** (0.00479)	-		-		-
Country experience on				-				
Budget cuts	1.037 (0.0309)	0.993*** (0.00261)	0.968*** (0.0113)	-	1.003 (0.0400)	0.992*** (0.00254)	1.044 (0.0309)	0.993*** (0.00261)
Budget cuts × fiscal constraints	-	-	-	-	1.001 (0.000500)	-	-	-
Student growth	0.947*** (0.0198)		0.952** (0.0221)	-	0.948** (0.0198)	-	0.968 (0.0427)	-
Student growth × unemployment	-	-	-	-	-	-	0.995 (0.00692)	-
Historical legacy	0.166*** (0.115)	1.134*** (0.0543)	0.886 (0.242)	-	0.187*** (0.112)	1.129*** (0.0500)	0.276** (0.151)	1.094** (0.0445)
Country-specific problem pressure				-				
Fiscal constraints	0.993 (0.00981)	-	-	-	1.001 (0.00328)	-	-	-
Unemployment	-	-	1.315*** (0.0765)	-	-	-	1.069* (0.0389)	-
Observations	3654		3654		3654		3654	
Number of Failures	284		284		284		284	
Time at Risk	3654		3654		3654		3654	
Wald $\chi 2$ (k)	95.12 (20)***		110.4 (18)***		96.37 (20)***		99.56 (20)***	
Log pseudolikelihood	-719.1		-711.9		-718.6		-716.1	
BIC	1602.2		1571.5		1601.3		1596.3	
AIC	1478.1		1459.9		1477.2		1472.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

The models D2a through D2d pinpoint to the importance of the control variables (cf. Table 4-29). Similar to the other variables not included in the interaction terms, the results largely confirm the finding on model D1. Among the controls passing the statistical significance tests are the dummy variable on shared responsibilities, the recognition of private universities, the tally on the risk sequence and a country's score on membership in IGOs. The private university dummy still shows the contradictory relationship already discovered in model D1.

In term of the AIC scores, most explanatory models do not perform better than the initial model D1 on parallel problem solving and path dependency. The AIC of 1474.6 for model D1 is statistically significant from model D2a and D2b, but not D2d. Only interaction model D2b with an AIC score of 1459.9 indicates significantly different model fits. This is not surprising as this is the only model with a significant interaction effect.

Table 4-29: Domestic problem-pressure (part 2)

Explanatory variables	*Model D2a* *Problem-solving and fiscal constraints*		*Model D2b* *Problem-solving and unemployment*		*Model D2c* *Problem-solving and fiscal constraints*		*Model D2d* *Problem-solving and unemployment*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	1.007 (0.00937)	-	1.003 (0.00902)	-	1.007 (0.00882)	-	1.006 (0.00943)	-
Shared Responsibility	3.399** (1.826)	0.869*** (0.0455)	1.636 (0.902)	0.903* (0.0492)	3.722** (2.049)	0.866*** (0.0459)	2.901** (1.567)	0.868*** (0.0456)
Tertiary education enrolment	1.013 (0.0153)	-	0.997 (0.0140)	-	1.015 (0.0153)	-	1.006 (0.0146)	-
Public higher education expenditure	-	-	-	-	-	-	-	-
Recognition of private universities	0.224*** (0.126)	1.155*** (0.0477)	0.281*** (0.126)	1.113*** (0.0329)	0.229*** (0.127)	1.155*** (0.0472)	0.217*** (0.110)	1.150*** (0.0424)
Pilot projects	1.947 (1.079)	-	2.262 (1.294)	-	1.962 (1.100)	-	2.065 (1.174)	-
Risk sequence	0.794** (0.0802)	-	0.755*** (0.0809)	-	0.800** (0.0801)	-	0.783** (0.0785)	-
International norm	1.546 (0.700)	-	1.789 (0.831)	-	1.511 (0.692)	-	1.714 (0.767)	-
International interlinkages	1.059*** (0.0162)	0.996*** (0.00112)	1.060*** (0.0139)	0.996*** (0.000891)	1.056*** (0.0160)	0.996*** (0.00109)	1.061*** (0.0155)	0.996*** (0.00104)
Observations	3654		3654		3654		3654	
Number of Failures	284		284		284		284	
Time at Risk	3654		3654		3654		3654	
Wald $\chi 2$ (k)	95.12 (20)***		110.4 (18)***		96.37 (20)***		99.56 (20)***	
Log pseudolikelihood	-719.1		-711.9		-718.6		-716.1	
BIC	1602.2		1571.5		1601.3		1596.3	
AIC	1478.1		1459.9		1477.2		1472.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.8.3 Partisan Politics

Party politics refer to the question if governments are policy-driven or vote-seekers. In the former case government preferences determine the adoption of performance-orientated reforms in higher education (diffusion hypothesis D3). In the latter governments' policy choices depend on voters' preferences (diffusion hypothesis D4).

Government preferences for performance-orientated reforms are measured on behalf of parties' preferences for efficiency and market-orientation as stated in their election manifestos (cf. Bräuninger 2005). Bräuninger derived the data on party manifestos from the Comparativo Manifestos Project (CMP) (cf. Budge et al. 2001). The party-related CMP items on efficiency measure the yearly average emphasis of governments on policy efficiency and are weighted by parliamentary seats of the government parties. Bräuninger used (quasi-)sentences in party programs that dealt with "government and administrative efficiency" and the "need for efficiency and economy in government and administration" (cf. Bräuninger 2005). He counted how many times the issue was mentioned in the party manifestos and divided that value with the total number of (quasi-)sentences to obtain a measure for the policy position of a party (cf. ibid.: 415).

The variable is multiplied with 100 for a better visibility of the coefficient. That means the value indicates the percentage share of items in government party manifestos referring to government efficiency. The underlying assumption is that governments emphasizing public sector efficiency also favour performance-orientated policy reform in higher education (cf. Pennings 2006). As a matter of fact, most performance-orientated policies discussed in this study are based on the ideas belonging to the concept New Public Management (cf. Schedler 2007). To name a few, that relates to all issues of deregulation, but also to the use of economic instruments like performance-based contracts and private funding as additional source of income.

To determine voter preferences I use the Kim-Fording measure of median voter ideology (cf. Kim and Fording 1998; Kim and Fording 2003). The index measures the yearly average on the ideological position on the median voter (100=right; 0=left). That means the voter preferences have been estimated expost from electoral results, rather than measuring the actual preferences and opinion of voter. Unfortunately, data on voter preferences regarding educational issues is not available. Broader surveys like the World Social Value Survey do not include items on education policy, but are only referring to gender issues and societal problems related to the education system. Hence it is not meaningful to derive voters' positions on performance-based policy reforms. Other data sources like the CMP data refer only to party positions.

The question is if international influences actually have electoral consequences (cf. Hellwig and Samuels 2007; Kayser 2007). Does adopting internal policies translate into positive or negative voter turnout? This depends on the opinion of the voters in the country at risk. The expectation is, that right-wing voters prefer policies aiming at

market-orientation and economic freedom. Similar to right wing-governments, I assume that these voters favour policy reforms aiming at cost containment, deregulation and privatization or increasing the efficiency of the public administration (cf. Potrafke 2010). However this expectation is not without debate. The left-right divide provoked some criticism and empirical evidence often points to more complex patterns on policymaking. For example, tax cuts (cf. Jensen and Lindstädt 2012) or liberal welfare state reforms (cf. Pennings 2005) are not only right-wing phenomena.

I expect the degree to which the governments are following each of the two logics to be determined by the electoral accountability. The average electoral volatility indicates the risk to be punished in elections (cf. Carmignani 2002; Carmignani 2003). Carmignani measures the changeover in seats at elections as a measure of electoral uncertainty. Electoral volatility is an expost measure, but comparative polls are usually not available. The data also gives a more general picture of electoral uncertainty. Others only focus on the performance of the governing parties. Slightly different operationalizations can be found (cf. Bawn and Rosenbluth 2006; Hellwig 2012; Manow 2002; Volden 2006). For example, as the percentage of votes the party of the incumbent head of government received in the last election (cf. Hellwig and Samuels 2007). Unfortunately, the data is sometimes not provided or incomplete (for example, Iceland is often missing in the country samples).

Interaction terms between electoral accountability and the variables on government preferences, respectively electoral ideology are used to estimate the conditional effects of political uncertainty and to determine if governments are rather policy-driven (conditional hypothesis D2a) or vote-seeking (conditional hypothesis D2b) (cf. Braun and Gilardi 2006).

Furthermore, the dummy variable on the historical legacy of the country at risk is also included in the explanatory models to see if the is path dependency of governments' decisions is also holding for the models dealing with party politics. These assumptions are tested with model D3.

Model D4a and D4d deal with the question if the different logics of policy makers (vote- versus policy-seeking) depend on the level of political uncertainty in a country. Governments will tend to follow the preferences of the voters, if the electoral turnouts are more volatile. In the opposite situation where policy-makers face less risk to be punished (or rewarded) at the ballot box, vote-seeking behaviour seems less likely.

Diffusion hypothesis D3 on *government preferences* is strongly supported across all the models tested in this subsection (cf. Table 4-30). The effect is highly significant at

the 1%-level. According to model D3, a more market-orientated government increases the probability for adopting performance-orientated policies. More specifically, an additional percentage point in shares of items in government party manifestos referring to government efficiency increases the probability for policy adoption by 28.4%. This effect is only 13.2% in model D4b. But model D3 is based on a TVC to deal with the lacking proportionality of this effect across time. The effect diminishes yearly by 1.2%. That means the effect in model D3 matches the average effect estimated in model D4b after 11 years. One reason for this slow time-decreasing effect might be that actual policy choices converged. For example, fiscal constraints might weaken the role of government preferences.

Model D4a provides another explanation for a weaker impact of government preferences on policy adoption. The interaction term dealing with the conditional effect of political uncertainty is also highly significant. The average electoral volatility decreases the impact of government preferences on policy adoption by 0.7% per additional percentage point. Accordingly, the effect of government preferences shrinks by half its size if the average electoral volatility is roughly 14%. The conditional hypothesis D2a cannot be rejected.

Similarly, the interaction term between voter preferences and political uncertainty is also highly significant at the 1%-level. An additional percentage point in terms of the average changeover in seats at elections leads to a negative impact of -0.3% on the hazard. This does not contradict the expectation that voter preferences become more important in case of higher political uncertainty. Rather the positive hazard ratio of 1.046 for the covariate on leftist median voters is not intuitive. That means the negative interaction term “corrects” this effect. It seems as if voter preferences begin to have a substantial impact on policy adoption only at relatively high average electoral volatilities of more than 15%. Consequently conditional hypothesis D2b cannot be disconfirmed too.

On the contrary, diffusion hypothesis D4 on voter preferences cannot be confirmed. As already indicated in the previous paragraph, the covariate on voter preferences does not match the theoretical priors. The effect is unexpectedly positive throughout all three explanatory models. Furthermore, the effect is usually not significant. And main effects only hold if the covariate on political uncertainty is zero –which is a rather unrealistic assumption.

The dummy variable on historical legacy remains robust too. The covariate remains highly significant at the 1%-level. Only the effect size varies between -66.6%

and -41.4%. The AIC for both interaction models is statistically different from the additive regression model D3. This strongly indicates that the issue of vote- and policy-seeking behaviour is a matter of context.

What is the impact of the control variables integrated into the models on partisan politics (cf. Table 4-31)? The negative effects of the dummy variable indicating recognized private universities in the country at risk are significant across all three models (on the 5%-, respectively the 10%-level). The negative effect varies slightly between -65.5% and -51%. The TVC is also relatively stable. The negative effect decreases between 7.5% and 10.4%. As mentioned earlier, the effect is not plausible. The usual expectation is that the existence of private university sectors put additional pressure on the public higher education systems for reforms. The risk sequence is statistically significant at the 5%-, respectively 1%-level. The effect is negative and varies between -23.7% and -19.7%. The memberships in IGOs are having a robust effect too. The additional probability per IGO increases between 6.4% and 7%. The effect diminishes by roughly -0.5% per year.

The other controls are failing the statistical significance tests. Neither tertiary enrolment levels nor public higher education spending, the dummy on pilot projects or the control dummy for common policies is statistically significant. Also the effect of veto players – though highly significant in model D3 – is not robust across the other two models. The dummy variable on shared responsibilities is also not significant when it comes to explain policy diffusion with partisan politics and policy legacies.

Both models on the interaction effects have lower AIC than the original partisan model D3. According to their AIC scores models D4a and D4b have a significantly higher goodness of fit compared to model D3. They also perform better than model D1 on problem solving and path dependency.

Table 4-30: Partisan politics and historical legacies (part 1)

Explanatory variables	*Model D3* *Partisan politics*		*Model D4a* *Policy uncertainty and government preferences)*		*Model D4b* *Policy uncertainty and voter preferences*	
	Main	TVC	Main	TVC	Main	TVC
Partisan politics						
Government preferences	1.284*** (0.0695)	0.988*** (0.00410)	1.202*** (0.0473)	-	1.132*** (0.0289)	-
Government preferences × political uncertainty	-	-	0.993** (0.00269)	-	-	-
Voter preferences	1.009 (0.00708)	-	1.008 (0.00773)	-	1.046*** (0.0134)	-
Voter preferences × political uncertainty		-		-	0.997*** (0.000856)	-
Historical legacy	0.586** (0.142)	-	0.334*** (0.0904)	-	0.472*** (0.121)	-
Political uncertainty						
Electoral accountability	-	-	1.099*** (0.0209)	-	1.317*** (0.0779)	0.994*** (0.00191)
Observations	3878		3878		3878	
Number of Failures	286		286		286	
Time at Risk	3878		3878		3878	
Wald $\chi 2$ (k)	80.89 (16)***		112.2 (16)***		118.7 (17)***	
Log pseudolikelihood	-728.8		-719.5		-715.6	
BIC	1589.8		1571.2		1571.6	
AIC	1489.6		1471.0		1465.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-31: Partisan politics and historical legacies (part 2)

Explanatory variables	*Model D3* *Partisan politics*		*Model D4a* *Policy uncertainty and government preferences)*		*Model D4b* *Policy uncertainty and voter preferences*	
	Main	TVC	Main	TVC	Main	TVC
Veto players	1.034*** (0.0118)	-	1.022* (0.0124)	-	1.018 (0.0120)	-
Shared Responsibility	1.284 (0.605)	0.926* (0.0410)	0.736 (0.154)	-	0.654* (0.144)	-
Tertiary education enrolment	1.005 (0.0148)	-	1.005 (0.0140)	-	1.006 (0.0147)	-
Public higher education expenditure	1.002 (0.0194)	-	1.016 (0.0200)	-	1.035* (0.0203)	-
Recognition of private universities	0.388** (0.176)	1.104*** (0.0333)	0.345** (0.152)	1.103*** (0.0324)	0.490* (0.202)	1.075** (0.0304)
Pilot projects	1.548 (0.803)	-	1.318 (0.602)	-	1.247 (0.558)	-
Risk sequence	0.803** (0.0823)	-	0.763*** (0.0787)	-	0.763*** (0.0775)	-
International norm	1.291 (0.586)	-	1.501 (0.672)	-	1.513 (0.707)	-
International interlinkages	1.064*** (0.0147)	0.996*** (0.000958)	1.070*** (0.0152)	0.995*** (0.00100)	1.065*** (0.0151)	0.996*** (0.00105)
Observations	3878		3878		3878	
Number of Failures	286		286		286	
Time at Risk	3878		3878		3878	
Wald $\chi 2$ (k)	80.89 (16)***		112.2 (16)***		118.7 (17)***	
Log pseudolikelihood	-728.8		-719.5		-715.6	
BIC	1589.8		1571.2		1571.6	
AIC	1489.6		1471.0		1465.2	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.8.4 Summary

The empirical evidence supports several hypotheses (cf. Table 4-32). Diffusion hypothesis D2 on the role of *historical legacies* and path dependency cannot be rejected. The covariate on policy legacies is supported through all models dealing with common responses. The diffusion hypothesis D1 on *domestic problem solving* seems to work for student-related developments too. Though the effect of completion ratios is only significant at the 10%-level (cf. model D1). But the hypothesis has to be rejected in case of financial mismanagement and budget cuts. The diffusion

hypothesis D3 on *government preferences* is also supported, whereas diffusion hypothesis D4 on the impact of *voter preferences* is disconfirmed. The findings on interaction effects are rather mixed. The theoretical priors are largely disconfirmed in case of domestic problem pressure (conditional hypothesis D1). The opposite applies to the conditional hypothesis on the role of *electoral accountability*. Both conditional hypothesis D2a and D2b are supported by the empirical evidence.

Table 4-32: Overview of findings on assumptions dealing with common responses

Model	Explanatory variables	Relationship				Hypothesis supported	Robust (Model D5)
		Expected	Observed	Significant	NPH		
D1	*Country performance on*						
	• Public expenditure	Positive	Positive	No	N/A	No	N/A
	• Completion ratios	Negative	Negative	Yes	N/A	Yes	N/A
	Country experience on						
	• Budget cuts	Positive	Positive	No	Negative	No	N/A
	• Student growth	Negative	Negative	Yes	N/A	Yes	Yes
D2a, D2c	*Country-specific problem pressure (fiscal constraints)*						
	• Country performance	Positive	Positive	No	N/A	No	N/A
	• Country experience	Positive	Positive	No	N/A	No	N/A
D2b, D2d	*Country-specific problem pressure (unemployment)*						
	• Country performance	Positive	Negative	Yes	N/A	No	N/A
	• Country experience	Positive	Negative	No	N/A	No	N/A
D3	*Party politics*						
	• Government preferences	Positive	Positive	Yes	Negative	Yes	Yes
	• Voter preferences	Negative	Positive	No	N/A	No	N/A
D4a, D4b	*Political uncertainty (electoral accountability)*						
	• Government preferences	Negative	Negative	Yes	N/A	Yes	N/A
	• Voter preferences	Negative	Negative	Yes	N/A	Yes	Yes
D1, D2a-d, D3, D4a/b	*Path dependency*						
	• Historical legacy	Negative	Negative	Yes	Positive*	Yes	Yes

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use of non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check in the comprehensive model. This category does not apply to all explanatory variables, as they might not have passed the statistical tests conducted in the previous subsections. "N/A" generally indicates if a category does not apply. *N/A in model D3 and D4a/b.

Several of the control variables have a significant impact on policy adoption and – hence – have to be incorporated into the analysis when dealing with common responses. This includes the control on the IGO memberships of the countries at risk

and the risk sequence. The control on and the recognition of private universities are also significant in the models on common responses.

But the discovered negative effect is not matching the theoretical priors. Private university sectors are supposed to increase the adaptive pressure on public sector reforms in higher education rather than diminishing them. Perhaps policy makers follow a slightly different logic in domestic politics than the previously tested models on interdependencies indicate. The existence of a private university sector might take away pressure from the public university sector. In case the public universities are not performing well, private institutions can fill in these gaps?

The other controls are usually failing the statistical significance tests or are not reliable. Neither tertiary enrolment levels nor public higher education spending, the dummy on pilot projects or the control dummy for common policies is statistically significant. Also the effect of veto players, the dummy variable on shared responsibilities and the level of public expenditure are not robust across the various models.

The covariates integrated in the synthesized model on common responses confirm the previous findings to a high degree (cf. Table 4-33). The synthesized model D5 is based on robust variables only (and the controls). That means the previously tested models match the expected relationships and the coefficients are statistically significant at least at the the 5%-level.

The covariate dealing with the impact on the growth of student numbers is significant at the 5%-level. An additional percentage point in student growth decreases the probability for policy adoption by 11%. The effect decreases by 1.1% per annum. The covariates on partisan politics remain highly significant. Government preferences favouring performance-orientated reforms increase the probability for policy adoption by 14.4% per unit. The same applies to the effect of voter preferences. The effect is positive and increases the probability for policy adoption by 3.0% per additional point on the right-left index on the preferences on the median voter. This applies only to situations where the electoral accountability is zero. This is a highly unlikely situation in real life. But the effect becomes negative with higher level of political uncertainty (0.2% per average percentage change in seat shares). The effect of electoral accountability also increases the probability for policy adoption. This applies to cases in which the median voter preferences are extremely right wing with a score of zero. The negative effect of policy legacies is also robust. The effect remains highly significant at the 1%-level.

The controls also confirm the results obtained in model D1 through D4b to a large degree. Most controls are not significant. The risk sequence and the international memberships in IGOs remain the only highly significant controls. Both factors are significant at the 1%-level. Memberships in IGOs increase the probability for policy adoption. This effect diminishes slowly by 0.3% per year. The number of previous policy adoptions leads to a lower probability for additional legislation. The veto player index is statistically significant, but only at the 10%-level. But theoretical expectations usually point into the opposite direction. The hazard ratio indicates a positive impact on policy adoption, but the usual expectation is that a higher veto potential leads to a lower likelihood for policy change.

Interestingly, the final model D5 is not based on a lot of TVC. The covariates on student growth and the control on IGO memberships are the only ones with a TVC. Compared to the other approaches, it seems, as if non-proportionality is less of an issue in models on tales of common responses. The good performance of actor-centred explanations based on preference is also supported by the relatively low AIC. Among the models dealing with common responses, only model D2b is having a similar AIC score – albeit a higher BIC value. From this point of view, model D5 performs significantly better than models D1 through D4b.

Table 4-33: Common responses

Explanatory variables	*Model D5* *Common responses*	
	Main	TVC
Country experience on		
Student growth	0.890** (0.0426)	1.011*** (0.00427)
Partisan politics		
Government preferences	1.144*** (0.0305)	-
Voter preferences	1.030*** (0.0113)	-
Voter preferences × political uncertainty	0.998*** (0.000719)	-
Political uncertainty		
Electoral accountability	1.172*** (0.0440)	-
Path dependency		
Historical legacy	0.350*** (0.0942)	-
Veto players	1.021* (0.0123)	-
Shared Responsibility	0.923 (0.210)	-
Tertiary education enrolment	1.002 (0.0137)	-
Public higher education expenditure	1.029 (0.0201)	-
Recognition of private universities	0.856 (0.198)	-
Pilot projects	1.639 (0.777)	-
Risk sequence	0.769*** (0.0769)	-
International norm	1.572 (0.718)	-
International interlinkages	1.052*** (0.0132)	0.997*** (0.000923)
Observations	3654	
Number of Failures	284	
Time at Risk	3654	
Wald $\chi 2$ (k)	117.6 (17)***	
Log pseudolikelihood	-713.4	
BIC	1566.3	
AIC	1460.8	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

4.9 Comparing Models of Policy Diffusion

In the previous sections on learning, socialization, externalities and common response, various explanatory models haven been estimated. Based on the tested models, explanatory models using robust covariates only have also been synthesized. Model A5 deals with the robust learning assumption, model B6 with socialization, model C4 with externalities and model D5 with common responses. Explanatory variables, which are not significant at the 5%-level (or higher) across the singular models and/or do not match the expected relationship have been excluded. In case additive regressions and interaction effects performed similarly well, simple additive covariates have been preferred as the main effects are more difficult to interpret when modelling the complex structure of interaction terms (cf. Brambor et al. 2005; Braumoeller 2004; Enqvist 2005; Kam and Franzese 2007). Also sticking to the additive logic eases the comparison between the different diffusion variables, which are the main focus of this study.

To avoid problems due to collinearity two final models are estimated. Model E1 includes the variable measuring the policies of competing countries, whereas model E2 contains the policies of other IGO members. Both models yield similar results. The findings presented in Table 4-34 confirm largely the previous results. Most covariates are robust in model E1 and E2, except for one of the learning variables. The comparative country performance on completion ratios is insignificant and negative in models E1 and E2. This sheds some doubt on the validity of the *learning from success* hypothesis. The brain drain effect is also not significant in model E1 and E2. But this does not disconfirm the conditional effect of the openness of higher education systems on brain drain effects as the main effect merely indicates the impact on policy adoption in case the higher education system in the country at risk is closed. That means the openness of the higher education system is zero. But this is usually not the case in European higher education as there is a certain share of student flows between the European countries.

Table 4-34: Comparing diffusion models (part 1)

Explanatory variables	*Model A5 Learning*		*Model B6 Socialization*		*Model C4 Externalities*		*Model D5 Common responses*		*Model E1 All Mechanisms*		*Model E2 All Mechanisms*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Comparative Country performance												
On completion ratios	1.029** (0.0144)	-	-	-	-	-	-	-	0.974 (0.0169)	-	0.981 (0.0168)	-
Policy experience												
On Student growth	1.826*** (0.324)	-	-	-	-	-	-	-	1.957*** (0.354)	-	1.934*** (0.346)	-
Policy experience of neighbours												
On budget cuts	0.880** (0.0520)	1.014*** (0.00431)	-	-	-	-	-	-	0.895* (0.0566)	1.012*** (0.00449)	0.900* (0.0556)	1.011** (0.00437)
Historical peers' comparative performance on												
Public expenditure	0.863*** (0.0333)	1.015*** (0.00319)	-	-	-	-	-	-	0.882** (0.0452)	1.012*** (0.00454)	0.885** (0.0442)	1.013*** (0.00434)
Common networks												
Policies of international partners	-	-	1.121* (0.0672)	0.992* (0.00454)	-	-	-	-	1.210*** (0.0783)	0.987*** (0.00493)	-	-
Ideology-weighted EU candidate effect												
Policies of EU members	-	-	1.015*** (0.00476)	-	-	-	-	-	1.017*** (0.00579)	-	1.016*** (0.00590)	-
Competitive interdependencies												

Explanatory variables	*Model A5 Learning*		*Model B6 Socialization*		*Model C4 Externalities*		*Model D5 Common responses*		*Model E1 All Mechanisms*		*Model E2 All Mechanisms*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Policies of competitors	-	-	-	-	1.169*** (0.0679)	0.987*** (0.00411)	-	-	-	-	1.201*** (0.0712)	0.987*** (0.00409)
Cooperative interdependencies												
Brain drain effect	-	-	-	-	0.991** (0.00378)	-	-	-	0.997 (0.00392)	-	0.998 (0.00385)	-
Brain drain effect × international openness of higher education system	-	-	-	-	1.001*** (0.000431)	-	-	-	1.001** (0.000316)	-	1.001** (0.000308)	-
International openness of higher education system	-	-	-	-	0.912*** (0.0314)	-	-	-	0.939*** (0.0206)	-	0.943*** (0.0198)	-
Country experience on												
Student growth	-	-	-	-	-	-	0.890** (0.0426)	1.011*** (0.00427)	0.844*** (0.0452)	1.013*** (0.00457)	0.855*** (0.0451)	1.012*** (0.00450)
Partisan politics												
Government preferences	-	-	-	-	-	-	1.144*** (0.0305)	-	1.150*** (0.0387)	-	1.144*** (0.0373)	-
Voter preferences	-	-	-	-	-	-	1.030*** (0.0113)	-	1.032** (0.0128)	-	1.033** (0.0129)	-
Voter preferences × political uncertainty	-	-	-	-	-	-	0.998*** (0.000719)	-	0.998** (0.000825)	-	0.998** (0.000839)	-

Explanatory variables	*Model A5 Learning*		*Model B6 Socialization*		*Model C4 Externalities*		*Model D5 Common responses*		*Model E1 All Mechanisms*		*Model E2 All Mechanisms*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Political uncertainty												
Electoral accountability	-	-	-	-	-	-	1.172*** (0.0440)	-	1.149*** (0.0486)	-	1.154*** (0.0496)	-
Path dependency												
Historical legacy	-	-	-	-	-	-	0.350*** (0.0942)	-	0.321*** (0.0819)	-	0.335*** (0.0843)	-
Observations	3654		3878		3878		3654		3654		3654	
Number of Failures	284		286		286		284		284		284	
Time at Risk	3654		3878		3878		3654		3654		3654	
Wald $\chi 2$ (k)	107.6 (16)***		65.74 (13)***		50.18 (15)***		117.6 (17)***		203.3 (26)***		214.2 (26)***	
Log pseudolikelihood	-721.5		-739.7		-733.9		-713.4		-694.0		-694.3	
BIC	1574.3		1586.8		1591.8		1566.3		1601.3		1601.9	
AIC	1475.0		1505.4		1497.9		1460.8		1440.0		1440.6	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Table 4-35: Comparing diffusion models (part 2)

Control variables	*Model A5 Learning*		*Model B6 Socialization*		*Model C4 Externalities*		*Model D5 Common responses*		*Model E1 All Mechanisms*		*Model E2 All Mechanisms*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC
Veto players	0.940** (0.0251)	1.005*** (0.00189)	0.959 (0.0256)	1.004* (0.00188)	0.963 (0.0232)	1.005** (0.00179)	1.021* (0.0123)	-	1.022* (0.0115)	-	1.021* (0.0118)	-
Shared Responsibility	4.534*** (2.279)	0.831*** (0.0402)	4.524*** (2.410)	0.840*** (0.0418)	1.845 (0.815)	0.892*** (0.0380)	0.923 (0.210)	-	0.767 (0.196)	-	0.754 (0.191)	-
Tertiary education enrolment	1.116*** (0.0354)	0.992*** (0.00230)	1.006 (0.0100)	-	0.999 (0.0113)	-	1.002 (0.0137)	-	0.998 (0.0136)	-	0.995 (0.0137)	-
Public higher education expenditure	1.041* (0.0226)	-	1.189*** (0.0494)	0.988*** (0.00294)	1.013 (0.0205)	-	1.029 (0.0201)	-	1.040 (0.0277)	-	1.037 (0.0285)	-
Recognition of private universities	1.873*** (0.293)	-	1.885*** (0.235)	-	0.615 (0.212)	1.083*** (0.0310)	0.856 (0.198)	-	1.463* (0.328)	-	1.392 (0.322)	-
Pilot projects	1.793 (0.999)	-	1.967 (1.096)	-	1.722 (0.928)	-	1.639 (0.777)	-	1.155 (0.523)	-	1.249 (0.578)	-
Risk sequence	0.799** (0.0773)	-	0.799** (0.0795)	-	0.754*** (0.0789)	-	0.769*** (0.0769)	-	0.745*** (0.0795)	-	0.749*** (0.0769)	-
International norm	-	-	-	-	-	-	1.572 (0.718)	-	-	-	-	-
International interlinkages	-	-	-	-	-	-	1.052*** (0.0132)	0.997*** (0.000923)	-	-	-	-
Observations	3654		3878		3878		3654		3654		3654	
Number of Failures	284		286		286		284		284		284	
Time at Risk	3654		3878		3878		3654		3654		3654	
Wald $\chi 2$ (k)	107.6 (16)***		65.74 (13)***		50.18 (15)***		117.6 (17)***		203.3 (26)***		214.2 (26)***	
Log pseudolikelihood	-721.5		-739.7		-733.9		-713.4		-694.0		-694.3	

Control variables	*Model A5 Learning*		*Model B6 Socialization*		*Model C4 Externalities*		*Model D5 Common responses*		*Model E1 All Mechanisms*		*Model E2 All Mechanisms*	
	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC	Main	TVC
BIC	1574.3		1586.8		1591.8		1566.3		1601.3		1601.9	
AIC	1475.0		1505.4		1497.9		1460.8		1440.0		1440.6	

Note: Estimates are hazard ratios from stratified conditional gap-time Cox proportional hazard models on repeated events. Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors (in parentheses). Standard errors are calculated by clustering on country-policies. *** Significant at < 1%; ** significant at < 5%; * significant at < 10%. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI.B).

Other hypotheses on learning can be confirmed (cf. Table 4-36). Policy experience on student growth remains statistically significant at the 1%-level, though the impact on policy adoption changes slightly. In model A5 an increase in the coefficient on policy experience by 1 leads to a probability for policy adoption that is 82.6% higher. This value is 93.4% in model E1 and 95.7% in model E2. Still the effect size remains relatively similar compared to the substantial differences in the model configurations. Model A5 is based on learning variables only, whereas models E1/E2 cover a much broader range of covariates. Model A5 is based on 16 covariates only, but model E1/E2 integrate 26 covariates. Furthermore, no interaction terms are included in model A5. That means the hypothesis on *learning from policy experience* could still not be disconfirmed.

The two variables dealing with bounded versions of learning are also showing relatively similar results across the cox models. The size of the negative effect remains almost identical and differs by less than two percentage points. For example, an increase by one unit in the historical peers' comparative performance on public expenditure leads to a 13.7% higher chance for policy adoption in the subsequent year in model A5. This effect is almost the same with 11.8% in model E1 and 11.5% in model E2. Though both covariates are only significant at the 5%-level, respectively the 10%-level. That means the significance levels in the models integrating all diffusion variables are slightly lower. Analogous results apply to the TVC. The negative impact of both covariates decreases by 1.1% to 1.5% per year.

The extensive models largely confirm the results from model B6 on socialization too. The effect of the policies of the countries sharing common IGO memberships with the country at risk is also robust. It remains significant across the various models. Its significance level is even higher in the extensive model E1. It is highly significant at the 1%-level. With a hazard ratio of 1.21, the effect size is also higher in model E1. Accordingly, the TVC is also slightly higher. The main effect becomes zero after roughly 15 years at risk in model B6. In model E1 the effect approaches the zero point after around 16 years. The covariate measuring the policies of EU member states with similar ideologies as the EU candidate countries at risk also remains highly significant at the 1%-level in model B6, but also in the models E1 and E2. The same applies to the effect size, which is almost the same. The effect varies only between 1.5% and 1.7% per additional unit.

How robust are the previous findings on externalities? The covariate dealing with the policies of competitor states is highly significant in all three models. The positive effect varies slightly between 16.9% per unit in model C4 and 20.1% in model E2.

The TVC is also robust. The effect is the same with -1.3% per year. The interaction terms dealing with the conditional effect of the international openness of the higher education system and the policies in target countries is after all significant at the 5%-level in model E1 and E2. The effect is the same. Each additional percentage point in the share of international students in the country at risk increases the probability for policy adoption due to the policies in target countries by 0.1%. That means an increase by 15 percentage points increases the effect on policy adoption by roughly 1.2%.[138] The findings are also reliable for the main effect of the international openness of the higher education system in the country at risk. The negative effect remains highly significant at the 1%-level. This – as already mentioned at the beginning of this section – does not apply to the main effect of the variable measuring the policies of target countries.

The covariates on common responses are probably the most robust ones when comparing the stability of effect sizes and significance levels. The dummy variable on policy legacies measuring the impact of path dependency is also highly robust across all three models. Furthermore, the covariate measuring the yearly student growth in the country at risk remains significant. Moreover, its effect is highly significant in the models dealing with all mechanisms. Both the size of the main effect and the TVC are relatively stable. The negative effect of student growth in the country at risk turns positive too after some time. The TVC indicates that the negative effect decreases by 1.2% to 1.3% per year (1.1% in explanatory model D5). In other words, the impact becomes positive after roughly 11 to 12 years. This time-dependency is quite comprehensible. In case student growth remains high it comes to no surprise that after a period of constant growth the issue of student growth rather increases the problem pressure and the goal becomes more of a problem (in terms of teaching quality) than a solution (in terms of educating workforce and decreasing unemployment).

The results on partisan variables also remain stable. The effect of government preferences on policy adoption is still highly significant at the 1%-level. The effect size also does not change much with a hazard ratio between 1.144 and 1.150. The same applies to the interaction term between voter preferences and political uncertainty. The hazard ratio and the significance level are the same throughout all

[138] The formula for calculating the hazard ratio for a 15% step is $\exp(\beta_1 * 15)$. Note, the effect of unit changes is nonlinear (cf. Cleves et al. 2010: 134).

three models. Similarly, the main effect of the voter preferences and political uncertainty are almost identical.

The synthesized models usually have a significantly lower AIC score than the previously tested models. Moreover, previous findings on AIC scores have to be considered with care. Especially regarding controls a lot of volatility exists across the various models.

But between all the different diffusion models, significant differences exist in terms the overall model fit. Explanatory models E1 and E2 have the highest model fit with an AIC of 1440.0, followed by model D5 on common responses, model A5 on learning, model C4 on externalities and model B6 on socialization. Especially in the latter two models, much of the explanatory power stems from the control variables. From that point of view, an integrative approach seems most suitable.

I obtain different results for the AIC and BIC regarding modes E1 and E2. The higher BIC for the more comprehensive models E1, respectively E2 point to the circumstance that the BIC penalizes stronger for the number of parameters in a model (cf. Acquah 2010). As models E1 and E2 are based on 26 parameters, whereas the other models are based on 15 to 17 estimators only. Of course, if the aim is to follow a rather parsimonious theoretical approach it might be more appropriate to focus on a more specific theoretical framework. According to the comparative findings of this section, an approach based on learning or – better – a diffusion model dealing with common responses seems most appropriate as a starting point.

The interpretation of the control variables is more complicated (cf. Table 4-35). The control variables tested in the synthesized models remain the same, except for the two control variables dealing with general diffusion effects. The variables on common policies and country memberships in IGOs have been excluded from the models E1 and E2. Those factors are not controlled for as diffusion effects are already covered by various other variables from the explanatory models on learning, socialization or externalities.

Among the list of alternative explanations, only the variable estimating the number of previous events per country and policy item suffices statistical standards. The tally on the risk sequence has a negative impact on policy adoption between 20.1% in model A5 and B6 and 25.5% in model E1. The effect is relatively stable across all six models presented in this section and it is statistically significant at the 1%-level except for the models A5 and B6. But even in those two models, the significance

remains relatively high at the 5% level. The same applies to the impact of IGO membership of the countries at risk that is only tested in model D5 on common responses. It has a highly significant impact at the 1%-level. Though this covariate effect slightly decreases by 0.3% per year, the additional membership in one IGO increases the probability for policy adoption by 5.2%. This finding match with the results derived for the models testing socialization. The effect of the policies of other members in IGO is also positive and statistically significant.

The other control variables are less meaningful. The effects of veto players are only partly statistically significant. The estimated effects vary in terms of the size (of the effect), its significance as well as its stability over time. Among the controls not passing the statistical significance tests in the models E1 and E2 on all mechanisms are the dummy variable on shared responsibilities, the level of enrolment in tertiary education, public expenditure the dummy on pilot projects and the recognition of private universities (only significant at the 10%-level in model E1).

Table 4-36: Overview of findings on assumptions tested in the explanatory models dealing with all diffusion mechanisms

Model	Explanatory variables	Relationship				Hypothesis supported	Robust across models
		Expected	Observed	Significant	NPH		
E1/E2	*Comparative country performance on* • Completion ratios	Positive	Negative	No	N/A	No	No
	Policy experience on • Student growth	Positive	Positive	Yes	N/A	Yes	Yes
	Policy experience of neighbours on • Budget cuts	Negative	Negative	Yes	Positive	Yes	Yes
	Historical peers' comparative performance on • Public expenditure	Negative	Negative	Yes	Positive	Yes	Yes
	Common networks • Policies of international partners	*Positive*	Positive	Yes	Negative	Yes	Yes
	Ideology-weighted policies of • EU members	Positive	Positive	Yes	Negative	Yes	Yes
	Competitive interdependencies • Policies of competitors	Positive	Positive	Yes	Positive	Yes	Yes
	International openness of higher education system on • Brain drain effect	Positive	Positive	Yes	N/A	Yes	Yes
	Country experience on • Student growth	Negative	Negative	Yes	N/A	Yes	Yes
	Party politics • Government preferences	Positive	Positive	Yes	Negative	Yes	Yes
	Political uncertainty (electoral accountability) • Government preferences • Voter preferences	Negative Negative	Negative Negative	Yes Yes	N/A N/A	Yes Yes	N/A Yes
	Path dependency • Historical legacy	Negative	Negative	Yes	Positive*	Yes	Yes

Note: Own illustration. Columns three to five describe the relationship between the various covariates and the dependent variable. Column three lists the relationship formulated in the corresponding hypothesis in chapter two. In terms of the causal relationships, the explanatory factors usually work in both directions - depending on the operationalization of the variables policy adoption might be more or less likely. The relationship expected depends on the actual construction of the covariates. For example, in case of the indicator for measuring learning from experience in terms of public expenditure per student a positive experience, and hence a positive impact on policy adoption, is indicated by a negative effect of the covariate on the dependent variable. The fourth column shows the statistical effect of the covariate and column five indicates if this effect is statistically significant. The sixth column on the use non-proportional hazard (NPH) indicates if there is a (positive or negative) robust and significant time varying effect of the covariates. The seventh column lists if the original hypothesis is supported by the main effect – in case of conditional factors this applies to the interactive term. The last column indicates if the effect of the covariate is also passing the robustness check across the various models tested. "N/A" generally indicates if a category does not apply. *N/A in model D3 and D4a/b.

5 Concluding Remarks

This chapter discusses the conclusions of this thesis and gives some outlook on directions for future research. Section one and two provide a summary of the study and present the main theoretical and empirical findings. Section three deals with the general implications of this study for those studying policy diffusion. Overall, it seems as if the lessons learnt can be structured according to the following key words: time-dependency; multi-causality; conditionality; (neglected) policy laboratories and (domestic) politics. Section four touches on the benefits and limitations of this study. It also discusses some methodological problems that arose during the study. Special focus is on the problems related to disentangling theoretical assumptions derived from mechanism-based thinking in macro-quantitative designs. Last but not least, future research options are discussed in the final section.

5.1 Explaining Policy Diffusion in European Higher Education

The preceding chapters deal with the spread of performance-orientated higher education policies in West European countries. Utilizing event history modelling and cox regressions, various explanatory models are tested in a theoretically informed stepwise fashion. More specifically, hypotheses on learning, socialization, externalities and the common response of countries to policy problems are contrasted. The analysis is dealing with policy change and adoption in higher education systems in 16 West European countries between the years 1980 and 1998. Overall 14 policy items describing performance-orientated reforms for public universities are analysed.

Chapter two provides the theoretical framework. Four testable and coherent explanatory models on the functioning of the different diffusion mechanisms are provided: learning model(s), diffusion model(s) based on a combination of socialisation and emulation arguments and model(s) based on hypotheses on externalities stemming from competitive and cooperative interdependencies. A fourth set of hypotheses is formulated on the assumption that governments are policy- and/or vote seeking and that they reply to domestic policy problems and historical legacies in a similar way (the common response approach). This framework provides the potential answers to the causal analysis and the factors accounting for both the

adoption and modification of performance-orientated policies as well as the differential impact of diffusion processes (that means, the conditional variables).

Chapter three covers the descriptive analyses of policy change and adoption in West European higher education systems between the years 1980 and 1998. It gives answers to the empirical question if we can observe patterns of policy clustering in European higher education policy. More specifically the EU-15 states with a fully-fledged higher education system (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, United Kingdom) and two associated members of the EU (Norway and Iceland) are covered.

The descriptive analysis shows empirical patterns of policy diffusion for most policy areas. Differences exist between countries and policies in terms of the timing, frequency as well as the scope of policy reforms. Diffusion patterns are more pronounced regarding the items on institutional autonomy, external quality assurance and stakeholder participation. Funding arrangements change rather selectively. In most cases, it is only formula funding and target agreements that are spreading, whereas the number of adopters of performance-driven funding and demand-side vouchers remains relatively stable. Also countries seem to favour cost sharing in terms of granting possibilities for contracting services, whereas study fees do not spread. The empirical data also shows that almost all processes are characterized by an increasing probability for policy adoption (except for adopting legislation on teaching contracts).

Chapter four includes the causal analysis and the empirical test of the theoretical framework provided in chapter two. It deals with the question what international factors cause and stimulate the adoption of public policies in higher education and what the interplay between and international and domestic explanatory factors is. Explanatory models and hypotheses are tested by means of a Cox Model for repeated events. Various partial models are tested on learning, socialization, externalities and common responses. The chapter also provides the comparative analysis of the explanatory models and the final robustness test of variables successfully passing the previous statistical tests. In other words, the chapter deals with the question which explanatory stories work.

The stepwise tests of covariates provide a mixed picture of the role of diffusion mechanisms and the conditional variables. The diffusion frameworks like learning, socialization and externalities perform quite differently. Furthermore, the domestic

model based on common responses seems to be a serious alternative for analysing policy clusters.

Robust learning effects can only be confirmed with regard to the issue of student growth – both in terms of learning from success, but also regarding the effects of policy experiences. This does not apply to financial developments. Similarly, longer-term effects are disconfirmed. Bounded versions of learning are also supported. And by and large, interaction models dealing with problem-driven learning cannot be rejected.

Only a few hypotheses on network socialization pass the statistical tests. The impact of EU memberships cannot be confirmed. The same applies to the socialization effects on EU accession candidates. On the contrary, empirical evidence supports the assumption on network socialization driven by memberships in intergovernmental organizations. Furthermore, sharing ideological dispositions plays a significant role in determining the actual effects of IGO memberships, but also in terms of the conditionality effects on EU accession candidates. Evidence for peer socialization is even more limited. Only in case of ideological peers some significant impact on policy adoption can be found, but this effect is not robust across all models. The same findings apply to international policies and norms. Furthermore, the results for socialization do not support the assumptions on conditionality. For example, the hypothesis on the mediating impact of domestic problem pressure on peer socialization is also falsified.

Externalities can only be traced in case of competing states, whereas the diffusion hypothesis on competitive policies and competitive countries is disconfirmed by the analysis. Analogously, the covariate on brain drain effects was also not passing the statistical tests. Assumptions on externalities seem to benefit from integrating conditional variables and interaction effects though. The conditional hypothesis on the international openness of the higher education system is confirmed. This does not mean, that all conditional hypotheses dealing with externalities work. Interaction effects in terms of domestic problem pressure are not supported by the statistical analysis.

In case of the common responses models, conditionality is also no universal phenomena. The effects of domestic problem pressure are not robust. Similar to the learning approach, the hypothesis on solving domestic policy problems is confirmed for the student-related problems, but the conditional variables dealing with fiscal policy problems have to be rejected. The covariate dealing with the effects of path

dependency and historical legacies is also confirmed by the statistical results. The same applies to government preferences for performance-orientated policies. The diffusion hypothesis on the impact of voter preferences has to be rejected though. But the conditional impact of political uncertainty on the orientation of governments (policy- versus vote-seeking) is confirmed.

Last but not least, the examined control variables play different roles in different diffusion processes. The majority of control factors clearly lack robustness across the various explanatory models though.

So what can we learn from the previous analysis and its findings? What are the main empirical findings on the theoretical expectations and the various primary and secondary hypotheses?

5.2 Theoretical and Empirical Findings

The stepwise tests of covariates provide a mixed picture on the role of diffusion mechanisms and conditional variables when it comes to explain the adoption of performance-related higher education reforms. This applies to the diffusion frameworks like learning, socialization and externalities, but also to the domestic model based on common responses as a reason for policy clustering. Though most of the hypotheses from the latter theoretical framework cannot be rejected (cf. Table 5-1).

Diffusion hypothesis A1 on *learning from success* can largely be rejected. The only diffusion variable passing the previous tests eventually fails the final robustness tests in terms of model E1, respectively E2. Evidence for diffusion hypothesis A2 on *learning from experience* only works for the issue of student growth. And diffusion hypotheses A3a and A3b on longer term learning effects have already been falsified in section 5.4.

The results for the bounded versions of learning support conditional hypothesis A2 on *similar historical origins* and conditional hypothesis A1 *on learning from neighbours*. Conditional hypothesis A3 on *ideological similarities* is rejected. But comprehensive tests apply to the fiscal performance indicators only. A final test for conditional hypothesis A3 is still missing as the unconditional covariates on learning from student related performance indicators have not been tested in the synthesized models. The unconditional factors already performed well in the learning models. Similarly, the interaction models dealing with learning and domestic problem

pressure are not tested in the synthesized models E1 and E2 dealing with all mechanisms. Therefore, the final and comparative assessment of these hypotheses is still unsettled. That means conditional hypothesis A4 on *problem-driven learning* cannot be rejected for the time being.

Diffusion hypothesis B1a on networks socialization between *EU partners* is already disconfirmed in subsection 4.6.1. The same applies to diffusion hypothesis B2 on *EU candidates*. But diffusion hypothesis B1b on socialization in *intergovernmental organizations* cannot be rejected. These findings are partly confirmed by the hypothesis tests on *Ideological similarities* as the conditional versions of network socialization (conditional hypothesis B1). The EU effect is still not confirmed, but both conditional versions on IGO memberships and EU accession candidates cannot be rejected. Here, the former hypothesis has not been tested in model E1 and E2 due to the robust findings on the unconditional version of the diffusion variable.

Most diffusion hypothesis on peer socialization can be rejected. That applies to both diffusion hypothesis B3a on *regional peers* as well as diffusion hypothesis B3c on *cultural peers*. The role of *ideological peers* is not tested in the synthesized model. That means, a final evaluation of diffusion hypothesis B3b is still missing and the hypothesis cannot be rejected for the time being. The hypothesis on the impact of *international norms* also fails the statistical tests. Common policies and norms also do not seem to be decisive when it comes to policy adoptions. A similar picture emerges regarding conditional hypothesis 2a on *problem-driven peer socialization* and the mediating impact of domestic problem pressure. This hypothesis is strongly disconfirmed. Last but not least, the conditional hypothesis B2b on the role of *political uncertainty* has also been dropped after the statistical test in section 4.5.

Some evidence can be found for diffusion effects caused by externalities. Diffusion hypothesis C2 on the *policies of competitors* is robust across the various tests carried out in this chapter. Diffusion hypothesis C1 on *competitive policies* and diffusion hypothesis C3 on *competitive countries* are disconfirmed by the analysis. Analogously, diffusion hypothesis C4 on *brain drain* effect must also be rejected. The effects of policies in other countries attracting a lot of domestic students perform better in the interactive models. Conditional hypothesis C2 on the international *openness of the higher education system* cannot be rejected for the brain drain effects and the policies of competing states. These results are contrary to the ones on the covariates dealing with competitive policies and competitive countries. From this point of view, a final evaluation cannot be made at this point in time. Conditional effects on externalities in terms of domestic problem pressure cannot be found. The

interaction effects of domestic problem pressure on externalities are not robust. Therefore, conditional hypothesis C1 on *problem-driven socialization* is also rejected.

The conditional effects of domestic problem pressure in models dealing with common responses are also not robust. Conditional hypothesis D1 on *domestic problem pressure* must be rejected in the light of the empirical findings. However, diffusion hypothesis D1 on *domestic problem solving* cannot be rejected due to the robust performance on the covariates dealing with student-related problems like completion ratios and student growth.[139] The hypothesis is not supported by the variables dealing with fiscal policy problems. The various statistical models also confirm diffusion hypothesis D2 on the *historical legacy*.

Diffusion hypothesis D3 on party politics and *government preferences* is also confirmed. The same applies to the conditional effect of *electoral accountability* formulated in conditional hypothesis D2a and D2b. The conditional variable is robust for both government preferences as well as voter preferences. Despite the robust interaction effect on voter preferences, hypothesis D4 on the singular effects of *voter preferences* has been disconfirmed by the cox regressions.

[139] Though it has to be acknowledged that the covariate on completion ratios is not evaluated in the final models E1 and E2.

Table 5-1: Overview of findings on hypotheses testing

Type	No.	Hypothesis	Mechanism	Disconfirmed
Primary	A1	Learning from success	Learning	Yes
	A2	Learning from experience		Partly
	A3a	Longer term learning from success		Yes
	A3b	Longer term learning from experience		Yes
Secondary	A1	Learning from neighbours		Partly
	A2	Similar historical origins		Partly
	A3	Ideological similarities		Partly
	A4	Problem-driven learning		Partly
Primary	B1a	EU partners	Socialization	Yes
	B1b	Intergovernmental organizations		No
	B2	EU candidate		Yes
	B3a	Regional peers		Yes
	B3b	Ideological peers		Yes
	B3c	Cultural peers		Yes
	B4	International norms		Yes
Secondary	B1	Ideological similarity		Partly
	B2a	Problem-driven peer socialization		Yes
	B2b	Uncertainty-driven peer socialization		Yes
Primary	C1	Competitive policies	Externalities	Yes
	C2	Policies of competitors		No
	C3	Competitive countries		Yes
	C4	Brain drain		Yes
Secondary	C1	Problem-driven competition		Yes
	C2	Openness of higher education systems		Partly
Primary	D1	Domestic problem solving	Common responses	Partly
	D2	Historical legacy		No
	D3	Government preferences		No
	D4	Voter preferences		Yes
Secondary	D1	Domestic problem pressure		Yes
	D2a	Electoral accountability and voter preferences		No
	D2b	Electoral accountability and government preferences		No

Note: Own illustration. Primary hypotheses are dealing with diffusion variables triggering diffusion processes based on mechanisms like learning. Secondary hypotheses are dealing with conditional variables mediating the effects of diffusion variables. Column five summarizes the results of the empirical tests in chapter four. “Partly” indicates that there are mixed results in case various indicators are used to test the hypothesis.

Overall, evidence can be found for (and against) all the four approaches – at least as distinct theoretical approaches. None of the theoretical approaches is fully convincing. This would have been rather surprising due to the broad and comprehensive list of explanatory factors tested though. In comparison, the evidence drawn from European higher education policies does not support many of the assumptions related to learning, externalities and socialization, whereas the common response model is relatively robust. Many of the assumptions related to interdependencies lack robustness, whereas the common response model seems to be the most stable one.

Interdependency is a multi-dimensional concept – hence testing explanatory models based on interdependent decision-making require a comparative assessment of diffusion mechanisms. From this point of view, the recommendation for analysing diffusion is to start with a model based on domestic politics and successively extend this model by explanatory factors dealing with interdependency. Diffusion variables matter, but it is only one side of the story.

5.3 Implications for Research on Policy Diffusion

Studying policy diffusion and the clustering of policies across time, space and sectors offers valuable insights into the policy process by giving answers to questions that might help decision-makers to improve the quality of policy outputs: Under which conditions do policies spread? Why do some policy innovations spread while others do not? And what can we learn from a diffusion framework to enhance institutional designs and problem-solving capacities in governments? This thesis is not evaluating different institutional settings and the quality of policy outputs though. Of course, different explanatory factors have been tested comparatively showing that decision-making is not purely rational and not only orientated towards problem solving and the saliency of a problem (cf. Rapaport, Levi-Faur and Miodownik 2009). But the main focus of this study is on explaining policy diffusion and contributing to the general discussion in the academic field. Here, several desiderata can be obtained from the previous analyses for studying policy diffusion:

First of all, time matters. Of course, time is not a theoretical variable (cf. Beck 2010). Time as such does not explain policies. At least time does not have to say a lot about policies in substantial terms. Still it is empirically important and “of the essence” (Box-Steffensmeier and Jones 1997) as this study demonstrates. Considering the various

tests carried out in the previous chapter, one has to acknowledge that time matters in all models. But there are different ways in which time matters.

Firstly, the analyses in section 3.5 illustrate the time dependency inherent in the data on adopting legislation on performance-orientated policies. For example, the probability for policy adoption of external quality assurance does not change over the first five years of analysis, but then becomes increasingly more likely. The risk for adopting legislation on external quality assurance systems is particularly growing and reaches its climax after fourteen years in the second half of the 1990s. The same patterns can be observed regarding external stakeholder participation. But the risk increased less dramatically with a first (local) peak after the first ten years.

As already discussed in chapter four time –secondly– helps to disentangle the effects of the explanatory factors. Working with time can increase the validity of findings in terms of causality.

Thirdly, empirical evidence shows that the diffusion effects are not always proportional across time. Furthermore, reconfiguring explanatory models can substantially inflate the non-proportionality of variables. That means testing the proportional hazard assumption is essential for cox models. In this regard, time helps to identify the contingency of explanatory power. Are causal effects stable across time or are they time-dependent? This seems to be even more important as the social sciences usually deal with middle-range theories only.

Fourthly, temporal orders between independent and dependent variables strengthen the causal argument, but it can also help to disentangle different diffusion processes. For example, some authors argue that emulation has a strong initial effect on policy adoption that fades over time, whereas learning and competition seem to be stable across time with similar original and future effects (cf. Shipan and Volden 2008: 844).

Second, many faces of policy diffusion have been discovered in this study. Various processes drive policy clustering – some of them are based on interdependencies and international factors, whereas others are mainly motivated by domestic rationales. From this point of view, the recommendation for analysing diffusion starts with a model based on domestic politics and successively extending this model by explanatory factors dealing with interdependency. International explanations still have to be integrated into policy analysis as many tales and stories unfold when it comes to explain policy diffusion.

The analysis demonstrated that a comparative approach is necessary for a final evaluation of diffusion mechanisms. But testing singular approaches like learning

might sometimes be necessary – for example, in case of developing specific theoretical branches or elaborating on the contingency of specific assumptions. Or in case, the focus is on the interplay between various diffusion mechanisms. For example, how to factors driving competition and learning interact?

Third, the study supports warnings about the conditional nature of policy diffusion. Interaction effects matter too. For example, the empirical analysis shows clearly that explanations like brain drain or learning from success in terms of fiscal developments are not sufficient for explaining policy adoption if mediating factors are not taken into account. Causal relationships are often conditional. In all approaches, one can find evidence for the importance of conditional variables. But this does not necessarily mean these assumptions are superior to simple additive regressions. It highlights once more that statistical analysis has to adapt to the existing state of the art. Depending on the theoretical discussions quite different research designs are recommended, but robustness checks are essential.

The formerly assumption that the effects of diffusion mechanisms based on communication are unconditional (cf. Holzinger et al. 2007a; Meseguer and Gilardi 2005: 8) cannot be supported on behalf of this study. Against the evidence presented in this study, a comprehensive theoretical framework should certainly incorporate theoretical assumptions on the interplay between causal mechanisms and their conditional variables.

Fourth, the study demonstrated the usefulness of examining rather neglected areas of research on policy diffusion. It seems, as if European higher education systems are a valuable empirical source for examining processes of policy clustering. But the study also showed that processes within policy laboratories are issue-specific – they can even differ within policy components.

For example, consider the developments of the two items related to cost-sharing policies: study fees and contract-based services. Taking a look at European higher education systems in the year 1980, one has to acknowledge that some of the policy innovations that spread during the 1980s and 1990s had already been in place in some countries. In some cases policies were rather unknown in European higher education (for example, external quality assurance). Other policies were already common by the time the observation starts. In 1980, contracting teaching was already adopted by more than a third of the countries of the sample.

As a consequence, the underlying baseline hazard for both adoption processes developed quite differently (cf. Figure 3-4). The probability for a country reforming its

policy on study fees increased steeply over time with a peak in the mid-1990s. On the contrary, the probability for increasing the possibilities of a university to engage in contract teaching is very high at the beginning of the time period, but continuously sinks until the processes on study fees reaches its highest values. A plausible explanation might be that the public authorities increasingly discover study fees as an alternative and more effective instrument to reduce public expenditure on higher education. Alternatively, the decreasing popularity for adopting legislation on teaching contracts might relate to its facultative nature. The policy is about granting the (legal) possibilities for universities to become active as a service provider. In the case of study fees the public authorities are able to directly impose a policy on the universities.

The study at hand dealt with this issue as a statistical nuance by using strata and by applying a repeated events approach, but it also shows that opening up the policy laboratory and dealing with specific issues in more detail is a research question of its own right.[140]

Fifth, bringing domestic politics back into research on policy diffusion seems essential. The concept of policy diffusion can be seen as a response to models of policy change merely focussing on internal determinants for explaining policy spread (cf. Berry and Berry 2007; Garrett, Dobbin and Simmons 2008). Proponents of policy diffusion argue against a purely domestic model for explaining policy outputs. Independent domestic decision-making is seen as highly unlikely and neglects external factors driving policy-makers to adopt certain policies. But diffusion researchers also argue against explanatory models based entirely on international explanations. Rather the argument is in favour of a more complex modelling of policy processes dealing with the interplay of international and domestic factors.

Still it seems as if – at least in this Western European context – neglecting domestic politics ignores a substantial and important part of the story. Contrary to other examples like the American higher education system (cf. McLendon et al. 2006; McLendon et al. 2005), horizontal interdependencies in Europe at that time do not have the same explanatory power.

According to this study another set of explanations leading to the diffusion of policies has to be integrated into the analysis: assumptions on parallel problem problem-solving (cf. Knill and Lenschow 2005), path dependency and historical legacies as

[140] Of course, this probably requires drafting a different research design.

well as (similar) government preferences. The study shows that dimensions of partisanship and domestic politics have to be brought back in when dealing with the spread of similar polices. This has to go beyond the simple inclusion of domestic controls. Scholars should aim at theoretically integrating both strands of explanations, rather than merely conceptualizing domestic politics in terms of control variables or factors mediating the domestic impact of international systems.

5.4 On the Benefits and Limitations of the Study

Several limitations prevail, though the thesis contributes to higher education research and studies of policy diffusion in several ways.

First of all, the thesis joins a growing number of diffusion studies that demonstrated the usefulness of mechanism-based and comparative frameworks in statistical analysis (for example Boehmke and Witmer 2004; Daley and Garand 2005; Dobbin et al. 2007; Shipan and Volden 2008; Simmons and Elkins 2004). Furthermore, this thesis is the first study on the diffusion of higher education policy in Europe hence significantly advances our knowledge on the role of interdependencies in higher education.

Secondly, the study improves our theoretical understanding of diffusion mechanisms. It delivers new insights on the explanatory power of the considered explanatory factors. Furthermore, the study points to the question what is the interplay between international, national, and policy-specific variables in determining patterns of diffusion.

Thirdly, the thesis provides a current review on the literature of policy diffusion thereby providing common sense on the current state of the art in diffusion research. But rather than presenting the theoretical arguments according to research strands, the discussion systematically reviews the relevant literature by referring to causal arguments and the questions usually underlying empirical analysis. The thesis also highlights the intersections between the various conceptualizations of causal mechanisms and gives a more realistic picture of testing diffusion theories. That means theories are rather analytical toolboxes than opposing truths about the social world.

Fourthly, this study provides a comprehensive theoretical framework. Diffusion mechanisms are discriminated by providing coherent explanatory models for explaining policy adoption (cf. Zürn and Checkel 2005: 1057). The theoretical

framework is disentangling theoretical arguments according to the underlying causal ideas on when and how actors adopt external policies. More specifically, clear-cut expectations on policy adoption and clustering due to learning, socialization, externalities or common responses are formulated and tested. In doing so, the theoretical framework explicitly deals with the conditional nature of policy diffusion by formulating specific conditional hypotheses on factors determining the effectiveness of diffusion mechanisms.

Last but not least, the analytical framework developed in this thesis can be used to examine other policies in future research projects. The research design is very specific concerning its theoretical scope; that is to say, it is dealing with domestic decision-making and national governments as well as the adoption of policies due to diffusion processes. That means the unit of analysis is clearly located on the domestic level. Although diffusion is dealing with situations of interdependent decision-making, it is mostly the national government that has to decide upon changing its existing policies for a new one. From this point of view, the theoretical framework is a rather general framework that can be applied to any policy field. Furthermore, discussion of the underlying causal chains allows for testing intervening steps (or variables) in future research. For example, examining variables on the micro-level of the causal chain could help to answer the question whether actors really changed their causal beliefs.

Of course, the study carried is no panacea. Some would argue that it does not make sense to analytically distinguish theoretical arguments that cannot be disentangled empirically. It is probably right that certain explanatory factors partly overlap. For example as three of the four described mechanisms have in common that their function mainly rests on communication and the exchange of information between national and transnational actors, it comes to no surprise that ideological and/or cultural factors play an important role in theoretical arguments. The underlying assumption is that ideologically and/or culturally similar actors decode information in a similar way (cf. Friedkin 1993; Simmons and Elkins 2004; Strang and Meyer 1993; Weyland 2007).

Problematic in applying concepts like learning and competition is to answer the question about which results national policy-makers do care for. Do they really want to find effective solutions for domestic problems? Or is it about economic benchmarks and political results (for example, in terms of payoffs at the ballot) (cf. Meseguer 2005: 77)? Especially in the latter case, theoretical predictions fall together as competitiveness can be conceptualised as the performance-measure. In such a

situation, discriminating between both mechanisms becomes even more complicated. One solution might be that learning usually focuses on the actual implementation of policies whereas competition is not necessarily linked to practical implementation, but already applies to the impact of the choices of policy makers. Furthermore, the various diffusion mechanisms are characterized by different degrees of complexity. This complicates an analytical and clear-cut distinction between the ideal diffusion mechanisms. For example, learning itself is often understood as a broad theoretical framework incorporating theoretical arguments from other diffusion mechanisms too. “Learning from difference” can serve as an example here (cf. Sabel and Zeitlin 2008).

Another problem might stem from the fact, that the framework tested is derived from mechanism-based thinking. The question is usually if a macro-quantitative approach is suitable for causal inference on relationships at the micro-level (cf. Kittel 2006). In many hypotheses, change is actually induced at the micro-level. For testing diffusion mechanisms based on altered beliefs one would preferably have data on actors beliefs and attitudes over time. Therefore the proposed models still are only tentative.

But from my point of view, this is rather an argument on analytical clarity as causal propositions are the starting point of empirical analysis and as such they should fulfil formal criteria like consistency (cf. Gerring 2005). To put it differently, rather than adjusting theories to methodological problems, we should strive for better data instead as measurement problems apply to all sorts of (quantitative as well as qualitative) data (cf. Wimmel 2003). In this regard there is a certain similarity with natural sciences. Nobody ever saw strings or quarks, but as long as the model holds and is useful in explaining and understanding the object of interest it will prevail (cf. Kuhn 1962). Hence, it is not surprising that most causal assumption on state behaviour in diffusion processes is based on some kind of micro-behaviour and not on macro-based theories instead. [141]

As previously mentioned, a divide often overlooked in diffusion research is the segregation of diffusion studies according to the methodological approaches applied. Notwithstanding the widespread calls in political science for mixing different quantitative and qualitative methods in a complementary way (for example, Lieberman 2005; Koenig-Archibugi 2004), scholars dealing with diffusion research largely neglect the possibilities to integrate plural methodological approaches. The

[141] That does not imply that a micro-foundation is a necessary condition for formulating a causal theory. For a more critical view on mechanism-based thinking see Gerring (2010).

same applies to this study. And it seems highly recommended to extend the study. For example, case studies can help to trace the causal link between the independent and the dependent variables passing the robustness tests. This would increase the validity of the findings formulated in this study.

The hypotheses formulated are also rather simple. Of course, the study goes beyond the simple linear and additive regressions usually carried out in diffusion research and also tests interaction effects. But this applies to conditional effects only. Hypotheses on the interplay of diffusion mechanisms are not tested (cf. Holzinger and Knill 2004; Holzinger and Knill 2008). For example, one could assume that the logic of competition is less important in cases where there is a lot of interaction and trust between the actors. That means future research should also focus on developing and testing hypothesis on the interaction between the various diffusion mechanisms. Furthermore, the good performance of the covariate on government preferences brings up the question what factors influence policy preferences? And how do preferences translate into action (cf. Rommetvedt 2006). What role do international ideas play (cf. Harrison 2002)?

Also some of the conditional variables tested in the previous sections have not been utilized in the synthesized models. The question remains, if the covariates in the models on all diffusion mechanisms would have been more robust in case the conditional versions were used. But then, these did not survive the theoretically more parsimonious models on learning, socialization, externalities and common response. This limitation rather supports the cumulative approach characterizing the theoretically informed stepwise testing carried out in the previous chapter.

Another drawback of this study is its limitation in terms of policies, countries and times covered. One has to be aware that most innovations and ideas on tertiary education are not completely new in higher education policies (or other sectors). For example, peer reviewing was already applied in the UK in 1832 at the University of Durham (cf. Lewis 2010: 24). And although some interaction effects are linked to the notion of policy interdependencies (cf. Bönker 2008) a systematic test is still lacking. Also the question remains, if policy transfer is driven by European interdependencies only or if global or American developments are the decisive factor (cf. Haverland 2006)?

In a similar vein, the presented results must be taken with care. Generalizations are problematic as studies dealing with diffusion miss the needed independency from the observed population (cf. Holzinger 2006; Seeliger 1996; Plümper and Schneider

2009). Therefore, issues like incomplete data and truncation (or censoring) can have serious impacts on the results (cf. Greve, Tuma and Strang 2001). Furthermore, the case selection follows a comparable (or similar) cases strategy, which questions in how far the results are applicable to other constituencies (for example, beyond Western Europe).

Another problematic of the study relates to the measurement of the variables and overlapping concepts – for example, as in the case of university cultures and similar historical traditions in subsection 2.4.1.2 on bounded-rational learning. Disentangling historical and cultural patterns is problematic. First of all, culture is a multi-dimensional concept and several factors like language, religion, values but also historical and institutional elements have been discussed in the literature to describe the cultural characteristics of countries (cf. Elkins and Simeon 1979; Friedkin 1993; Jepperson and Swidler 1994; Hall and Taylor 1996). Second, Clark himself did not only refer to traditions and historical legacies, but also cultural understandings and beliefs that shaped the relationship between Academia and the political system in each country (cf. 1983).

General problems like the need to use proxies and the information loss in case of aggregated data have already been discussed. But also the operationalization of the dependent variable might be problematic. Measuring policy adoption is based on international reports and (qualitative) evidence from higher education research. That means it mirrors the perspective of researchers during that particular time. In this regard, evidence is essentially qualitative in nature. For example, measuring concepts like autonomy are rather fuzzy affairs. Strictly speaking, the comparability is limited as constructs are time contingent and might even be different across policy sectors. The reader has to keep in mind even performance-orientated universities are still not comparable to private companies.

5.5 Outlook

Some of the possibilities for future research directly derive from the previous discussion on the limitations of this study. For example, the limitations concerning data availability and –hence– operational definitions that leave room for improvement call for additional data inquiries. The same applies to extending the analysis – for example, by examining diffusion processes in other multi-level systems like the USA, Australia or Canada. Or the missing integration of hypotheses on the interplay

between the various diffusion mechanisms requires additional tests. Especially as existing studies rarely focus on interaction effects between diffusion mechanisms.

Moreover, it looks like three methodological innovations are especially promising to contribute to the comparative analysis of diffusion processes in higher education. First, the rather statistically orientated research on policy diffusion is increasingly using computational simulations to deal with causal processes (cf. Mooney 2001; Braun and Gilardi 2006;). Simulations can be used to generate additional insights on how the parameters accounting for diffusion processes interact and what the overall patterns would look like. Second, the causal analysis can be complemented by fsQCA (cf. Hermann and Cronqvist 2006; Rihoux 2006: 686f).[142] Although such procedures are characterized by the disadvantage that it is not possible to single out the net impact of each variable, the method helps to deal with another dimension of causality – are the considered variables necessary and/or sufficient conditions for the dependent variable? In addition, fsQCA does not suffer from the usual statistical problems like multicollinearity or autocorrelation and is quite instructive when it comes to analysing different configurations of explanatory factors and their interactions.[143] Third, some scholars try to strengthen causal inference by mixing different quantitative and qualitative methods in a complementary way. Here plural methodological approaches usually try to integrate statistics with case studies (for example, Karch 2007) or formal models (for example, Franzese and Hays 2008).

Furthermore, dealing with policy adoption alone does not paint a comprehensive picture of policy diffusion. Investigating the outcome of diffusion does not only mean to observe its effects in terms of policy adoption and policy change, but also to consider the scope and degree of cross-national policy convergence, respectively divergence resulting from these patterns of diffusion (cf. Bennett 1991; Heichel et al. 2005; Holzinger et al. 2007b; Kerr 1983). This will answer, to what extent policies in different states have become more similar over time – a question still highly debated in political science in general (cf. Dolowitz and Marsh 2000: 8; Tews 2002: 4f; Holzinger and Knill 2005: 765ff; Holzinger et al. 2007b). In a similar vein, analysing multiple states of policy adoption might help to complete the picture (cf. Steele 2011). So far, the interest was on the adoption and modification of performance-orientated higher education policies. But what explains why governments choose different

[142] The question is still unanswered, if these methods are capable for analysing panel data (cf. Caren and Panofsky 2005). One possibility to deal with variations over time is to construct cases according to different time phases or a change in the explanatory conditions.

[143] See Aus (2007) for a similar argument.

scopes of a policy. For example, why do some governments adopt only external quality assurance measures for new study programs, whereas others do not make such exceptions? Both questions are often interrelated. Here estimating so-called SUR-models[144] can help to identify the factors determining both the question if governments adopt a reform and how far-reaching reforms will be (cf. Blake et al. 2010).[145]

Although there is a growing body of literature examining processes of policy diffusion, the governance potential of these diffusion processes is still widely ignored.[146] Hence, future research might give a better clue where higher education dynamics will lead us from a philosophical point of view. Do we really move towards a more market-like model of higher education systems characterized by a supervising instead of a command and control-state (cf. Vught 1997)? And if it is all about diffusion: can steering by voluntary (or soft) modes of governance help to overcome problems of collective action (cf. Busch and Jörgens 2007)?

[144] SUR means seemingly unrelated regressions.

[145] Similarly, the spread of innovations can be analysed along several policy dimensions ranging from policy goals, instruments and/or settings (cf. Bennett 1991; Hall 1993; Dolowitz and Marsh 1996, 2000; Heichel et al. 2005).

[146] For a notable exception see Busch and Jörgens (2012).

Appendices

I. Description of Policy Components and Items

The study deals with the diffusion of funding and funding-related policies as a core task of European governments. More specifically, the focus is on regulating the public university system and activities on tertiary education. That means the regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. Overall legislation across 5 policy components and 14 items are considered:[147]

A. External Quality Assurance

Along with the introduction of performance-based funding policies and an increasing autonomy for public universities, governments face the question of how to sustain a certain degree of control and influence over the higher education systems and its outputs (cf. Vught 1995; Wit and Verhoeven 2004). In addition to setting specific incentives – for example – through an increasing performance-orientated funding, external quality assurance aims to increase the accountability and performance of public universities. More specifically, regulations promoting quality assurance systems and external stakeholder participation are considered:

1. External Quality Assurance Systems

External quality assurance system deals with the move from *exante* to *expost* control of teaching activities at public universities (cf. Harvey and Williams 2010).[148] Traditionally, ministerial control covered the programs and degrees offered by public universities. The ministry, responsible for higher education, usually has to approve the curricula and degrees offered by universities.

But countries can also implement standardized and regular external quality assurance system systems (cf. Harman 1998; Leszczensky et al. 2004). Approaches differed in terms of standardized methods (accreditation, evaluation, audits) used and the scope of regulations. Quality audits apply to the assessment of internal quality assurance systems, whereas quality evaluation usually deals with the assessment of a university's output (for example, in terms of teaching and/or research activities). In accreditation procedures, specific minimum standards that universities have to comply with in order to achieve formal recognition are formulated. Countries sometimes combine several quality approaches.

Legislation may establish and promote regular and system-wide quality assurance activities like external evaluations, accreditations or quality audits, but can also have a limited scope and apply to newly established programs only. External quality

[147] See also Annex II for a categorization of country-specific legislation and country reports in Annex III.
[148] Note that the issue of internal evaluation is not addressed here.

assurance is not always based on a regular and system-wide scale. Some countries do not have a fully-fledged and universal external quality assurance system for tertiary education, but rather very limited external evaluations carried out ad hoc and/or only on the request of universities themselves. Sometimes the scope of domestic regulations is limited, as the policy is not applied to all institutions and programs. These countries follow a selective approach where only singular programs are evaluated (for example, new programs).

2. Participation of External Stakeholders in University Governance

Introducing external stakeholders into institutional governance bodies was already prominent with the discussion on democratic university structures. Historically the Humboldtian model with a high degree of formal autonomy had influenced a lot of countries and no external stakeholders are represented in the institutional governing bodies (cf. Amaral and Magalhães 2002). As a consequence, most countries introduced regulations on the inclusion of representatives from stakeholder groups like students and (junior) staff in the 1970s. More recently, countries adopted policies opening up universities for representatives from interest groups like business and industry, but also from unions and other societal groups.

The focus of this study is on legislation allowing or requiring the inclusion of representatives from external interest groups like business or industry in institutional governance bodies. Countries adopted regulations regarding the inclusion of such external stakeholders into university advisory councils and/or decision-making boards. Regulation on the inclusion of representatives from stakeholder groups like students and (junior) staff is not considered. The number of external stakeholders might be left unspecified, but legislation on external stakeholder participation often determines different degrees of involvement. For example, in terms of minimum numbers or different ratios of seating in the governance body like singular representatives or the minority, respectively majority of members.

B. Institutional Autonomy on Student Supply

Promoting the performance-orientation of public universities also requires the capacity to act accordingly. This does not only apply to the allocation of financial recourses, but also to human inputs like staff[149] and students. Regulations granting public universities discretion on managing the student and graduate supply themselves differ according to various aspects of institutional autonomy: student intake, course and program offer as well as student selection and access. [150]

[149] Staff resources are strongly linked to monetary resources and are therefore considered as an integral part of funding autonomy (see Annex I.D.2.).

[150] The focus is on full-time undergraduate studies. Differences in terms of part-time or postgraduate studies are not elaborated here. Also minimum access requirements like a secondary-school qualification (or equivalent) are excluded from discussion as they can be considered as the standard approach in Europe. The same applies to subject-specific differences. In most countries, however, the

1. Managing Student Intake

Institutional autonomy on managing student numbers relates to the deregulation of student intake and allowing universities to determine the appropriate institutional capacities themselves. Higher education system differs according to the question if and who determines the student intake of universities. Is student access regulated by the state or could universities determine the appropriate institutional capacities themselves? Traditionally, the higher education ministry or even the parliament decides about the closeness of the higher education system. Student access is either centrally regulated or it is following an open access policy. In neither case there is much room nor an incentive for universities to improve its efficiency. But universities gain more discretion if governments only indirectly determine the student intake (for example, by applying target numbers for determining university funding) or if governments leave the decision of determining student intake to the universities themselves). In case of the former, the scope of university discretion is (indirectly) limited due to providing target numbers determining the number of public funding.

2. Managing Course Planning

Institutional autonomy on course planning deals with legislation promoting autonomy in terms of course and study programs and granting responsibility for planning on institutional course portfolios to the universities themselves. The range of decreasing governmental influences ranges from requiring ministerial approval instead of parliamentary legislation, guidelines or framework regulation of course programs to full institutional autonomy.

New study programs and curricula often require parliamentary or governmental legislation. Traditionally, the parliament or the government specifies the course structure of universities in specific laws and decrees. Other countries do not require parliamentary decisions, but course planning is still based on detailed guidelines and ministerial approval.[151] But regulations can also promote university autonomy. Sometimes study programs set up by institutions only require ministerial approval for recognition rather than adopting more demanding forms of governmental consent (for example, a law). In case of guidelines and framework regulation of course programs university autonomy is still limited, but the ministry of higher education usually has the burden of proofing that a degree is illegal or that a university does not have sufficient funds to guarantee the quality of programs. Full autonomy is usually achieved if the curriculum and organisation of each program becomes the sole responsibility of the higher education institutions.

government decided the number of available places for specific subjects like medicine, veterinary medicine, dentistry and teaching based on labour market estimates (cf. Eurydice 2000b).

[151] Sometimes countries use central registers where universities have to list their degrees to be formally recognized by the public authorities.

3. Managing Student Selection

Regulations dealing with student selection refer to the selection criteria required for university admission and the responsibility for organising and carrying out the selection procedures. Promoting institutional autonomy on student selection can be carried out in terms of delegating the responsibilities for these issues to the institutional level. Another way for governments of granting universities increasing responsibility to determine their own entrance requirements is to set a national framework on student selection. Far-reaching discretion usually requires student selection to become a generic university task, but the discretion of universities is expected to increase if universities do not have to follow a general standard, but can determine their own entrance requirements within a national framework. Often an open admission policy made the issue of student selection obsolete in case no *numerus clausus* exists. Even though in these cases, universities are usually managing the access procedures, an open admission policy restrains their possibilities to act strategically. Therefore, centrally regulated access or open access policies render university autonomy in student selection very limited.

C. Performance-orientated Public Funding

Public funding streams can refer to financing several activities and cost types like teaching, teaching-related research, infrastructure investments, equipment and/or staff salaries (cf. Kaiser et al. 1992; Maassen 2000; Leszczensky et al. 2004). These categories of expenses are often funded separately by allocating additional grants.[152] Basic teaching budgets can also cover some of the capital expenses. Focusing on public higher education systems, the analysis is limited to the university funding directly provided by the responsible public authorities. To narrow down the analysis, the section is dealing with regular public funding of public universities and tertiary education only. Funds for current costs (or expenses) refer to the recurrent operational costs of a university. This includes running costs for providing teaching activities like staff salaries, but also refers to overhead costs linked to the maintenance of the university operations. For example, funds for the administration of the university, but also costs for the maintenance and operation of equipment and buildings can belong into this category. Depending on the arrangements for providing buildings and facilities, this item might also include expenses for renting facilities and offices or utility costs. Other funding streams not directly referring to tertiary education like capital investments and research are not considered here.

[152] This does not necessarily mean that the funding of these expenditure categories is following the same logic. For example, the provision of basic grants in terms of research, investments and social services is rarely designed in the same way as the appropriation for teaching activities. A notable exception here is Belgium (cf. Leszczensky et al. 2004). Furthermore, these funding streams are often itemized (cf. ibid.)

Also singular funding activities are not included. This relates to initiatives and action programmes promoting teaching-related projects of universities (for example, on student exchange or e-learning) (cf. Leszczensky et al. 2004; Salmi and Hauptman 2006). Those funding streams are project-based and are usually only temporary and/or about capacity building. Form this point of view the policies and impacts show great variations across institutions, time and subjects. Furthermore, the main interest of this thesis is on governmental policies, but project-based funding is a facultative policy where it is up to each institution to secure the adoption and implementation of each project.

The same applies to external research funding. Funding streams provided by research councils or funding stemming from other ministries than the departments responsible for higher education are not considered here (cf. Leszczensky et al. 2004). [153] Funding linked to social benefits like subsidizing student housing is excluded likewise. From this point of view, the section deals with the basic recurrent and regular funding for teaching, administration and capital investments at universities that are provided by the responsible public authorities (cf. Salmi and Hauptman 2006).

Public authorities can adopt different approaches on how to determine the allowances funding regular teaching activities at tertiary level provided by each university:

1. Formula Funding

Different methods for allocating public funds exist. Traditionally, governments negotiated budgets with each individual university and allocations are rather ad hoc and incremental. That means the distribution between universities is based on historical developments. Funds are negotiated between the public authorities and universities, but no general systematic and transparent criteria for determining financial allowances are applied. Costs are usually reimbursed. The total amount of allowances is based on budget proposals by the universities that have to be approved by the responsible ministry. In this situation, only the expenses actually made are qualifying for refunding. From an administrative point of view, this form of cost determination is usually linked to a higher degree of workload, as expenses and reimbursements have to be reported and checked according to accounting rules. Therefore, reimbursements are often seen as impediment for flexible and efficient resource allocations (Kaiser et al. 1992: 27).

In the case of formula funding then, general and objective criteria for funding allocation are pre-formulated. That does not mean, that the ad hoc allocation of funds is not based on the use of specific criteria like a university's student intake, but the application of these indicators is not general and/or transparent.

[153] External funding coming from private sources is only considered, if it is regulated by a country's higher education department like in the case of setting the level of tuition fees (cf. Annex I.E.1.).

Formula-based funding refers to funding mechanisms allocating funds according to different kinds of indicators (for example, the number of students enrolled). In contrast to negotiations, these formulas are known and applied to all universities. Public authorities apply general criteria indicating what should be the cost in order to determine the actual amount of public funding. The breakdown of costs is therefore the same for all universities.[154]

Again different degrees in the application of formula funding can be distinguished. Several restrictions might apply to the scope of formula funding. The use of formulas can be very limited as they are only indicative and not transparent to university managers. Or formula funding remains limited to certain cost categories like overhead costs or smaller investments. Or sometimes staff expenses are excluded as personnel are provided directly by the state.

2. Target Agreements

Funding allowances might be based on institutional budget requests and proposals or on performance contracts between the responsible public authority and each university defining the financial provisions as well as the institutional objectives and goals (for example, in terms of student intake) (cf. Leszczensky et al. 2004). Public authorities use different instruments to formulate university budgets and strategic goals. Usually, public allowances are based on yearly budget requests and proposals by each university. But some countries improved planning security by extending the planning periods and softening the annuality principle or by negotiating so-called target agreements with each university.[155] These contracts usually define the financial provisions as well as the institutional objectives and goals (for example, in terms of student intake). In some situations, the application of performance contracts is limited to additional funds, but sometimes the full budget is linked to the agreements. Often, planning instruments differ according to current funding or capital investments (for example, by dealing with short- and/or long-term development).

A different method for resource allocation refers to contract-based funds. In essence, two forms of funding contracts can be distinguished. Target agreements between governments and individual universities relate to overall institutional goals and missions. Based on negotiations between governments or ministries, these contracts lay down specific tasks and duties with which institutions have to comply. But rather than steering universities in all details, mission-based agreements merely formulate

[154] That does not mean, that an element of negotiation is still involved in funding allocation – this mainly relates to the question on how many study places a university provides, but also to determining the tariffs per student. Regarding the latter, countries differ in their cost accounting procedures. Generally, two approaches exist: normative allowances and allowances by reimbursement. In case of normative allowances, the costs are usually determined according to a) explicit cost calculations; b) the actual expenditure of some institutions serving as cost reference; c) the average systemic costs per student, usually calculated from aggregate statistics on expenditure and enrolment; and/or d) incrementally on the base of previous expenses.

[155] Institutional performance contracts should not be confused with national development plans for higher education. Such strategic national plans existed in most countries since the late 1970s and early 1980s, but are not considered performance-orientated instruments for steering universities.

goals and tasks that are monitored by the public authorities. Thereby the question on how to achieve these goals is left to the universities themselves.[156] Target agreements then highlight the performance of the institutions. Depending on the purpose of these agreements the base can relate to input, throughput and/or output indicators.

3. Performance-driven Funding

The flexibility and performance-dependency of public allowances can change. Public funding of universities differs according to their performance-orientation. The regular institutional budgets for core activities traditionally followed a rather ad hoc and incremental path. But public allowances for higher education become increasingly flexible and performance-based. This issue is usually linked to choosing different indicators for allocating funds.[157]

The allocation mechanism can be based on different indicators. Whereas some countries apply a fixed and cost-based approach in allocating funding for current expenditure, other countries use a performance-based approach. In a cost-based approach funds are usually fixed and inflexible. Indicators used are pre-determined staff-student ratios, the existing staff numbers or square footage of the university buildings used or simply the inclusion of a historically fixed amount into the budget allocation. These indicators are not changeable in the short-run and therefore funds are rather static and incremental.

Performance-driven funding is usually based on flexible indicators like student numbers (input-driven) or graduate numbers (output-driven). Performance indicators refer to the actual outcome of university activities. Input indicators describe the demand side of university performance. For example, funding is provided on the base of numbers of enrolled students, new entrants or intakes of external funding. Output indicators then refer to the supply side of university performance as the number of graduates or performance in terms of university rankings and passed exams or credit points obtained by university students.

The scope of performance-orientation can differ – for example, in terms of the amount to be redistributed according to performance-driven indicators. Countries can (re-)distribute only a minor amount of the budget according to performances. For example, the performance-based budgetary share is limited to the yearly budgetary increases only. This approach is often followed to balance historical differences and achieve a convergence in the cost structures of different institutions.

Or countries provide a substantial amount of the budget according to their performance, but a minimum funding level is fixed thereby guaranteeing a specific

[156] Sometimes target-agreements refer to the development of process-related instruments like the development of internal quality assurance systems.

[157] Note that this policy item does not measure the input- or output-orientation of funding, but measures the performance-orientation of funding arrangements only (that means, the relationship between fixed and flexible parts of the core budget).

funding level as basic funding. In a similar vein, the main cost categories like staff costs might be exempted from the funding formula, as it is the case if the public authorities directly provide personnel. Rarely far-reaching approaches are implemented with the full budget for basic funding following performance indicators. Also different mixtures are possible, where the funding formula consists of cost-based, input as well as output indicators.[158]

Often (first) attempts aiming at allocating funds according to objective and transparent criteria fail. The formulas turn out to be fuzzy and lacking transparency and are indicative at best. Under these circumstances, bargaining still dominated the resource allocation and a reliable and valid resource planning for universities is simply not possible. In a similar vein, countries might follow performance-driven formula funding at first sight, but the allocation is still basically cost-based. For example, in case tariffs are adjusted yearly to balance the ministerial budget or if performance refers to the student intake pre-determined by the public authorities. As a consequence, such systems come close to cost reimbursements (cf. Kaiser et al. 1992: 27, Fn. 8).

Governments often updated their formulas in terms of the level of cost tariffs. But usually no substantial changes tok place in terms of the number of used cost tariffs. These events are also excluded from the analysis.

4. Study Vouchers

Another performance-based element can be integrated into a country's funding arrangements. Study vouchers refer to the establishment or promotion of market-based funding instruments. Rather than directly allocating funds to the universities, funding is following the demand of students. Instead of directly providing funds to the universities (for example, on behalf of negotiations and/or formulas), public subsidies are based on schemes where each student receives a funding voucher that can be redeemed at any university. The government allocates funds to each university for every student studying at that particular institution. That means the government reimburses funding on behalf of the vouchers submitted. This policy is often applied in countries where students have to pay tuition fees.[159]

Demand-side vouchers[160] have to be distinguished in terms of coverage. In a very basic form study fees are only partially waived (for example, only covering a reduction in fees). Or vouchers are only targeted at specific student groups (for example, based on merit or needs) and/or restricted in terms of benefits rather than

[158] Note that this policy item does not measure the input- or output-orientation of funding, but measures the performance-orientation of funding arrangements only (that means, the relationship between fixed and flexible parts of the core budget).

[159] Only financial help for full-time undergraduate students is considered here. Other forms of financial student support (for example, for covering living costs) or fee exemptions for part-time or postgraduate students are excluded. They may only contribute indirectly to university budgets by allowing students to finance their studies.

[160] Only demand-side vouchers for full-time undergraduate students are considered (cf. Salmi and Hauptman 2006).

aiming at widespread support for full-time undergraduate students. In this case, financial student support is very limited in its scope. Using fee exemptions becomes a matter of social policy, rather than being a tool for steering universities.

D. Institutional Autonomy on Resource Management

After having decided on allocating the funds provided by the public authorities, the question for policy makers to grant universities the legal capacities on managing their resources independently remains. This policy component relates to the responsibilities for managing human, financial as well as capital resources:

1. Lump Sum funding

The instrument of lump sum for providing the recurrent public funding for tertiary education at universities refers to awarding single[161] block grants rather than itemised budgets characterized by earmarked funding streams. [162]In other words, funds come in terms of block grants so that allowances can be freely distributed within universities by the institutions themselves (for example, across different organization units or cost types like personnel expenses).

Usually, different types of budgets determine the question on how to spend the provided money internally. Itemized budgets are characterized by detailed listings of financial provisions allocated to the institutions – for example, for different programmes or for organizational sub-units like departments or institutes. Instead of prescribing on how to spend the budgets approved by the national ministries, the state universities can usually distribute allocated lump sum budgets within the rules of public sector finance. From this point of view, universities become more autonomous in how to spend the public money on different functions and activities (for example, for specific teaching activities or for staff salaries or equipment).[163]

At first sight, it seems like there is a strong link between the financial autonomy of universities and the type of budget provided by the public authorities. In case of lump

[161] Sometimes block grants are provided according to different university activities like teaching, research, and capital investments.

[162] Some authors argue that this distinction only relates to negotiated budgets (cf. Salmi and Hauptman 2006). But what about providing global budgets based on funding formulas? Whereas the method for allocating funds (for example, through negotiation or formulas) relates to the way university subsidies are determined, the budget type describes the way the subsidies are provided (for example, through global or itemized budgets). From this point of view, allocation methods and budget types are not directly related. Although one has to acknowledge that obtaining data on the type of budgets provided in contract-based funding arrangements is often not possible. Usually not all universities are eligible for contract-based funding, as governments do not apply this instrument to all universities, but rather try to supplement other forms of funding. A notable exception can be found in Germany, where the *Bundesland Berlin* is negotiating target agreements with all its universities.

[163] In determining the change from itemized to lump sums, the question is not on a comprehensive system change, but on the basic public funding for universities. Other funding sources (even public ones) might still be based on itemized budgets. For example, contract-based funding as in the case of research projects is usually based on earmarked funds.

sum budgets, the degree of autonomy seems to be higher as funds are not itemized. As a matter of fact, this relationship does not necessarily have to be the case.

Appropriations are often provided as block grants, but sometimes universities obtain faculty-specific block grants or they have to develop their own budget plans that are subject to the approval by the Ministry of Education anyway. Under these conditions, university budget plans have to be earmarked according to expenditures on operational costs like general administration costs, staff categories (that means teaching, research, administrative, and technical personnel) and material costs. As these plans allow for little flexibility regarding the internal reallocation, the budgets are de facto itemized. Usually the internal allocation of funding within universities in such a system is framed by auditing and ministerial approval.

Allocations according to itemized budgets are usually linked to relatively strict regulations on how universities can spend public funding – although the extent of intuitional discretion concerning the transfer between different budget lines might vary. This depends on the guidelines and eligibility criteria limiting an institutions' budgetary discretion. Universities often obtain appropriations according to line items, but still retain discretion on internal allocation as they are allowed to transfer funds across budget lines. Restrictions might still apply to the scope of the policy. For example, staff costs cannot be offset with material expenses. But lump sum funding can also be very limited in case the main cost categories like staff usually being the main portion of the current costs in the budget is excluded.

2. Staff Management

As university staffs are often public servants, the management capacities of universities are sometimes limited by national regulations on the recruitment, promotion and working conditions of university staff. Financial restrictions regarding staff salaries are usually applied in all countries. For example, even in cases of far-reaching university autonomy staff salaries are regulated due to the public status of universities. Therefore institutional autonomy on staff management is not evaluated in terms of funding aspects (for example, wages). These have been usually excluded from universities as part of the public sector and are usually part of wage negotiations between social partners for public sector employees. That means, specific aspects of staff management remain regulated (for example, the salaries and the career system). Therefore, the focus here is not on the restrictions on procedures for employment, staff qualifications and positions and their working conditions (for example, setting the salaries and wages or working hours).

The question is rather if universities are free to choose their academic and non-academic staffing as well as their composition. This also includes the number of professors and senior-level administrators. But restrictions on the scope of the policy might even apply in cases of granting universities autonomy to hire and manage their staff themselves. For example, staff appointment and internal staff allocation is

subject to ministerial approval. Or –to a lesser degree– by determining only the maximum number of posts at a university, rather than providing detailed staff plans.

3. Managing Buildings and Equipment

The managing capacities regarding the acquisition and operation of buildings and equipment are also subject to public regulations. Often buildings and equipment are provided and managed directly by the public authorities or universities are only responsible for the operation of existing buildings and equipment.

Sometimes universities obtain the responsibility for managing and purchasing their own equipment, but do not obtain competencies for maintenance planning concerning the buildings themselves. Under these circumstances, the Institutional autonomy remains very limited as the policy only applies to equipment rather than all infrastructure. Or the scope of the policy is restricted as universities are only responsible for the operation of current buildings and equipment.

Universities usually acquire far-reaching discretion when the state grants the full ownership on buildings and equipment.[164] As a consequence, the acquisition or operation of buildings and equipment is up to the universities themselves.

E. Cost-sharing Policies

Regulations on cost-sharing policies deal with additional income that public universities could acquire to cover the cost of their teaching activities and the policies promoting private funding. Usually public universities are heavily regulated regarding the possibilities for generating income from private sources. In some countries it is legally impossible to market services. But countries might deal with the increasing budgetary burden by adopting study fees and/or allowing public universities to contract and sell teaching services:

1. Study Fees

Policies on study fees refer to establishing or deliberately[165] extending cost sharing between the state and the consumers of tertiary education by charging fees to be paid by students. For example, students have to pay a fee for registering and certification at universities (that means registration fees) and/or tuition (that means the enrolments in courses). Usually registration fees are only limited and aim at administering the registration and certification only, whereas tuition fees are higher as their purpose is to cover (some of)[166] the costs of the educational courses.

[164] English universities were responsible for managing buildings and equipment, though buildings remained state-owned (cf. Annex III).

[165] In some higher education systems, fees are set on a yearly base. Those (yearly) adaptions of the (quantitative) level of tuition and/or registration fees are not considered to overestimate diffusion effects – contrary to country legislation leading to a significant increase in tuition fees as discussed in higher education research. Such events are included in this study.

[166] Tuition fees in Europe are usually not cost-effective.

A lot of countries follow a no-fees policy for the main group of their student population - undergraduate full-time students.[167] But countries can also set a bandwidth within universities could freely set their own tuition fees. These are often determined according to the type of education (that means university versus non-university higher education) and the subject to be studied (for example, medical studies are more expensive than social science). Or governments set the registration fees, whereas universities are allowed to freely determine the tuition fees.

Sometimes fees are not at the discretion of the universities significantly weakening the link between consumers' choices and universities. That means income from fees is not considered as institutional surpluses. As a consequence, the financial incentives for universities to adapt strategically to student demand must be considered as very limited and modest.

2. Contract-based Services

Traditionally public universities are fully funded by the state. But public authorities can allow and promote the idea of marketing and selling teaching services to customers. For example, to private firms who want to train their employees or in terms of commissioned university continuing education for individuals. Traditionally, generating private income is not allowed or it is not considered as additional institutional income. That means private income does not constitute a part of the institutional budgets.

Or governments allow universities to acquire private income, but activities focused on research rather than teaching activities. Institutional possibilities usually remain very limited as they only refer to research activities or individual activities of professors. That means the idea of contracting and marketing services is only applying to offering research activities. Third party funding might be put on an equal footing with institutional funding by the public authorities, but contracting services usually refer to research activities of individual scholars and professors. In these cases, additional funds are linked to special accounts of the professors, rather than to the institutional budgets (that means the institutions are functioning merely as intermediary buffer administrating the funds).

Or contract activities are subject to ministerial approval. Then additional business of professors has to be reported and/or (partly) approved by the responsible public authorities. Ministerial approval is usually conditional on the non-interference with the professor's and the institution's regular obligations. But government can also expand the legal capacities of universities to offer contract-based services. Sometimes governments align far-reaching discretion to universities even considering diversifying financial institutional income as a university task itself.

[167] The focus is on full-time undergraduate studies at public universities. Regulations dealing with fees for postgraduate, part-time or private students are not considered.

II. Comparing Country-specific Legislation

The following table provides a categorization of legal policy instruments. The categorization of legal instruments applied in the various countries and its native terms presented here serves as a summary to ease the comparison of legislation across countries rather than indicating the data sources for measuring country-specific policy outputs. These sources are listed in the actual country reports. In other word, the table does not indicate a systematic mapping of the type of policy outputs examined to write the country reports (cf. Annex III). The country reports are based on a secondary data analysis of previous research about legislation on higher education and not on legislative documents itself. Readers should be aware of this.

Instrument **Country**	*Legislative Act*	*(Government) Decree*	*(Ministerial) Order*	*Other* *(for example, circular, but also policy documents)*
Austria	Bundesgesetz	-	Verordnung	Erlass
Belgium	Wet/ Loi	Koninklijk Besluit / Arrêté royal (AR)	Arrêté ministerial/ Ministerieel Besluit	Circulaire/ Omzendbrief
Belgium (fr)	Décret	Arrêté du Gouvernement de la Communauté française	Arrêté de l'Exécutif de la Communauté	Circulaire
Belgium (nl)	Decret	Besluit van de Vlaamse Regering (BVR)	Ministerieel Besluit	Omzendbrief (OZB)
Denmark	Lov Finansloven (Finance Act)	-	Bekendtgørelse (ordinance)	Cirkulærer
Finland	Laki	Asetus	Ministeriön päätös	-
France	Loi, DDAC, Ordonnance	Décret	Arrêté ministéreal	Circulaire
Germany	Bundesgesetz	-	Verordnung	Verwaltungs-vorschrift Beschlüsse und Empfehlungen der Kultusminister-konferenz (KMK)
Greece	N.μov (Nomos)	Proedrikó Di.tagμa (Proädriko diatagma)	Kotnä Uπrourgikä Aπrófash (Kini ipurgiki apofasi)	Egkúkliov (Egiklios)
Iceland	Lög		Reglugerð (regulation)	-
Ireland	Act of Parliament	-	Order	-
Italy	Legge, legge communitaria, decreto legge, decreto legislativo	Decreto del Presidente della Repubblica (DPR)	Decreto ministeriale (DM)	-

Instrument **Country**	*Legislative Act*	*(Government) Decree*	*(Ministerial) Order*	*Other* *(for example, circular, but also policy documents)*
Netherlands	Wet Algemene	Algemene Maatregel van Bestuur	Ministeriële regeling	-
Norway	Lov	Kongelig resolusjon (royal decree)	Forskrift (regulation)	Rundskriv Bevilgningsreglement (binding appropriation guidelines)
Portugal	Leis	Decretos-leis (decree-laws)	Decreto regulamentar (implementing decree), Regulamento (regulation)	-
Spain	Ley ordinaria, real decreto-ley, real decreto-legislativo	Real decreto	Orden	Resolución, Instrucción, Circular acuerdos y propuestas del Consejo de Universidades
Sweden	Lag	-	Förordning (ordinance)	Föreskrift
United Kingdom	Act of Parliament	Order in Council	Ministerial Order	Regulations of Higher Education Funding Council for England (HEFCE) (since 1992) Regulations of Universities Funding Council (UFC) (1989-1992) Regulations of University Grants Committee (UGC) (until 1988)

Note: Tabel presents a classification of country-specific legislation and policy documents at the national level. Terms in case of Belgium (fr) and Belgium (nl) refer to the community-level. Source: Extended version based on Eurydice (2000b), Kaeding (2007: 99) and EC (2011).

III. Country Reports

This section includes the country reports used to measure policy adoption across the various policy items on the performance-orientated reforms in higher education. The reports list the status quo on the policy items under consideration and subsequent reforms between 1980 and 1998. This includes – if available[22] – the type of legislation (cf. Annex II), when it was adopted and when it came into force. It also details the provisions relevant for the policies under consideration and lists the policy items affected by each piece of legislation.[23] A detailed description of the various policy items is provided in Annex I.

The legislation, its dates and provisions are derived from reports and databases of international and national organizations dealing with higher education policy. In addition, data comes from essays and articles in academic journals and books. Each country report also lists the sources used for this kind of secondary data analysis.

The country reports are not dealing with financial action programs (for example, in terms of project funding) or documents indicating governmental discussions and recommendations (for example, White Papers, Green Papers, Government Reports). Pilot projects are listed if they are implemented on a system-wide level. Reforms are also listed if the literature indicates that the actual policy change is based on other policy documents or even introduced without specific legislation. The public authority responsible for higher education is usually located at the central ministerial level. Contrary information is provided in the notes of each country table.

[22] "N/A" indicates if the type of legislation is unknown or not applicable.

[23] Note this does not necessarily qualify as an event used in the survival analysis of the previous study as in the case of Germany as the focus of the study is only on policy adoption involving the central government (cf. section 3.2).

A. Belgium (BE)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• The budget is split up into the different activity areas of the institutions. Separate resources for teaching and research are provided, but the teaching appropriations also include funds for teaching-related research like doctoral studies. Funds for basic operational costs are provided in terms of two block grants for working credits (to cover administrative, teaching as well as research-related activities) and investment credits (to cover capital expenses of facilities and buildings used for teaching, administration and research). • Although the appropriations are provided as block grants. Universities have to develop their own budget plan subject to approval by the ministry. As this plan allowed for little flexibility regarding the internal reallocation, the budget form has been de facto itemized. As a consequence, autonomy on budget spending is limited, as a system of auditing and ministerial approval framed the internal allocation of funding within universities. According to the purpose of the working credits, the university budget plans have to be earmarked according to expenditures on operational costs like general administration costs, staff categories (that means, teaching, research, administrative, and technical personnel, and material costs). Universities obtain different grants relating to different cost types. Spending within these categories is heavily regulated and allowed only little flexibility even within cost categories. • Belgian universities own an extensive authority regarding administrative issues and staff appointments (still certificate requirements must be respected). • The ownership of buildings belongs to the state. Also government commissioners have to approve all larger expenditures (above 50.000,- BFR). • Funding allocation is based on formulas. Although the actual details of the underlying funding formula change several times (for example, in terms of curricula classifications), but the main principles remains stable. The institutional provisions for working credits are determined by the number of students – undergraduate as well as postgraduates – enrolled in the previous academic year. The student numbers are then multiplied by a fixed cost tariff per student. These tariffs are classified and weighted according to different study branches, as some studies were more extensive and required costlier infrastructure. The tariffs for calculating the unit costs in the formula for working credits have been determined by the Ministry on the base of student/teacher ratios and pre-existing expenditure patterns across different subject areas (that means, the tariffs were subject-related). The law allows the government to annually update the tariffs in line with the (general) developments of prices and salaries (also based on seniority of staff structure). For the calculation of working credits a minimum level of subsidies is guaranteed independent of student numbers. This basic grant is supposed to cover the fixed costs for running a university. In addition, a peak cut-off was applied to adjust for a maximum level of costs per student. De facto only the three biggest universities are funded according to the student numbers as all the other institutions remained in the band-with of guaranteed funding. • The student intake is not centrally fixed Basically an open admission policy for all pupils with secondary school-leaving certificate applies except for courses in engineering, which require entrance examination. • There is a joint responsibility between government and institutions to set selection criteria for oversubscribed courses (an entrance exam existed for civil engineering). The universities themselves carry out the entrance examinations of the medical programmes. • The question which courses a university can offer is stipulated by specific decrees (also provided minimum regulations on syllabi). In the Walloon Community, “legal” degrees and programs are subject to approval by the Ministry of Education (as opposed to “scientific” degrees). • Study fees are raised for undergraduate and postgraduate studies as well as for continuing education and part-time studies. Minimum and maximum levels for tuition fees are set according to subject studied, the type of education (short-/long-cycle) and the type of higher education institution. There is no significant price difference regarding fees for undergraduate and postgraduate studies. • These funds are not at the discretion of the university as the ministry as setting both the levels of tuition fees as well as the assignment for this source of income (that means, the funds are deducted from the general revenues provided to the university).	A2, C1, C3, C4, D1, D2, D3, E1, E2

Year	*Legislation*	*Provisions*	*Items*
		• Tuition fees are means-tested in both communities. Communities grant holders receive a reduction of fees, but no exemption. In the Flemish Community reduction is also provided near-grant holders with low family incomes. • Contract based services largely focus on research activities. That means contract teaching is very limited. For example, Belgian universities do provide only few continuing education activities in terms of short-term courses and as tuition fees have been linked to the length of study they generated only very low income from continuing education. • The university boards of directors also include representatives from social and economic organizations.	
1981	N/A	• The government changes the curricular classifications and the definitions for eligible students underlying formula funding.	C3
1982	N/A	• The government changes the curricular classifications and the definitions for eligible students underlying formula funding. Furthermore, the peak-off cut is lowered and the fixed costs per student are altered.	C3
1986	Saint-Ann Austerity Plan	• The governmental Saint-Ann Austerity Plan aims at reducing public expenditure on higher education. It fixes the cost unit per student; cuts down the social allowances and increases tuition fees. The Plan also reduces the number of students eligible for grants.	C3, C4, E1
1991 (1991-1994) (Flemish Community)	Parliament of Flanders Decree on universities in the Flemish Community	• More autonomy on internal governance structures is granted. Also a new funding system based on block grant budgets in introduced. Grants for basic funds for teaching and teaching-related research are provided on a monthly base and for investments on a three-monthly base. Funds can be transferred from one fiscal year to the next if ministry is not vetoing and reallocating. • University autonomy increases both with regards to the employment of teaching staff and buildings and equipment, but some limitations still exist on staff employment and investments. • The block grants are still allocated according to funding formulas. Each formula consists of a fixed and a flexible part (max. 50%) and is indexed by average price developments. Max. 50% of the working grant are allocated according to the number of 'education-load-units' (OBE) multiplied by a constant amount per OBE (the basic unit BEB): • The OBE are measuring full-time equivalents of students weighed according to subject areas, that means, the flexible part is allocated on the number of students (in undergraduate, postgraduate and continuing education and General Practitioner programs). The Ministry of Education determines the BEB. The other (min.) 50% are provided as fixed sum based on the budgets of a reference year (changed, for example, in 1996). • The total block grant for the working payment then has been indexed yearly on the base of the index of labour costs (80% of indexed adaption) and consumer prices (20% of indexed adaption), that means the growth in the overall budget is incremental. The actual budget level is fixed as soon as general public budget had been approved. • University's autonomy on course planning increases (implemented in 1994). It listed the recognized universities and the study domains and degrees they are allowed to offer. Based on this list, programs and degrees of universities are fully recognized by the state. But the government can still stop funding a course having a bad quality or drop the academic program from the recognized list (this did not happen during the study period). • The level of tuition fees continues to be determined by the government in the Flemish Community (based on the recommendation of the VLIR). Study fees become institutional surpluses, whereas in the income from study fees is still deduced from the institutional budgets in Wallonia. • Three main tasks of universities are outlined for universities: research; tertiary education; and promoting exchange with society by providing scientific knowledge and expertise. • Each university's governing board is required to evaluate departments and staff every eight years under conditions set by the Flemish Interuniversity Council (*Vlaams Interuniversitaire Raad* - VLIR). A committee of external reviewers is evaluating the results of self-evaluation of university programs at the faculty level. First evaluations are carried out in the academic year 1994/95.	A1, A2, B2, C1, C3, C4, D1, D2, D3, E1, E2

Year	*Legislation*	*Provisions*	*Items*
		• The previous principles on the composition of the university governing bodies are confirmed.. The same groups are represented in the governing bodies, in similar mutual ratios, although the actual numbers have changed. Direct involvement of external stakeholders is only possible on a limited number of occasions. External stakeholders are represented on the board of directors, but this board has no direct role in the educational policy.	
1991 Walloon Community	Decree	• Universities are granted full ownership of buildings and equipment. • The tuition fees have been adapted to the increasing price index.	D3, E1
1994 (1995) Walloon Community	Decree on university studies and academic degrees in the Walloon Community	• Universities obtain full autonomy on the recruitment and managing of all staff within the limits determined by the so-called full-time equivalent units (*unités équivalent temps plein* - UETP). That means the maximum number of position is centrally determined. • The course structure in terms of subject-areas and degree titles and authorized the fields where universities are allowed to provide degrees are reformed. • The Decree abolishes the distinction between “statutory” and “scientific” degrees. All university degrees are called “academic” degrees. The Ministry of Education becomes responsible for approving all university degrees (previously only regarding “legal” university degrees). But universities obtain the full autonomy regarding curricula settings and course planning. • University governance boards include representatives of several stakeholder groups ranging from professors, administrative and technical personnel to students, but also representatives from companies and trade unions.	A2, B2, D2
1995 Flemish Community	Decree concerning scientific and social services of universities with other legal entities	• The Flanders government strengthened link between universities and society by formulating it an explicit task with the 1991decree. But it takes additional years until explicit regulations are adopted in 1994 and 1995 (in force since 1995) and eventually the 1995 Decree on the provision of scientific and social services by universities and non-university higher education institutions and their relationships with other legal entities determines the regulations for contract-based services.	E2
1996 (Flemish Community	Decree	• The funding formula funding is updated. Continuing studies and “General Practitioners programmes” are not part of the input-based part of the funding formula anymore. • Rather a small portion of the formula-based budget is distributed according to the number of graduates – a kind of a first step towards output orientated funding.	C1, C3

Year	*Legislation*	*Provisions*	*Items*
1998 (-) Walloon Community	Decree on the financing and control of universities public expenditure	• Core funds for universities are provided as two lock grants: one for teaching, research and administration, and one for buildings and other investments (only partially implemented in 1998). Universities are granted full autonomy to universities on matters of budget spending, but staff expenditure has to remain below 80% of total public funds. • Some staffing regulations on employment and qualifications apply and the payroll is calculated using a 'weighted average gross cost' method. • The financing of working and investment expenditures on a global budget determined by funding formulas. The overall budget is based on the courses offered by each institution only – the numbers of enrolled students are weighted by different subject-related cost tariffs (only regular students were eligible for funding). Different coefficients for counting students also existed regarding part-time students, but also regarding specific goals (for example, for doctoral students, joint degrees). • Furthermore, public authorities includes a supplementary cost based element: Small institution can use "virtual" student numbers to provide minimum level of funding, whereas full universities face maximum ceilings after whom reduced tariffs are applied. This should reflect the decreasing average costs per student. • The revision of 1998 includes a retarding element in it as it is based on the student numbers of the past four years (still multiplied by student tariffs set by the public authorities). • The universities still have to submit budget plans annually for approval to the Ministry of Education.	C1, C3, D1, D2
1998 Flemish Community	N/A	• Public authorities put an output-related indicator into the formula by including a discount for repeating semester (80-90%). But its role is only secondary (ca. 5% of the operating grant are based on output criteria).	C3

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. The responsibility for higher education was fully transferred from the federal level to the three language communities in 1989 by a special law on the funding of the Regions and Communities. Nowadays the role of the federal government in higher education policy is mainly limited to research funding. With this legislative act, every linguistic Community had the right to organize, fund and control its higher education institutions independently from federal regulations and according to its own objectives, goals and priorities. The federal budget for higher education has been distributed across the communities according to the number of pupils. The communities are free in how to allocate this block grant (even possible to use these funds for different purposes than higher education). Despite the prevailing similarity between the Communities, two higher education systems with different regulations and authorities exist in Belgium: the Flemish higher education system of the Dutch-speaking region of Flanders as well as the Walloon higher education system in the French-speaking region Wallonia. Overall, the transformation towards the sub-national level did not result in a complete re-design of systemic characteristics. Rather the Communities reformed the existing arrangements while maintaining most of the basic principles. With the decentralization of responsibilities from the federal to the Community level, the Minister of Education of the French, respectively the Flemish Community became responsible for approving degrees and programs. The Flemish Community has its Ministry of Education (*Ministerie van Onderwijs*), the French Community has a General Administration (*Administration générale*) for education and scientific research within the Ministry of the French Community. In case of financial student support the linguistic communities were already able to introduce own regulations at the beginning of the study period.

Data sources: Baert and Cockx 1998; MotFC 2001; Cottenie 2001; Damme 2005; Dassen and Luijten-Lub 2007; EC 2000, EC 2004; Eurydice 1999, Eurydice 2000b, Eurydice 2003; Fiers and Lesseliers 1996; Fitzmaurice 1984: 431; Garrouste 2010; Geiger 1978; Hecquet and Frost-Smith 1984; Heffen and Lub 2003; Huys, Debackere and De Kock 2009; IBE 2007; Kaiser et al. 1992; Kaiser, Vossensteyn and Koelman 2001; Kaufmann 1996; Kelen 1992; Kirstein 1999; Kouptsov 1994; Leszczensky et al. 2004; Maassen 2000; NARIC 1999; OECD 2002, OECD 2006a; Schwarz and Westerheijden 2007; Vanderhoeven 1999; Verhoeven 1982; Panaretos 2000; Wielemans 1988, Wielemans 1988; Wielemans and Herpelinck 2000; Wielemans and Vanderhoeven 1993; de Wit 2006: 16; de Wit and Verhoeven 2000. For full bibliographical details see list of references.

B. Denmark (DK)

Year	Legislation	Provisions	Items
1980 (1981)	N/A	• In 1980 the Ministry of Education gains significant influence on the internal allocation of universities due to a fine-grained item lists and setting the student intake for each course (in operation since 1981). • The budget is split up into activity areas of institution. Funds for teaching activities are provided in terms of two block grants (one for recurrent and one for capital expenses). Bigger institutions with several faculties do not receive overall block grants for teaching, but faculty specific budgets and the possibilities to transfer public funds across different programs are limited. Administration and capital costs are assigned in a very detailed budget, that means they are de facto earmarked. Universities do not submit their own budget proposals. • Public buildings are provided free of charge by the state. Some funds are earmarked for special purposes (for example, investments). • Universities are free to choose their academic and non-academic staffing as well as their composition, but they are subject to ministerial approval. The financial autonomy is limited due to restrictions on setting the salaries and wages of their staff. For example, in higher education salaries of teaching staff is negotiated and between the Central Association of Academics (AC) and the Ministry of Finance and fixed according to age and academic grade. The same applies to the working conditions. • The direct appropriations for public universities provided by the Danish government are based on the incremental allocation of administration and capital costs. Only the financing of teaching activities is based on a funding formula. Teaching Budgets are calculated on a central formula including the following indicators: forecasts of the number of successfully passed exams (the so-called study steps increments – SSI). Estimated numbers of passed exams are based on active students, that means, the yearly enrolment corrected by past drop out rates and averaged study time. Following the SSI the staff numbers and equipment needed are calculated using centrally fixed objectives for student/teacher ratios within subject-areas (that means, calculation were made on the faculty level), maximum rates for salaries and conversion into maximum number of student full-time equivalents for each institution. Furthermore, due to fixed student/staff ratios and student numbers the ministry determines *almost* the complete production structure. The tariffs are normatively set, based on experience and historical data stemming from previous times and are adjusted yearly to balance the ministerial budget and student numbers per institution are also set by ministry the system comes close to cost reimbursements • Higher education programs (and their content) and institutions are subject to ministerial approval. • Before 1980 the maximum annual capacity of student intake is fixed by the Parliament through a general *numerus clausus* and the regulation of student intake in the higher education sector. Now the Ministry of Education fixes the student numbers for individual universities annually. This also includes the admission numbers per course. The actual distribution is based on labour market forecasts. In addition, student preferences and existing capabilities due to the current provision of buildings and teaching staff are considered. • The government is responsible for regulating the selection criteria in case of exceeding demand for courses and the management of university admission is the responsibility of an agency coordinating the application scheme (KOT – *Den Koordinerede Tilmeldi*). • Fulltime university education is free of charge and no study fees exist. • Universities are able to provide external services, but the additional income has to be paid to the treasury and is not seen as direct income of the universities. • The participation of external stakeholders in university councils is not stipulated.	C1, C3, D1, D2, E2
1984	N/A	• The detailed regulation of personal resources where every position is subject to approval by the ministry is replaced by a block grant for staff and a corresponding maximum level of employees (that means, internal allocation increased). Still employment at universities is limited by governmental regulations (for example, on the maximum level of employees).	D1, D2
1985	N/A	• Sales of external services contribute now directly to university budgets. There is hardly any information available about the size if income derived from contracting teaching activities.	E2

Year	*Legislation*	*Provisions*	*Items*
1992 (1993)	Finance Act	• The act establishes the Danish Centre for Quality Assurance and Evaluation of Higher Education. Danish universities have to implement self-evaluation procedures, but the Centre also carries out external evaluation by peer reviewing study programs based on staff and student surveys as well as site visits (every 7 years). • Originally the project is supposed to run for five years, but it is soon extended until 1999. In 1999 the Danish Evaluation Institute (EVA) is created as permanent follow-up institutions.	A1
1992 (1993	Multiannual agreement between almost all parliamentary parties	• Since 1993 the Danish government bases its appropriations on four-year agreements limiting the number of students per institutions (before yearly). Previously planning was based on a yearly outlook. These agreements frame the financial capacity of each university (details up to the university). That means, the overall student intake and the budget of the higher education sector for 1993-96 is set. • The government determines the overall student numbers per institution by target agreements imposing the numbers of study places to be offered (every four years), that means, the maximum number of student places are negotiated between the government and institutions as a whole (not per discipline). That means that usually universities are allowed to determine the admission numbers to each course within a quota agreed with the government. With this policy access to higher education study places increased and studying becomes less selective.	B1, C2
1993 (1994-1995)	Consolidation Act on Universities	• Lump sum funding is introduced to the block grant for teaching, that means there are no restrictions on internally allocating the basic and the new taximeter grant. Three block grants are allocated to universities: a basic grant, a taximeter grant and the grant for capital expenses. • Danish universities still have to comply with a list of framework restrictions on procedures for employment, staff qualifications and positions and their working conditions. This also includes the number of professor and senior-level administrators at universities. From this point of view, financial autonomy is still limited. • The institutional autonomy on buildings and equipment is limited. All investments decisions not financed by the block grant for capital expenses are subject to ministerial approval. In principle, the state still owns the building, but the ministry still supplies universities with the requested land and buildings. • The act introduces the allocation of block grants according to the taximeter principle for institutions providing medium- and long-cycle higher education (that means, the universities) (implemented by the Budget Reform of 1994). The principle strengthened performance-related funding and the underlying funding formula is simplified. In addition a very small basic grant independent of the university size exists since the 1993 reform (around one million DK). • The tariffs are based on direct costs for teaching activities and equipment, indirect costs for administration (for example, staff and maintenance of buildings) and costs for necessary practical teaching costs (for example, in medicine and education). • Teaching appropriations have been directly based on actual student numbers passing their exams multiplied by subject-related tariffs, that means, allocations based on yearly activity reports and not on forecast. Students in continuing education have also been counted. The actual amount of funding is laid down in the annual Finance Act (from 1994 on), but the corrections do not have an impact in the first year, that means, operation from 1995 on. • The tariffs are rather re-distributional as they are adjusted annually to the overall budget of the Ministry of Education, but the Ministry of Education and Finance is allowed to overrun the ceiling within a certain range. The tariffs underlying the formula for current teaching expenditure is predominantly derived from past costs (adjusted annually by the Ministry), that means, they were not based on objective cost-calculations. • Institutional autonomy on course planning increases by delegated responsibilities to the institutions to decide on their course portfolio and the student intake. The Ministry of Education yearly determines the maximum number of entrants, but the institutions set the number of places offered. • The government determines the overall student numbers per institution by target agreements imposing the numbers of study places to be offered (every four years), that means, the maximum number of student places are negotiated between the government and institutions as a whole (not per discipline). That means that usually universities are allowed to determine the admission numbers to each course within a	A2, B2, B3, C1, C3, D1, D2, D3,

Year	*Legislation*	*Provisions*	*Items*
		quota agreed with the government. • Responsibilities for establishing educational programs and course portfolios are delegated to the universities themselves. Programs are usually not subject to ministerial approval as long as they remain within the framework provided by the Ministry of Education. Also it is essential for the university to highlight the societal and economic impact of the program, which means, mainly in terms of the relevance for the labour market. The Ministry is only able to quit programs or limit the student intake in case of quality problems (had to be proven by the Ministry) or due to limited places for practical training (for example, in education and medicine). • The Ministry is still responsible for establishing compulsory admission requirements (for example, subjects in general upper secondary education and partly minimum marks in school-leaving exams). However, each university decides on how many applicants meeting the admission requirements it wants to admit to each of its programs. In addition, universities obtained the right to set its own selection criteria in case of over-subscribed courses and the procedures for admission on its own (former government responsibility). The Ministry of Education only regulates admission in medical studies and teacher training. Although virtually no *numerus clausus* existed, all applicants have to bypass the central admission system KOT as the number of study places was not sufficient to provide all applicants with the requested study places. • The act also prescribes a minimum of two external members in the university advisory body (board of directors).	
1998 (-)	N/A	• The Ministry of Education decides to implement a contractual policy by 2000. According to this idea development contracts have to be negotiated between universities and the ministry that laid down the general teaching and research profile of the university. In addition, the contract is supposed to draft general budgetary guidelines. Based on external assessments these contracts have to be renegotiated after a period of four years. • These performance contracts do not contain any additional funds and appropriations. Rather the policy functioned as development plan where universities are forced to formulate strategic objectives and goals that help the ministry to gain additional insights on university priorities and strengthen the dialogue with the universities.	C2

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. In Denmark Higher education institutions and programmes in Denmark are regulated by ministerial orders and subject to ministerial approval (Kristoffersen 2005: 91), but changes in higher education often do not require legislative change in Denmark (cf. Bache 1998: 284).

Data sources: Bache 1993; Bache 1998; Blumberg 1986; Canton et al. 2001; Conrad 1990; Enslev, Bassé and Stigaard 1988; Eurydice 1999; Eurydice 2000b; Ginnerup et al. 2008; Haarløv 1997; IBE 2007; Kaiser et al. 1992; Kaiser et al. 2001; Kirstein 1999; Klostergaard Jensen and Neuvians 1994; Kouptsov 1994; Kristoffersen 2005; Kyvik and Tvede 1998; Leszczensky et al. 2004; Maassen 2000; NARIC 1999; OECD 2005d; OECD and IMHE 2004; Otte and Mortensen 1998; Rasmussen 1998, Rasmussen 2004; Thune 1996, 2001; Vossensteyn 1997, Vossensteyn 2003; Whitehead 1985; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

C. Germany (DE)

Year	Legislation	Provisions	Items
1980	N/A	• Regular public funds have to cover staff salaries, material costs as well as maintenance for buildings and facilities. The budget does not distinguish between teaching and research activities and the costs are reimbursed. • The Budgets are itemized and the allocation of funds is strictly earmarked. The budgets are divided into detailed chapters", "title groups", and "titles" and the transfer of funds across budget lines or fiscal years is not possible. Unspent money led to budget cuts in the subsequent years. Based on institutional budget requests, the annual budget is negotiated between higher education institutions and the Ministry of Higher Education in each of the *Länder* (usually linked to past funding). The starting point of negotiation was the staffing plan (*Stellenplan*) of the previous year. This plan also determines the number of students each institution has to accept. Teaching capacities are calculated on the base of national standards (*Kapazitätsverordnung*). Overall, formulas or other fixed and transparent criteria have not been applied. Rather budgeting is incremental and cost-based. • Regulations regarding the salaries and other payments to civil servants apply. While the personal income and additional resources of full professors are negotiated between the professor, the president or rector, and the respective ministry of the Land, additional resources (including support staff) are to be negotiated between the professor, the department, and the central institutional administration. The department exercises control over these budgets • The Planning Committee for the Construction of Higher Education Institutions is responsible for planning of capital investments and for the administration of buildings. The institutions are only responsible for the operation of the buildings. Also institutions do not own the property, but the *Länder* authorities in question. • Access is restricted in some selected courses, but the Federal Constitutional Court rules that it is only applicable under very specific circumstances based on the institutional capacity. Consequently, the *Länder* agree to an inter-state treaty on national selection and admission procedures. In addition, a central agency for the allocation of study places (ZVS) is established. This body organizes the selection procedures for a specific set of usually over-subscribed courses (for example, medicine, but also business administration, psychology or law). Each institution carries out student selection for other courses (also dependent on capacities for study places calculated by Länder authorities). • According to the Framework Act on Higher Education (HRG) the Higher Education Ministries of the *Länder* are responsible for the organization of studies and examinations. Consequently, they have to approve study programs and define examination requirements. • No study fees are imposed for (the first) undergraduate studies. Consequently, The need-based financial assistance provided by the federal state (*BaFög*) does not include an amount for paying fees. • There was no reliable information on contract teaching activities, but the income is supposed to be negligible. In all *Länder*, universities are allowed to charge fees for UCE, but specific regulations differ. The individual professors usually acquire third party funds. Funds are usually linked to special accounts of the professors, rather than to the institutional budgets (that means, institutions were functioning merely as intermediary buffer administrating the funds). The HRG is dealing with research-related income only, but it does not put on an equal foot with regular research activities of the professors as it is conditional on the non-interference with the professor's and the institution's regular obligations. In addition, additional business of professors has to be announced and (partly) approved by the *Länder* Ministries. • There are no specific regulations on external stakeholder participation and only very few *Länder* had universities with board of trustees (*Hochschulkuratorien*). Last but not least, these *Länder* provisions are only facultative on this issue. Also these bodies are only allowed to have an advisory role.	A2, D3, E2
1985	Act on temporary employment of academic staff	• Institutions gain some autonomy on the employment of junior teaching staff.	D2

1985	Third Amendment to the Framework Act on Higher Education (HRG)	• With the 1985 Third Amendment to the Framework Act on Higher Education (HRG) the Higher Education Ministries of the *Länder* only have to approve the university regulations on examinations only (*Prüfungsordnung*) (previously the *Studienordnungen*, that means, the course regulations dealing with the curricula, had to be approved as well). • Third-party funding s put on an equal foot with regular research activities as it is formally recognized as part of higher education research. Corresponding activities are regulated in more detail, but contracting services usually refer to research activities of individual scholars.	B2, E2
1988	N/A	• The *Länder* agree on a common framework for study coursers and degrees to guarantee their mutual recognition. It is based on framework studies and examination regulations (*Rahmenordnungen*) coordinated by the "Joint Commission for the Coordination and Regulation of Higher Studies and Examinations" of the *Länder* and the HRK. These *Rahmenordnungen* have to be jointly adopted by the KMK and the HRK.	B2 *Not counted as event*
1993 (-)	KMK/HRK joint declaration	• A joint Statement of the KMK and the Rectors' Conference (HRK) on the 'Implementation of the Structural Reforms of Studies' in 1993 calls for a quality assurance system and the need for reforming study structures. No clear structure emerges in the aftermath of this declaration, but most *Länder* legally require their universities to deliver so-called teaching reports. Teaching reports are public accountability reports informing about institutional objectives and performance	A1 *Not counted as event*
1994	KMK Resolution	• In a Resolution in 1994, the KMK calls for more financial autonomy and flexibility at higher education institutions (for example, in forms of global budgets and on behalf of student-related performance parameters for the allocation of resources). • As a consequence, several pilot projects started at the *Länder* level. Especially regarding staff funding and financial transfers across fiscal years. But also related to the institutional autonomy on the management of staff and buildings/equipment (for example, responsibility for staff plan, wage bargaining, decentralized procurements, responsibility for maintenance of buildings and smaller (building) investments) and staff recruitment).	C1, C3, D1, D2, D3 *Not counted as event*
1997	KMK Resolution	• A KMK Resolution calls for the introduction of advisory university boards also composed of external stakeholders and experts.	A2 *Not counted as event*
1998 (1998-)	Amendment to the Framework Act for Higher Education	• System-wide introduction of block grants and performance-orientated formula funding by the *Länder* is allowed. Target agreements usually secure level of funding for teaching (does not include longer capital investments). • Following the 1998 Amendment to the Framework Act for Higher Education, the former system of framework examination regulations (*Rahmenordnungen*) coordinated by the "Joint Commission for the Coordination and Regulation of Higher Studies and Examinations" (BLK) as well as the ministerial approval of degree programmes by the *Länder* was abolished by an external accreditation process for the new degrees that are in in a trial phase only (at both universities and FHs). • The special selection procedure for medical studies is dropped (in the academic year 1997/98). A performance-related quota is introduced for the institutional allocation of successful applicants in restricted courses (*Verteilungsverfahren*). In addition, institutions can award around 20% of study places in courses restricted by nation-wide regulations themselves (according to their own selection criteria). • Quality assurance in teaching becomes a statutory obligation for all higher education institutions. This policy has to be implemented by the *Länder*. • Federal regulations on the administrative organization of higher education institutions (internal and external) are abolished. The former HRG does not envision a university council (composed of external members), but now the *Länder* become fully responsible. Subsequently, university councils (*Hochschulräte*) similar to the American governing boards, respectively boards of trustees also including external stakeholders have been implemented in all *Länder*. • Some pilots are previously running at the *Länder* level, but system-wide implementation in *Länder* usually started in 1997/1998 with the amendment of the HRG in a very few *Länder* and was not realized in the majority of *Länder* during the study period.	A1, A2, B2, B3, C1, C2, C3, D1

1998	KMK Decision	• The KMK publishes a decision on establishing the Accreditation Council (*Akkreditierungsrat*) in 1998 for a three-year trial period (permanent status was acquired after the study period). This Council becomes responsible for the management of accreditation of the new Bachelor and Master's degree programs. Basically, it has to accredit private agencies that have to carry out the actual accreditation procedures. • Note, the HRK carries out a system-wide project promote information exchange between universities across *Länder* in terms of quality assurance (*Projekt Q*). It is also supposed to develop common evaluation standards on a national scale (funded by the federal Ministry of Higher Education (BMBF)). But this project was a bottom-up and experimental action and no systematic and regular external quality assurance system.	A1 *Not counted as event*

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. Universities and other higher education institutions were under the authority of the *Länder*-specific Ministry of Higher Education, but the laws and regulations of the German states have to be adapted to the federal Higher Education Framework Act (*Hochschulrahmengesetz*/ HRG). The HRG also allows for joint collaborations between the *Länder* and the Federal Government in specific areas of higher education. For example, the Federal-State Commission for Educational Planning and Research Promotion (BLK) was a standing forum for discussing all issues in education and research that were of interest to both the federal government as well as the *Länder*. The BLK makes recommendation to both the *Länder* governments as well as the federal government, but it also provided funds for pilot projects in innovative training methods. To guarantee coordination of higher education policies between the different constituencies of decision-making, the Standing Conference of the Ministers of Culture of the German *Länder* (KMK) represents the interests of the different *Länder*. Decisions and recommendations of the KMK are supposed to be subsequently implemented at the state level. The Ministry of Higher Education in each of the *Länder* is providing regular public funds within the framework of the HRG. In 1990 existing regulations on the higher education institutions in East Germany is adapted to West German standards in 1990.

Data sources: Alesi and Kehm 2000; Bartelse, Beerkens and Maassen 2000; Behm and Müller 2010; EC 2004; Efinger 2003; Eurydice 2000b; Faulstich et al. 2009; Federkeil and Ziegele 2001; Frackmann 1990; Hartwig 2004; HRK 2004; Hüfner 2003, Hüfner 2004; Huisman 2003; Kaiser et al. 1992; Kehm 1999; Kirstein 1999; Klostergaard Jensen and Neuvians 1994; KMK 1996; König 2007; Kommer, Graeßner and Prokop 1998; Kouptsov 1994; Lanzendorf and Pasternack 2008, Lanzendorf and Pasternack 2009; Leszczensky and Orr 2004M Liefner, Schatzl and Schroder 2004; Maassen 2000; Müller-Böling 1996; Palandt 2003: 182; Pritchard 1992; OECD and IMHE 2004; Orr, Jaeger and Schwarzenberger 2007; Rudder 1994; Schade 2005; Schuster 1988; Schwarz and Westerheijden 2007; Stannek and Ziegele 2005; Vossensteyn 1997; Vught 1990: 33; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

D. Greece (EL)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• The size of the institutional budgets is based on bilateral negotiations between the Ministry of Education and each university. Universities have to prepare itemized budget proposals subject to approval by the Ministry of Finance (sent via the Ministry of Education). Each university has to prepare two account budgets: One for current funds and one for capital expenditure. • Following a centralized tradition of educational management, the state controls university funding and determines all specific expense categories in the budget. Any payment is subject to approval by the designated Public Auditor in the Ministry of Finance. The university could only decide on some minor items in certain cost categories. The possibilities for transferring funds across budget items and cost types are very limited. It requires ministerial approval and follows the same procedure as the approval of the total budget. Universities are not allowed to keep any surpluses. Only operational expenses are provided as lump sum. Funds were covering expenses referring to administration and rent (staff salaries were earmarked), but as income from the universities' owns building is relatively low, financial discretion is very limited. • The budget for the current expenses is not based on any explicit criteria. Rather each budget item is evaluated by the Ministry on the appropriations of the previous year according to its necessity (that means, incremental allocation). Public appropriations are based on the budgets submitted by each institution and the compensation of actual costs (that means, reimbursement). Appropriations are actually ad hoc decisions (no national development plan existed). Decisions for current expenses are based on past expenses, but the capital budget are not based on objective criteria too. • The Ministry of Education manages human resources solely in terms of salaries, wages and staff numbers. Buildings and equipment are usually university property, but autonomy is limited. • Public funds are provided directly to the universities without any evaluation in terms of quality regarding their work. The central auditing commission checks the legal and correct disposal of funds according to the itemized budget. • Departmental admission numbers of students are fixed yearly by the Ministry the Ministry of Education. Universities are able to voice their concerns on student intake and funding, but usually it is not taken into consideration (usually the Ministry has to provide additional funding during the fiscal year as budgets were calculated too tightly). The Minister of Education consults each university (and since 1982) the Council of Higher Education before deciding on student intake. • The Ministry of Education is responsible for course planning. It has to approve all areas of institutional organization - study programs, departments and institutions. No external quality assurance system existed. • All courses are free of charge. No study fees are charged and no voucher scheme existed. Universities are also not able to derive private income by marketing services. Furthermore, external stakeholders are not allowed to participate in university governance.	D1, D3
1981 (1982)	Presidential degree	• Universities are allowed to install special research accounts. With this account universities are able to obtain and manage funds from external sources from 1982 on. That means, it becomes possible to market and sell university services. This policy is research focussed.	E2
1982	Framework Act on the new structure and the functioning of universities	• Universities become able to employ professors on yearly contracts if they are using their own funds derived through the newly established research accounts. • The act replaces rigid course controls by the Ministry, and universities are granted autonomy on introducing new course programs. The programs are still subject to ministerial approval. The act also grants autonomy to offer postgraduate study programs, to establish graduate schools and to confer doctoral decrees to the universities only.	B2, D2

Year	*Legislation*	*Provisions*	*Items*
1988	Ministerial order	• The original idea of the search accounts introduced in 1982 is to gather additional funding to carry out research projects, but provisions have been specified in more detail in subsequent legislations over the following years. With this legislation, the scope of the special research accounts is expanded now also covering teaching activities. Income from this source is negligible and universities are still almost entirely publicly finance.	E2
1992	Reform act on modernizing higher education	• Universities can introduce study fees to postgraduate courses. The study fees apply only to a very limited number of students, but they are part of the institutional income deposited into the Special Research Accounts.	-
1995 (-)	Act to create the National Education Council (ESYP)	• Although no external quality assurance system is installed within the study period, the act officially creates a body responsible for quality evaluation. This body does not become operational within the study period. • External stakeholders are represented within the Council of University Education as part of the ESYP, but are still not introduced to the institutional governance bodies.	A1
1997 (1998)	Education 2000 Act	• An open admission policy is supposed to be implemented after the study period. • Furthermore, study programs (except for postgraduate studies) are no longer subject to approval by the Ministry of Education (implemented in 1998). However, the Ministry still has to approve the departmental structure of universities. So the development of corresponding study programs is an institutional responsibility, but each decree corresponds to the departmental structure.	B1, B2, B3

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: Billiris 2005; Bourantas, Lioukas and Papadakis 2001; Clark 2003; EC 2000; Eurydice 1999, Eurydice 2000b; Fritsch, Keegan and Vertecchi 1997; Frangoudakis 1981; Gavroglu 1981: 96; IBE 2007; Kokosalakis 2000, 2001; Karmas, Lianos and Kalamatianou 1988; Kaiser et al. 1992; Kaiser et al. 2001; Kirstein 1999; Kyriazis and Asderaki 2008; Lutran 2007; NARIC 1999; Patrinos 1992; Panaretos 2000; Saitis 1993; Schwarz and Westerheijden 2007; Sianou 1991; Soumelis 1988; Stamoulas 2005; Tsamasphyros et al. 1998; YPEPTH 1995, YPEPTH 1999, YPEPTH 2004; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

E. Spain (ES)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• Spanish universities are comprehensively regulated by Ministry of Education. The ministry determined university budgets as well as the internal distribution of expenditure items at all levels. Also university expenses are subject to *exante* controls by Ministry of Finance. • The university budgets consist of ministerial subsidies and student fees (same for all universities and fixed by the state) and are jointly approved along with the general state budget. • Universities have no autonomy regarding facilities and staff management. Rather, the Ministry managed and controlled the level of staffing directly, but also the legal status, duties and rights of academic staff. Furthermore, the Ministry set salaries and promotions and all modifications have to be approved. Only operational expenses are characterized by more discretion as universities are legally authorized to make credit transfers to other cost categories than staff costs. Also self-generated revenues could be allocated freely (for example, tuition fees). Though these are not substantial. • According to the 1978 constitution the central government is responsible for recognizing degrees and for determining the requirements for "official qualifications". Also the government controls access by a national entrance exam introduced in 1974. • Registration and tuition fees are set by the regional government within the limits established by the national Council for the Coordination of Universities. Exemption from tuition fees is targeted at need-based students.	C4, D1, E1
1983 (1983-85)	University Reform Law (LRU)	• The first autonomous regions became responsible for the financing of public higher education (completed by 19??). Still many regulations remain unchanged. Furthermore, the Council of Universities is established. Consisting of representatives from the national and the regional government as well as the universities it becomes an intermediary body on developing common higher education policies across the country. • The change of the legal framework transforms universities into own legal entities and provides a limited degree of academic and financial autonomy. • Universities receive a lump sum for covering running costs that is largely free to be assigned internally, but allowances for personnel and staff as well as tuition fees are not at their discretion. More specifically, only the total amount of credits for staff expenditure is subject to approval of public authorities allocating the subsidies. the universities themselves have the power to set the numbers and professional category of the teaching staff. • Permanent positions like professors are still civil servants. Hence, statues on duties and rights, salaries, promotions as well as working conditions are nationally fixed. The universities themselves contract only service and clerical staff. Full autonomy exists on employment of temporary staff only. • But universities can allocate staff numbers by category or working loads across faculties. Universities also have authority on staff recruitment, but competition on teaching staff does not exist between universities as appointments are usually based on internal patronage. • The government controls access criteria and the content of the curricula and have to approve new subjects and universities. • Investment funds are not integrated into institutional budgets, but granted separately. Still universities have full autonomy on managing buildings and equipment (except for patrimonial goods). Furthermore, universities obtained the possibility to borrow money to finance investments (still subject to ministerial approval). • Funding is still based on negotiations and incremental allocations based on universities' past costs. • The central government (after consultation with the *Consejo de Universidades*), determines the basic curricula and requirements and which programs are recognized as national degrees. Universities can design their own curricula, but they have to register curricula with the University Council: Institutional diversification is welcome and universities can also set time limits for the completion of course programs. • The central government determines the selection and admission procedures for access to universities (after consultation with the *Consejo*	B1, B2, B3, D1, D2, D3, E1, E2

Year	Legislation	Provisions	Items
		de Universidades). The Council of Universities yearly fixes the student numbers for every university. A numerus clausus exists in most fields. Within this framework and based on faculty proposals universities determine the yearly access numbers and minimum marks to be obtained in national exams for every course (both implemented in 1985). • Tuition and registration fees for public universities are determined on a yearly base by the University council and the government of the autonomous local authorities (only for national degrees, otherwise responsibility of the *Consejo Social*). Fees make up a substantial part of the higher education budget, but fees are comparatively low. • Exemptions for need-based students exist, but no widespread coverage of program. • Academics are allowed to carry out privately funded activities in addition to their public duties (for example, teaching continuing education or contract research). Limits on generating extra income are not very restrictive. Subsidies, donations and legacies through any public or private entity are possible. Still universities keep only a marginal share of 5-10% of funds acquired by its staff. The remainder is at the discretion of the professor and not the university itself. Regulations on marketing and contracting services in force since 1985. • Public allowances are based on budget proposals, but universities' private revenues in previous years are usually deducted from estimations. This approach changed by 1985. • The Social Council is established strengthen the cooperation between society and universities. The Council includes representatives from different external stakeholder like trade unions and employers' associations, but also from the regional governments and its parliaments. Still external stakeholder participation in institutional governance bodies is absent. External bodies like the boards of trustees in American universities are not allowed and the established *Claustro Universitarios* (university boards) represents stakeholders from the university sector only.	
1983	Royal Decree on grants and other forms of assistance to students	• Student aid is reformed and general rules are established on need-based study grants. The exemption from tuition depends on the distance from home and financial hardship, but can also be granted in case of study merit. Furthermore, exemptions exist for servants and their children as well as university employees. There is no exemption from the registration fees. • The Ministry of Education is responsible and compensates universities for the loss of income caused by exemptions.	C4
1985 (1986)	Royal decree	• Although aimed at allocating funds according to objective criteria like the type and number of students and lecturers, de facto public subsidies to cover current expenses are still fixed on the basis of detailed expenditure needs by the public authorities. Though estimations are increasingly based on standardized allocation criteria to correct for historical imbalances (starting in 1986). • Long-term budgetary planning is introduced. First up to 1987 (and later extended to 1992), institutions received a fixed yearly increment.	C1, C2
1987	Royal Decree	• Sub-committees for the Evaluation of tertiary education are established within the Council of Universities and evaluating university programs on a regular base is required (also from occupational point of view). • Framework guidelines for course structure and degrees and their national recognition are established too.	A1, B2
1991	Royal Decree	• Procedural rules for university access are updated and become stricter.	B3
1992 (1993)	N/A	• The "Experimental Programme to Evaluate the Quality of the University System" is launched to carry out new institutional assessments methods at 17 institutions on a voluntary base (starting in 1993). • The Council of Universities carries out the pilot.	A1
1994	Report on the	• The Council of Universities in cooperation with representatives from all the Autonomous Communities publishes a report on best practice on	C1, C2, C3, C4

Year	*Legislation*	*Provisions*	*Items*
(since 1993)	Financing of Universities	funding universities. The report proposes formula funding for current expenses based on input and output criteria (performance orientated). Recommendations are supposed to be implemented over the next ten years. The first regions implementing some of the recommendation are Valencia (in 1993) and Villarreal (in 1994/95) and Catalonia (in 1997). • Furthermore, the report highlights generating private funds as additional source of funding for public universities (in terms tuition fees, but especially regarding contract-based funding). Regional governments are still responsible for setting tuition fees every year (within the national framework agreement). • Also the report calls for reforming and modernizing the student aid system to compensate for increases of fees.	E1, E2
1995	Royal Decree on the quality assessment of universities	• The five-year "National Plan for the Assessment of the Quality of Universities" (*Plan Nacional de Evaluación de la Calidad de las Universidades, PNECU*) is established. The goal is to promote and harmonize the evaluation system. The majority of universities participate on a voluntary base. • The Council of Universities heads the *PNECU*.	A1

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. The central Ministry of Education regulated universities until 1983. Since then shared responsibilities exist between the central and the regional governments. The central government remained responsible for the general guidelines on the organization of academic programs, but the regional governments became responsible for and regional development and for financing public universities. Although many rules remained common to all the public universities of the country, each region was able to introduce its own approach. Furthermore, the University Council (*Consejo General de Universidades*) became responsible for the co-ordination and planning of higher education at the national level. The University Council worked as an intermediary body consisting of representatives from public universities as well as from national and regional governments and legislatives. The implementation of this process began in 1985 with the Autonomous Communities of Catalonia and the Basque and was with the last regions becoming autonomous in 1996.

Data sources: CEPES 1994; de Espinosa and Alberdi 1999:Eurydice 1999, Eurydice 2000b; Kaiser et al. 1992; Leszczensky et al. 2004; Marcos 2003; Martín 2001; McKenna 1985; Moltó et al. 1988; Mora, Palafox and Pérez 1995: 391; Mora 1996, Mora 1997, Mora 2001, Mora 2005; Mora and Garcia 1999; Mora et al. 1995; Mora and Villarreal 1996; Mora and Vidal 2000, Mora and Vidal 2005; Palomar 1998; Pedró 1988; Santiago et al. 2009; Sanchez-Ferrer 1997; Schwarz and Westerheijden 2007; Val, Philipp and Castro 1998; Vidal 2003; Villanueva 1984; Villarreal 2001. For full bibliographical details see list of references.

F. France (FR)

Year	Legislation	Provisions	Items
1980	N/A	• The annual public funding is provided as a single block grant, but the budgets for universities are very limited as the government allocates and manages permanent staff as well as capital expenses directly, that means, the main appropriations for regular expenses are provided outside the of the university budgets. Also each administrative unit within the university has to provide its own budget. Public appropriations for staff, capital expenses and for current expenses (that means, material and other operational costs) are de facto earmarked. • Current staff expenditure is not included in the university budgets as permanent staff members are civil servants employed by the Ministry of Education. Universities are neither able to recruit or reallocate permanent staff on their own nor to determine their salaries. Universities employ only few people temporarily on private contracts (for example, usually in case of research projects, but also to cope with fluctuations in teaching needs). Permanent staff is assigned directly by the state on requests by the universities and therefore not part of the university budgets. • Buildings are usually state-owned and only few buildings are built with their own resources (and consequently at their disposal). • The operational grants are determined on a funding formula following budget requests submitted by the universities. The so-called GARACES (*groupe d'analyse et de recherche sur les activités et les coûts des enseignements supérieurs*) system distributes funds according to the overall teaching load and the buildings in use. More specifically, three parameters are used: the floor surface of educational facilities, number of contact hours, and complementary hours. The GARACES-system is based on a complex formula utilizing both cost and input indicators. The allocation of operational funds is linked to the overall teaching load and the buildings in use (according to square is determined according to enrolment numbers in the different subject-areas (in recognized courses) and a standard "teaching structure" (distribution of teaching time between lecture and tutorial)". • Permanent staff as main cost driver in university teaching is not included into the formula, but provided directly by the Ministry of Education. And although the GARACES-model is also following student numbers in terms of teaching load its performance-orientation is still limited due to the inclusion of cost factors for determining maintenance costs (that means, the square footage of used buildings) and its lack of transparency. The used funding formula is only indicative, that means, the Ministry of Education could still cut down (or increase) allowances. Instead of increasing student enrolment, GARACES is biased in favour of establishing new and recognized national diploma programs. • The government is not regulating the student intake except for pharmaceutical and medical studies. At the universities no *numerus clausus* exists, but the universities are responsible for managing the access procedures. • Institutions and programs have to be approved by the Ministry of Education. Only recognized national diploma degrees are eligible for public funding (granted for a limited period of time). • Though advisory committees reviewing the proposals of the universities base their decision merely on the qualification of the teaching staff, the program structure and the relevance in terms of labour market developments. Financial constraints play no role. • Additional external quality assurance systems do not exist. • Free tuition (in order to create equal access). Students do not have to pay tuition fees. But they are charged fees for registration or specific services. Fees are set annually by ministerial order and institutions have no power to change their level. All students in recognized degree programs have to pay the same registration fees. Study fees are deducted from the operational grant provided by the government • Undergraduate students are exempt from paying feed if they receive the means-tested study grant or are orphans. The Ministry of Education compensates the universities for these study fees exemptions. Universities themselves are also able to grant fee exemptions to students, but the government does not reimburse these costs and there is a 10% limit of all enrolled students. • Universities are allowed to derive additional income from external sources like foundations, donations but also by selling services (except for study fees). Also universities are allowed to set fees freely for study programs not funded by the state. These courses led to the so-called *Diplômes d'Université* and complement the national diplomas recognized by the government.	C1, C3, C4, D2, D3, E1, E2

Year	Legislation	Provisions	Items
		• External stakeholders are not represented in the university governing bodies.	
1984 (1985)	Higher Education Act (Savary Act)	• A contractual funding policy is established between the universities and the Ministry of Education. Universities obtain the right to conclude four-year contracts with the Ministry of Education to obtain additional funds for new projects. This policy deals with research only. • In addition to this contract, universities also have to provide a *Projet d'etablissement*. This institutional contract deals with all university activities and their financial needs in terms of recurrent funding, equipment, and staff (for the upcoming four years). The contracts are no legal document and the university strategic plans are not linked to the funding allocation. • The government sets a higher priority for means-tested grants. The number of student grants increases and a new calculation method is introduced. • The act highlights the diversification of university income by contracting and marketing services. • *Comité National d'Évaluation* (CNE) is enacted whose purpose was to review and evaluate all university activities (set up in 1985). Evaluations take only place at request by the universities. • External stakeholders have to be represented in the university governing boards. The governing boards are dealing with the university resources and advised by the Board of Studies and the Academic Council (both do not include external stakeholders).	A1, A2, C2, C4, E2
1989 (1991-1993)	Ministerial circular on contractual policy	• The contractual policy of 1984 is extended to teaching activities. The first teaching contracts are signed in 1991 and by 1993 target agreements on teaching activities are applied to the whole university sector (implemented gradually). These institutional contracts replace the budget requests in terms of teaching activities. • Current material and operational funds are mainly provided as lump sums (still excludes personnel costs). That means budgetary discretion is still very limited. • Furthermore, the role of the CNE is strengthened, as any public administration has to carry out institutional evaluations.	A1, C2, D1,
1989	Blueprint Act on Higher Education	• With the appropriations for constructing and maintaining buildings (and equipment) being integrated into the university budgets, their management becomes of shared responsibility between the central and territorial governments. University autonomy increases accordingly, but is still very limited.	D3
1991	N/A	• The government increases the amount and the number of study grants.	C4
1991 (1992)	N/A	• The registration fees are moderately increased since 1991. The actual amount of registration fees changes from a standard rate to an amount varying for some program types (for example, for more costly professional programs like health care training), but not according to the type of degree (starting in 1992).	E1
1992	N/A	• The *maquettes* become simplified. The *maquettes* contain the detailed structure and content of all university courses. In the course of this reform, the course portfolio is adapted to local needs.	B2
1993 (1994)	N/A	• The Ministry of Education is updating and simplifying the funding formula. The GARACES system is replaced by the SAN REMO (*système analythique de réparation des moyens*) system. • With this reform recurrent material and other operational costs are provided as lump sums (within the general regulations on public funding) and universities receive a fiscal compensation if they are understaffed. This compensation is also at their discretion. Still budget spending is heavily centralized as the Ministry of Education keeps allocating and managing permanent staff. Also the transfer of funds to the next fiscal year is still limited and only allowed under very specific circumstances. • As a consequence, the Ministry of Education is still responsible for personnel management, • Funds for operational costs are based on the number of students and the standard costs per students across different study programs (as calculated by the OC). For example, teaching appropriations of each university re based on the number of registered students (of the previous two years), the types of studies the students were enrolled, and estimated teaching hours to maintain lecturing. The calculated	D1, C1, C3

Year	*Legislation*	*Provisions*	*Items*
		number of teaching personal needed is compared to the posts assigned by the Ministry of Education and in case of understaffing, additional funds were assigned to balance these two positions (for example, for temporary staff). • These funds are calculated by using a standard cost unit per teaching hour (set yearly by decree). In the subsequent year, original allowances are adapted correspondingly. Furthermore, although the Ministry of Education is still responsible for personnel management, the financial compensation was also followed by a (re-) distribution of assigned staff. • In a similar way, needs for administrative and technical staff as well as maintenance costs for the existing facilities (based on the existing property in use by the university/measure in square footage) is calculated. • 2/3 of the funds allocated according to the SANREMO-system are input-driven on the basis of the number of students and standard costs per student (as calculated by the OC), whereas 1/3 are fixed by the square surface of existing universities buildings, that means, universities have an incentive to carry out infrastructure projects no matter if they needed these buildings to carry out teaching. • Although the formula aims at abolishing historical inequalities in staffing, adapting the overall university budget in the subsequent year is rare as the Ministry of Education guarantees the reduction to be a max. of 3% of the allowances obtained in the previous year. Furthermore, funds are calculated by using a standard cost unit per teaching hour, which is set yearly by a governmental decree. • All tuition fees paid by the students are deducted from the calculated allocations. Subsequently, some adjustments are made to reckon with differences in the staff-student ratios between institutions. The actual amount allocated to the institutions can be finally reduced if the resources available at the ministry do require so. As a result of this, in the first years after the introduction of the SANREMO model, the institutions receive only about 80% of the fundable costs.	
1994 (1997)	Decree on the Budget and Financial System of *Établissements publics à caractère scientifique, culturel et professionnel* (EPSC)	• Universities and other higher education institutions obtain a new resource management and accounting systems (*Harpège* and *NaBuCo*). • These systems provide universities with the management capacities to internally allocate their resources and budgets irrespective of administrative units (in operation since 1997). This system also provides universities with the capacities to internally allocate their staff resources more efficiently (in operation since 1997).	D2, D3
1998	N/A	• Furthermore, the funding formula used is shortened and slightly changed. 30% of the budgets are supposed to be based on the floor surface, 60% on student numbers and 10% from contractual activities. • From the budget year 1998/99, only half of the standard ratios of teaching hours per student are used to calculate the standard cost unit per teaching hour, that means, instead of distinguishing 36 different types of study programs, the OC defines only 18 different standard ratios of teaching hours per student were used for determining the costs per student. • The Ministry of Education also highlights the contractual policy again by aiming to target provision of 10% of the operating budget of all universities (that means, excluding salaries directly paid by the Ministry of Education).	C1, C2, C3
1998 (-)	N/A	• Zero-rated grants are introduced to exempt from registration fees, in case a student do not get financial aid. Several Ministries award the grant, but it is not a broad program. The coverage is targeted at 30% of all students. The Ministry of Education also compensates the universities for this exemption.	C4
Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher			

Year	*Legislation*	*Provisions*	*Items*
education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. Data sources: Chevaillier 1998, Chevaillier 2004a, 2004b; Chevaillier and Paul 2006; Dincă 2002; Dunkel and Mouillour 2009; EC 2000, EC 2004; Elliott 2007; Eurydice 1999, 2000a, Eurydice 2000b; Feutrie 1998; Fritsch et al. 1997; Fomerand 1977; Guin 1990; Jallade 2000; 2001; Kaiser 2001, 2007; Kaiser and Neave 1993; Kaiser et al. 1992; Kirstein 1999; Lemerle 2004; Leszczensky et al. 2004; Maassen 2000; Malan 2004; Malan and Frost-Smith 1986; Malicet 1997; McKenzie 2009; Musselin 2006; NARIC 1999; Neave 1985, Neave 1999; Panaretos 2000; Prost 2000; Taylor and Beasley 2005; Tight 1991; Vossensteyn 1997; Wielemans and Herpelinck 2000; Witte 2006. For full bibliographical details see list of references.			

G. Ireland (IE)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• An incremental budgeting system is used to allocate the funds for current and capital expenses for HE sector based on reimbursement. Budget requests have to be submitted from the universities to the public authorities. The previous year serves as a baseline and adjustments are supposed to reflect substantial changes in student numbers and cost developments, but this is neither an exclusive approach nor is it based on a pre-determined funding formula. • Funds for current expenses of the higher education sector are earmarked and reimbursed, but the public authorities can formulate different levels of discretion on financial provisions. Flexibility and discretion is lacking regarding pay and non-pay items and the use of extra income acquired. The transfer from current expenses to finance investments is allowed. • The overall academic staff numbers and staff qualifications are fixed. The public authorities negotiate wages too. But universities recruit their own staff within the budget limits, that means, staff are not civil servants and employment is based on institutional contracting (requires ministerial approval and is based on regulations a public sector employee). Within limits salaries can depart from public pay scheme. • Public authorities have a limited role in funding investments. • The number of study placed is limited on the base of course capacities. • There is no overall *numerus clausus*, but universities are allowed to select students according to their own admission standards (the admission is selective for most courses). Formally the Central Application Office (CAO) processes all applications for undergraduate studies at universities. Representatives of the participating institutions are directing the CAO. • The recognition of public universities is based on laws, but Irish universities can award and validate degrees themselves (except for the recognition of professional qualifications). • A means tested study grant scheme is in operation also covering tuition fees. Grant holders do not have to pay registration fees as well. • The universities charge significant fees to full-time undergraduate courses. Tuition and registration fees vary by discipline. The government sets the level of registration fees (fees are much lower than for tuition). Universities set the tuition fees. • Universities are free to establish campus companies and to market and sell their services. • The public authorities also have the task of evaluating tertiary education and giving advice universities accordingly, but no formal quality assurance system exists. • External stakeholders are not included in university governance boards.	B2, B3, C4, D1, D2, D3, E1, E2
1990 (1995)	HEA	• The public authorities start working on a new funding allocation system in 1990. First for a trial phase of three years, but fully operational from 1995 on. The core recurrent funding is provided annually as a block grant covering cover both teaching and basic research (ca. 2/3 of the allowances). Institutions can freely allocate the funding internally. This reform does not require legislation. • An additional earmarked grant per additional student is provided for graduate outputs in subjects deemed to be in short supply (ca. 4% of total public expenditure). • The core allowances are informed by a formula based unit cost system, but allocations are still mainly incremental and fixed. The core budget is distributed according to the pre-determent student intake. The individual amount is based on the average costs per students and subject (calculated yearly by the public authorities on behalf of the institutional cost accounting). Officially, the results are informing the institutional allowances for the upcoming year. Adjustments are supposed to be made according to the total costs of universities being above or below the average, but the link is rather indirect as the total public funding is capped.	C1, C3, D1
1992	N/A	• The CAO is reformed in 1992. It is now responsible for the whole higher education system and a standardized admission procedure based on a point system is introduced. Institutions are still responsible for student selection, but now within national standards.	B3
1995 (1997)	HEA	• In addition to the core funding a grant is provided in lieu of full-time undergraduate tuition fees (ca. 1/3). These study vouchers are provided since 1995, but were fully implemented in 1997. Institutions can freely allocate the funding internally. This reform is implemented on a non-	C4, E1

Year	*Legislation*	*Provisions*	*Items*
		statutory base. • With this grant in lieu, in practice tuition fees have been abolished for eligible undergraduates students, that means, students who are on their first undergraduate courses and do not repeat a year. The (increase in) payments are set in consultation between universities and the Department of Education and Science (based on cost developments). • Registration fees still have to be paid by students not being under the means-tested student aid scheme. It remains a voluntary process as the government is not bound to this policy, but rather renews it on a yearly base. Furthermore, universities are not bound to set their tuition fees according to the grant in lieu (the possibility of universities to set tuition fees is maintained under the 1997 Universities Act).	
1997 (1997-)	Universities Act	• Funding arrangements are reformed and universities are required to operate on a breakeven basis and are not permitted to build financial reserves. In practical terms, spending discretion is limited until the public authorities are advising universities are on their budgets (usually mid-way through the financial, respectively academic year). As the core grant is not provided in terms of this breakdown, bilateral negotiations for additional funding are common. • The institutional autonomy on staff management was strengthened. And universities received full ownerships of their assets in 1997, but investments have to be in accordance with strategic university plans. Also universities are able to maintain facilities in case they are not requiring additional funds from the public authorities. • The governing body of a university has to invite the public authorities to carry out a quality audit at their universities (minimum every 15 years). Future universities have to be accredited. • The act grants the primary responsibility on universities for quality assurance, but requires the evaluation of all departments and faculties at least every ten years. The public authorities have a statutory role under the act to support the universities in this. • A two-year pilot program on developing quality assurance procedures is set up under the Committee of Heads of Irish Universities in 1995/96. • University governing bodies like the academic council have to incorporate representatives from business and communities too.	A1, A2, D1, D2, D3

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. The Higher Education Authority (HEA) is the statutory planning and advisory body for higher education and research in Ireland (under the general responsibility of the Department of Education and Science (DES)). The HEA also allocates the annual core recurrent funding.

Data sources: O'Buachalla 1984, O'Buachalla 1992; CHIU 2000; Clancy 2008; Coate and Labhrainn 2004; Eurybase 2004; Eurydice 2000b; HEA 2006; HEA/IUA 2008; Kaiser et al. 1992; Kerr 2006; Killeavy 2004; Leszczensky et al. 2004; OECD 2004, OECD 2006d; Panaretos 2000; Schwarz and Westerheijden 2007; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

H. Italy (IT)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• The budget provided by the Ministry of Education (taking into account university requests) is itemized and allowances are largely earmarked. The transfer between different line items and headings is subject to special permissions by the Ministry of Education. • The Ministry of Education determines the total number of staff per discipline (taking into account university requests). Professorships are bound to means, that means, that staff numbers are directly linked to institutional course portfolios and the specific laws listing number and names of courses required to obtain a specific degree. Staff salaries are centrally fixed, but are adapted every two years according to the normal career progressions, and for inflation • Also, any variation in the supplies of universities (for example, institutions, staff, teaching load or study places) has to be part of a development plan (*piani triennali)* (the first national plan is implemented in 1986). • Universities have full autonomy regarding the use of buildings and equipment, but they lack the capacities to manage and allocate the existing buildings and equipment effectively across the different faculties. • Costs related to the general administration of a university are determined normatively on the weighted student load. The personnel salaries increase every two years according to normal career progressions, and adjusted for inflation time to time; Input base; normative; earmarked. Overall, the allocation is largely based on a historical and incremental basis. Variations in the supplies of universities (for example, institutions, staff, teaching load) have to be part of a development plan (*piani triennali*). • University access for over-subscribed is not regulated. The free access policy started on a temporary and experimental base, but it is still operational. The student intake is not regulated, but universities do not receive extra income if the estimated student numbers increase. • Public universities and the degrees offered have to be approved by the Ministry of Education, and any opening of universities required a specific law from the parliament. • The Course of study council (*Consigli di corso di studio*) consists of professors, students and staff representatives. Its task is to supervise the teaching activities and coordinate the coursework at the faculty level (but not the course planning). Specific laws are listing number and names of courses required to obtain a specific degree and the institutional course portfolios • The regional authorities are responsible for student support and no uniform national criteria are applied in granting merit- and need-based exemptions from fees. Grants awarded and the amounts of study fees (means-tested) to be paid by students are regulated across different region The Government only assists regions, which leave to diverse practices in terms of conditions and scope of provisions to cover study fees. • The Ministry of Education set registration and tuition fees. Fees are considered institutional surpluses • Universities are able to sign contracts with public and private customers (for example, for research or consultation activities, but also by commissioning continuing education with other public and private organizations). But this is very limited. For example, due to the impossibility legally to pay the staff for providing distance education. • The management boards of universities can also include representatives of local authorities and private bodies if contributing to the University budget.	A2, C1, C2, C4, E1, E2
1982 (1986)	Law	• The *piani triennali* have to be updated every three years, but the first national plan introduced in 1986 is valid until 1990.	C2
1989 (1989-1990)	Law establishing the Ministry of Universities and Scientific and	• Universities obtain the right to have their own statutes. As a consequence, universities gain both teaching and financial autonomy. Now professors are associated with research areas (*settori scientifico-disciplinari*) and not to teaching activities anymore. In turn, this increases the discretion for resource allocation and staff management. Still the recruitment and transfer of professors and researchers is centralized. • University regulations also govern contractual procedures and the administration of endowments.	A2, D1, D2, D3, C2, E2

Year	Legislation	Provisions	Items
	Technological Research	• New universities and faculties do not require the adoption of a parliamentary law anymore, but openings have to be included in the governmental development plans. Universities can submit proposals for new initiatives to the Ministry for University and Scientific and Technological Research (*Ministero per l'Università e la Ricerca Scientifica e Tecnologica*, MURST). • The management boards of universities have to be composed of various stakeholder groups also including representatives of local authorities and private bodies contributing to the University budget	
1990 (-)	Law	• The governing principles of the universities' triennial development plans (drafted by the Ministry of Education) are changed. The plan now aims to reduce the regional bias in university planning and funding, but the law does not have the desired impact.	C2
1990	Law on the reorganization of university teaching	• The law increases the autonomy of the faculties and the *Consigli di corso di laurea e di diploma* (Councils for courses leading to a *laurea* or *diploma*) in course planning. • Ministerial decrees still define the programs that have to be taught (through course tables attached to the legislation). But the Course Councils can partly choose which courses to provide within the framework listed in the course tables. • New universities do not require the adoption of a parliamentary anymore, but openings have to be included in the governmental development plans. • In addition, universities gain more autonomy as they can submit proposals for new initiatives to the Ministry. Previously, professorships were linked to specific courses and degrees and universities. That means the introduction of degrees required a specific law listing number and names of courses required to obtain a specific degree. Now universities are entitled to propose new degrees, although formal approval of the central government is still needed	B2
1991 (-)	Law on the right to higher education	• The State is supposed to nationally coordinate student aid, but the regions are administering the student grants. Universities can individually exempt (partially or fully) students from paying fees (for example, merit-based), but a national framework, which the universities also have to adapt to, is supposed to be implemented gradually.	C4
1993 (1994-1996)	Law on the rationalization of public finances	• Each university becomes an autonomous entity with its own budget. With this reform, universities obtain large budgetary autonomy. They receive a lump sum and have to allocate the funds under different headings like staff, equipment, and other expenses themselves. • Three funding streams are provided in terms of block grants: For the regular funding of universities (*Fondo per il Finanziamento Ordinario* - FFO), for university buildings and larger scientific equipment (FEU), and for the development of the university system (*Fondo per la Programmazione del Sistema Universitario* - FPS). • The Law also increases the institutional autonomy regarding buildings, equipment and staff management (though the latter gain is less far--reaching as course planning is still subject to ministerial approval). In addition, the government is still responsible for salaries and to fill new vacancies. • With FFO an input-based funding formula is introduced. The FFO includes the costs for staff and the maintenance costs for the operation of the universities (this also included teaching-related research activities). FFO is not fully performance-driven. 90% of the grant is based on past allocations, where 10% are redistributed through an "equalisation component". This component is supposed to be gradually expanded so as to replace the historically fixed component (within 30 years). • Basically, the flexible funds are provided according to a university's total number of full-time equivalent students (FTE) multiplied with the cost-weighted number of student. The tariffs set are not calculated, but based on historical costs (that means, average costs across all universities). FTEs are defined as the ratio between the total number of exam passed by an institution's students and the total number of exams that students were supposed to take (according to the study plans). The cost-weighted number of students is defined as the total standard unit costs per student (based on the total funds received by a university and its teachers-student ratio). The share of each university in a given year is a weighted arithmetic average of the shares of these two variables (that means, relative to all universities). The sum is based on a weight of 0.3 for FTEs and 0.7 for the cost-weighted students.	C1, C2, C3, D1, D2, D3, E1, E2

Year	*Legislation*	*Provisions*	*Items*
		• The allocation of the FPS is based on a university 3-annual development plan (so-called "pluriannual contract programmes") negotiated between the universities and the Ministry of Education. They aim at financing new projects related to teaching activities (based on ministerial decrees). • The universities obtain some autonomy in setting tuition fees. Tuition fees are set by individual universities and vary between universities and departments, whereas registration fees are still regulated by law. • The law also grants a broader legal scope for obtaining income from private sources.	
1993 (-)	Act on public administration in general	• The law offers an operational framework for evaluation activities aiming at the creation of an external evaluation system and internal evaluation units in each institution (implemented after the study period).	A1
1994 (1994-1996)	Right to study: Decree of the President of the Council of Ministers	• National and uniform merit- and need-based criteria for cost-sharing policies like study fees and the award of financial support are determined. Universities have to exempt students from fees that are obtaining the need-based student grants (implemented in 1996). • Furthermore, tuition fees are to be based on general criteria set nationally (implemented in 1994). The law sets minimum tuition fees, but also determines an absolute total amount of tuition fees to be paid by all students in a particular university.	C4, E1
1996 (1997)	Law on the rationalisation of public finances	• The development planning system is reformed. Universities have to split faculties and create new facilities if the student and staff numbers pass a threshold determined by ministerial decree (for every university). This law shall solve the problem of the so-called *megatenei* (mega-universities).	C2
1997 (1998)	N/A	• The used funding formula is updated and simplified. The regressions now involve fewer variables. Furthermore, different cost indicators are used according to six groups of faculties the students are enrolled in, but no differences existed between the degree programs included in each area the effect or for different institutions and economies of scale (since 1998).	C1, C3
1997	Decrees of the President of the Council of Ministers and a ministerial degree	• The student aid system and the tuition fee system are updated. The second law on equality of treatment is fixing the scales for the need-based tuition fees (based on common conditions for the whole country). • A payment scale took into account the student's social background. Universities can apply the criteria differently, depending on the calculation method used by each institution. That means, starting with the minimum level for tuition fees every university can adapt the payment according to a students' income category. • Total exempt for grant-holders and students entitles to a grant or loan, but not all received one because of a lack of resources (applied to up to 10% of students enrolled), or seriously handicapped persons. With this law, students fulfilling the economic criteria for receiving a grant, but who do not obtain one, were exempted from tuition fees. • A limit to the total amount of tuition fees to be paid by all students in a particular university is regulated: that amount must not exceed 20% of the ordinary financing from the State (only in case the institution has to reduce the tuition fees according to the economic background of the student).	C4, E1
1997 (-)	Ministerial Decree governing access and related guidance activities	• A comprehensive regulation of university access is provided. The universities can limit the student intake for certain courses (for example, medicine, architecture or veterinary medicine). Universities can also request to limit the student numbers in case they the lack infrastructures or teaching equipment to deal with all applicants. • The government is responsible for determining the number of study places and the selection criteria, whereas the universities organized the selection procedures. The ministry determined the number of study places in in all disciplines based on capacity and labour market developments. • In 1998, this decree is declared partly unconstitutional and the government has to adopt a new and more specific law regulating general	B3

Year	*Legislation*	*Provisions*	*Items*
		admission criteria and restricted study programs nation-wide (after study period).	
1997 (1997-1998)	Law	• The law stipulates that the share of funds spent on permanent staff of the FFO has to be below 90%. • The 1997 "Bassanini Laws" grant autonomy to universities on curricula development. The rigid curricula tables provided by the Ministry are replaced by general framework regulations (implemented after study period). Still new degrees have to be approved by the Ministry of Education.	B2, D1
1998	Law	• The responsibility for recruiting and appointing university professors and researchers is transferred from the government to the universities by a law in 1998. Still some limitations apply to managing staff.	D2
1998	Presidential Decree	• Universities are able to open and shut down new faculties and courses if they finance the implementation with their own funding. Previously governmental approval was required. • Establishes the *Comitati Regionali di Coordinamento* (Regional Committees on University Coordination). These Committees are supposed to support the Ministry of Education, the universities and other bodies in planning the higher education system. Among other things initiates regarding university access, continuing education, and the use of university buildings are coordinated.	B2, D1, D2, D3

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: Catania et al. 1998; Bighi 1993; Boffo 1997; Boffo and Moscati 1998; Bratti, Checchi and de Blasio 2008; CHEPS 2010b; CINDA 2008; EC 2000; EC 2004; Eurydice 1999, 2000b; Finocchietti and Capucci 2004; Francesco 1984; Fritsch et al. 1997; IBE 2007; Kaiser et al. 1992; Kirstein 1999; Luzzatto 1996: 371; Modica and Stefani 2002; Moscati 2001; Moscati 2004; Moscati 2007; NARIC 1999; Panaretos 2000; Perotti 2002: 24; Trivellato 2007; Schwarz and Westerheijden 2007, Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

I. Netherlands (NL)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• A total amount for personnel funds and one for material funds are provided per institution to cover operational expenses. These amounts are paid to the universities as a lump sum. How-, the universities are not authorized to use personnel funds for material costs or vice versa. As a consequence, spending freedom is very limited. • The government determines terms and conditions for employment. (for example, on wage scales, qualifications and conditions for promotion). Employees are civil servant. Full professors and readers are appointed by royal decree, that means universities cannot make actual appointments. The Ministry of Education only fixes the number of full professors. • Universities are in charge of buildings and all university property, but allowances for capital expenditure are determined by means of reimbursement and strictly earmarked. • Core funds are distributed according to the ITT funding formula (*Intentionele Taakstelling en Toewijzing or Intentional Objective and Allocation*). Allocations are largely based on the number of registered students. The formula is only partially enrolment driven with adjustments for production cost differences among fields (as defined by graduation rates) and across institutions. The teaching load consists of a fixed part and a variable part, making variations in the size of the budget only partly dependent on variations in student numbers. The fixed part is dependent on the number of "specialisations" offered by the institution, whereas the flexible part is based on the number of (full time equivalent) standard-course-length students. The staff numbers are calculated by multiplying the (pre-set) student/staff ratios with the number of students enrolled. Budgets are directly negotiated between the university administration and Ministry of Education on behalf of the ITT model. Institutions' budgets do not require ministerial approval. Institutions render the account of their expenditures in their annual reports. • The ITT model provides longer-term projections, which also serve as a basis for four-year budget agreements between the Ministry and the universities. • The parliament can restrict access to universities. By parliamentary act, the Ministry of Education is able to set maximum numbers for admission to universities to study certain subjects to be determined by the number of places available. Universities take the initiative in proposing a *numerus fixus* to be set. The universities jointly decide on this issue and the Minister can only deviate from their recommendations after joint consultations. • Universities can set up placement committees to allocate places if too many candidates have applied to study at a particular university and not enough applicants exist elsewhere. • Academic study programs have to be approved by the Ministry of Education to receive public funds. Courses are only eligible for funding of they are registered in the Central Register of Higher Education Courses (CROHO) (from 1981/82 on). The universities have to proof the ministry both the necessity and operationality of programs. A specific structural framework has to be taken into account referring to the nominal length of studies, obligatory subjects and examinations, but not detailed curricula. Universities can freely offer experimental and free study programs (not eligible for public funding). • Tuition and registration fees are set annually by the state and have been steadily increasing. Tuition fees are not a direct part of university budgets, but are deduced from the basic funds. The financial support system for students is very limited and involves a combination of need-based grants and loans and also covered study fees. • Universities are own legal entities and can contract teaching activities. Contract activities are acknowledged as third flow of university income. • University councils (*Universiteitsraad*) consist of a minimum of one-sixth members representing societal stakeholder groups. Executive boards (*College van Bestuur*) can also include a minority of external stakeholders.	A2, C1, C2, C3, C4, D1, D2, D3, E1, E2
1983	N/A	• The core budget for teaching activities is separated into two grants for personnel (academic and support staff) and material costs.	C1, C3, D1

		• The staff costs are allocated following a new funding formula - the Positions-Funds-Model (*Plaats Geld Mode* **-** PGM). The model consists of two elements: the volume component (to determine the number of personnel) and a price component (that means average personnel costs). The volume component is based on the standard-course-length students and a fixed floor to determine the number of teaching and non-academic staff. Different staff categories and student-teacher ratios apply. Furthermore, teaching norms are used to calculate staff/student ratios (also adapted to economies of scale). But it is also based on a normatively fixed amount for research funding. This volume component is converted into behalf into a total budget for staff costs via the price component. This component is based on average personnel costs (calculated from 1981 university budgets). Again, different tariffs apply. • Those funds can be distributed freely across cost categories and organizational units. Overall, the performance-drive of funding remains very limited. PGM is very complex and lacks a transparent incentive structure. • The budget for current material costs is determined by the OLM-model (*Overige Lasten Model*). Running costs are divided into fixed and normative costs (for example, a tariff per square meters). The government reimburses the earmarked fixed costs. The normative costs are mainly related to the results of the PGM-model and are paid to the institutions as a lump sum.	
1983	N/A	• Contract research and teaching for government, non-profit organizations, private business, and international organizations is regulated. • According to a governmental retrenchment plan for the years 1984-1987 it is up to the universities how to deal with the budget cuts (*Taakverdeling en Concentratie in het wetenschappelijk onderwijs* – TVC) – for example, by acquiring additional private income.	E2
1984 (1985)	Enabling Act regulating access to higher professional education	• University access can now be also limited on the grounds both of both capacity and job market issues (previously only in case of capacity problems). • Course planning is largely unregulated, but when planning study programs needs in terms of the total number of programs available and their national distribution (the so-called “macro-efficiency”).	B1, B2
1984 (1985)	N/A	• The ministry of education decides to set the fees at a fixed percentage of 15% of the operating costs.	E1
1984	N/A	• Regulations on academic staff structures are loosened. Rather than regulating positions in detail, relative ratios between senior and junior researchers are provided. Universities are not obliged to math the same ratios for every academic department but across the institution. Also the mandatory retirement age for full professors is reduced to 65.	D2
1985 (1989)	Memorandum *Higher Education, Autonomy and Quality* (HOAK)	• The government published a policy document on Higher Education, Autonomy and Quality (HOAK). Following the negotiations about the implementation of the HOAK in 1986, between the Minister of Education and the umbrella bodies of the universities, external quality assurance appeared on a systematic and nation-wide scale in 1988. The Association of Universities in the Netherlands (VSNU) is responsible. The system consists of external and yearly visiting committees for each discipline or study program operating nationwide. This procedure started in the academic year 1987/88, but the first year as a pilot project (fully operational since 1989).	A1
1986	Student Finance Act	• A universal basic grant system is introduced. The majority of students are entitled to financial support. The monthly budget obtained by students includes an amount to cover the payment of the statutory tuition fees (*wettelijk collegegeld*).	C4
1987 (1987-1988)	HOOP First Higher Education and Research Plan	• Universities obtain the right to appoint professors without the interference from the government. • Starting in 1987 the government publishes the Higher Education and Research Plans (HOOP) (stipulated by law). • The HOOP the government sets out the governmental views and outlook on the development of the higher education system. It is a two-year planning cycle partly drawn up on the basis of the annual reports of the higher education institutions. The institutions indicate in their annual reports previous activities and how they spent public funds (including innovations and strategic goals). The annual report also contains an outlook on future institutional policies. Following is a dialogue between the government and the universities boiling down to the (new) HOOP. • Then a dialogue is initiated in which the government and the institutions can together establish what is desired or required of the higher education and research system. The conclusions of this dialogue are incorporated in the final version of the HOOP.	C2, D2

		• The HOOP also frames the annual budget presented to the parliament.	
1987 (1988)	SKG	• With the new university retrenchment plan SKG (*Selectieve Krimp en Groei*) tuition fees increased substantially in the academic year 1988/89 by the Ministry of Education.	E1
1988	Harmonization Law	• Students are only eligible for study grants up to six years of studying.	C4
1992 (1993)	WHW, Higher Education and Scientific Research Act	• Spending autonomy of universities now applies to all of the core funding provided by the government. • A new funding formula is introduced in 1993. The HOBEK-model (*Hoger Onderwijs Bekostiging*) consists of the elements: a teaching component (ca. 23%), a research component (ca. 64%) and an "interweavement" component for teaching-related research (ca. 13%). • The block grant for teaching activities is assigned on pre-set tariffs multiplied with different input- and output-related indicators. Ca. 50% are provided on behalf of the various degrees issued (designers' certificates, diplomas and doctorates), ca. 13% for number of registered first years students and a part of ca. 37% is fixed. • Compared to PGM, the formula is simpler and more transparent. The actual payments are adapted to the budget calculated on behalf of the formula. Depending on being higher or lower than the available means, a correction factor applies. The teaching budget is usually increased annually according to inflation and pay rises in the higher education sector, but it can also be reduced to implement budget cuts. • The main part of the research budget is allocated on behalf of historical data. And the interweaveness component is a kind of “premium” payment proportional to the teaching load and the programs in each university. More specifically, it consists of 40% of the teaching tariffs. • The institutional plans do not have to be formally submitted to the Ministry of Education, but the institutions still have to publish them. • To open new study programs institutions merely must inform the Ministry of Education. The Committee for Educational Provision (ACO) appointed by the Minister of Education advises the institutions annually taking into consideration the national and regional supply of programs and the institutional profiles. The ACO assess the submitted plans, but the institution themselves decide whether to establish the new program and to make the Ministry register at the Central Register of Higher Education Study Programs (*Centraal Register Opleidingen Hoger Onderwijs*, CROHO). Registration is a prerequisite to obtain public funding and student assistance. If the Ministry wants to stop a program it has to proof if a program is lacking the needed quality. • Universities can now keep the tuition fees. That means they become directly part of the institutional budgets. • The financial student aid system is reformed. Payments are becoming more performance-orientated by introducing progress-related grant (*Tempobeurs*) in 1993. A minimum of 25% of annual credits has to be passed by the students to received financial aid. • The act eventually provides the legal obligation for the external quality assurance system. • In university boards, external stakeholders now represent the majority of the board (appointed by the government).	A1, A2, B2, C1, C3, C4, D1, E1
1994	N/A	• Uniform labour contract for civil servants are abolished and specific contracts for the higher education sector are introduced in 1989. Responsibilities shift from the Ministry of Internal Affairs to the Ministry of Education (except for issues like pensions and social security). • In 1994, all responsibilities for human resource management except for job evaluations, salary scales, annual pay rises and standard working hours are transferred to the universities.	D2
1995	N/A	• The parliament decides (substantially) increase tuition fees in three stages from 1995 to 1998.	E1
1995	N/A	• Universities obtained the ownership for the existing estate property from the government. Allowances for capital expenses are integrated into block grant for recurrent costs.	D3
1997	Act on the modernization of university governance	• University administration becomes accountable to new supervisory boards, whose members are appointed and dismissed by the Minister of Education. The supervisory board does not consist of internal academic members, but includes representatives from external stakeholder groups like industry and unions.	A2
Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents			

national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: Boer, Maassen and de Weert 1999; Boer, Enders and Westerheijden 2005; Boezerooy 2003; Cohen 1982; Daalder 1974; Eurydice 2000b; Ferris 1991; Frederiks, Westerheijden and Weusthof 1994; Goedegebuure et al. 1993; Huisman 2001; Huisman and Jenniskens 1994; Jeliazkova and Westerheijden 2005; Kaiser et al. 1992; Karstanje 1981; Koelman 1998; Kirstein 1999; Leszczensky et al. 2004; Luttikholt 1986; Maassen 1987; Maassen 2000; Panaretos 2000; Schuler, Stannard and Warmenhoven 1996; Spee, Viljlder and Wsseling 1989; Theisens 2004; UNESCO/CEPES 1985; Vught 1997; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

J. Austria (AT)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• Universities are only able to freely allocate funds, which are not part of the federal budgets, that means only the overhead costs are provided as lump sum). More specifically, university institutes and departments receive this rather small portion (that means, the organizational units). Therefore, funding transfers between organizational units are rare. • The Federal Finance Act determines the expenditure and staffing plans. The number and type of staffing posts are laid down the in the federal budget, but as soon as resources are granted to the universities they are able to deploy its staff internally. But as university personnel are civil servants, staff management is still subject to ministerial control and - although happening rarely - staff can also be withdrawn again. • The Ministry of Science, the Ministry of Construction and Technology and the university concerned jointly plan on investments in new buildings. Buildings are state-owned and the Ministry of Construction and Technology is responsible for the maintenance and construction of facilities, but universities can independently decide on the use of assigned buildings and equipment. • Financial allocations are rather fixed and follow an incremental track with no general and objective criteria attached. The actual costs are finally reimbursed. The universities only submit estimates of their requirements for staff and financial needs for the upcoming three years. The Ministry of Finance then uses estimates based on the proposals provided by the Ministry of Research. • Student intake is not limited due to the open access policy (though universities organize the admission procedure). Degrees and study courses are based on a framework law and the ministerial decrees on course schemes. Curricula are set by university bodies, but can be vetoed by the Ministry. • No study fees exist (except for membership fees for student organizations). Only in case of studying for second one-tier qualifications a payment of study fees is required (regulated in the law on higher education fees (*Hochschultaxengesetz*). This does not apply to doctoral studies. • Universities are able to contract services, but these are usually research-related activities. Also each contract is subject to ministerial approval (due to their limited legal capacities). • It is possible to integrate representatives from professional interest organizations into university governing boards (but not majority).	A2, C2, D1, D2, D3, E2
1987	Amendments to the University Organisation Act	• The regulations on contract-based services are extended in 1987, but the legal capacities for universities in this area are still very limited.	E2
1989 (-)	Amendments to the University Organisation Act	• The Ministry of Education obtains legal possibilities to carry out quality evaluations at universities, but did not implement corresponding measures.	A1
1993 (since 1993)	University Organization Act	• Universities now receive a global budget for the services provided rather than on each organization unit. With this, the budget consists of a second variable part dealing with the changing scope of its services (and funding correspondingly). Furthermore, the budgetary discretion increases as universities can determine their own organizational segmentation (type and number of units). This in turned influenced the configuration of the itemized budgets, so that an increasing share of the budget is de facto allocated as lump sum. • The discretion of the universities increases as they become responsible for the appointment of staff, but the overall autonomy is still limited as the overall staffing numbers are still fixed by the government. Also permanent staff members are civil servants that are paid directly by the government. Furthermore, the Ministry controls how the university uses vacant professorial posts. • From this point of view, the budgetary discretion is still very limited as the staff expenses as the main parts of the current costs are de facto earmarked.	A1, A2, B2, D1, D2, E2

Year	*Legislation*	*Provisions*	*Items*
		• The reform is implemented gradually institution-wise between 1993 and 1996. The larger universities need up to four years. • With the 1993 University Organization Act universities have to inform the Ministry about new study courses and programs, but the Minister can only reject it if it was informally or legally incorrect or if the university do not have the resources needed to implement the course. If the Minister does not reply within two month, the new course becomes legally valid. • Universities obtain additional legal capacity to act. For example, they merely have to inform the Ministry for Science and Research about service activities. Still budgets and cooperation are subject to ministerial approval. Accurate data is hard to gather, but university income from teaching services remains low (over 90% of university budgets are provided by the Federal government). • The universities are obliged to introduce systematic and comprehensive internal evaluation procedures, but the Ministry also has to enact a corresponding decree (adapted in 1997 only). The act also grants the right to the Minister to carry out system-wide external quality assurance system (not initiated within study period). The National University Board is also allowed to initiate university evaluations on a systems' level (also not initiated within the study period). • The universities have to introduce an advisory university board consisting of representatives from business, the region and university graduates.	
1997	University Studies Act	• Universities have to set up curricular committees. These committees are responsible for course planning. The committee also has to consider developments on the labour market and student demands when planning course portfolios. • The university curricular committees have to consult with representatives from employers' organizations in case of curricula changes. Also one member of the curricular committees has to have a business background.	A2, B2
1997 (-)	Evaluation decree	• With the 1997 evaluation decree, quality assurance procedures and a framework for regular quality evaluation of research and teaching are formulated for universities. Evaluation reports have to become public and the results must be referenced in the budget proposal of the universities. • Although members with business background are not part of the reviewer teams for the external quality assurance procedures, representatives from business are involved in the university curricular committees whose task it is to organize the evaluation activities. • A supra-institutional structure for quality assurance is not implemented within the study period.	A1

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: Arnold, Pechar and Unger 1998; Beerkens 2001, 2003; EC 2000; Eurydice 1999, 2000b; Hackl, Pfeffer and Eberherr 2004; Kasparovsky and Wadsack 2004; Panaretos 2000; Pechar 1997, 1998 Pechar and Pellert 1998; Pechar and Klepp 2005; Pechar and Thomas 2004; OECD and IMHE 2004; Reichl 1998; Schwarz and Westerheijden 2007; UNESCO/CEPES 1987; Vossensteyn 1997; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

K. Portugal (PT)

Year	Legislation	Provisions	Items
1980	N/A	• Public funds are provided as itemized budgets and are strictly earmarked and were not transferable to the next year. • Staffs are public servants. Their salaries and the employment (academic, administrative and technical) have to be authorized by the Ministry of Finance (on request by the universities) and is determined by law. • Capital investments are subject to approval by the Court of Auditors and buildings and equipment are state-owned. • The regular budget allocations are not based on clear and objective criteria or a formula, but are allocated incrementally on the base of historical developments and the negations between government and universities. • Public funding is not performance-driven and university expenditures are reimbursed. The Ministry of Finance pays current expenses like staff salaries on monthly request by the universities • The universities are submitting budget proposals for the estimated expenses to the Ministry of education. Universities have to negotiate funding for investments (new buildings and equipment) with the Ministry of Education according to their proposed development plans. • Although students had a constitutional right to study, a national *numerus clausus* existed for all courses. The Government determines the student intake of universities every year (in consultation with the universities), but no clear framework is applied. The Ministry of education is also responsible for selecting and placing the students. New course programs require legislation by the Ministry of Education. • The reimbursement of study fees is limited to holders of means-tested public support grants. • Tuition and registration fees have to be paid for all kinds of studies (set by the government). The nominal level of tuition fees remains constant (until 1992). Study fees are mainly considered as institutional income of the universities. • Legislation does not grant universities the autonomy to act as a service provider. • External quality assurance systems do not exist. Also external stakeholders do not participate in university governing boards.	C4, E1
1986	N/A	• Core funds can be transferred across item lines (though still limited). • Public appropriations for current running costs (personnel and alike) are based on a funding formula and distributed according to student numbers multiplied with different cost parameters set by the Ministry. The funding system is characterized by a lack of transparency and is only indicative (cuts are usually implemented by the Ministry of Education). • Four cost units are distinguishing between enrolment in laboratory and non-laboratory studies as well undergraduate and graduate programs. These tariffs are not subject-specific. In addition, a weights factor for special institutional characteristics is included too. • Overall the funding formula cannot be described as performance-related due to the lack of transparency and the caps that practically apply. Rather it is aiming at equity in resource allocation.	C1, C3, D1
1988 (1988-1989)	University Autonomy Act	• Core funds can be transferred across all budget lines and the next fiscal year with the consent of the university rector, but the universities still receive an itemized budget from the Ministry of Education. Transfers across fiscal years also become possible. • Capital funds are still negotiated on a project-base (according to development plans). Also universities obtain more autonomy on managing facilities. Still it is limited as the government has to authorize capital expenses) • The government only determines the overall staff numbers (academic and non-academic). The internal distribution and the hiring of staff are conferred to the universities. • The procedures for the ministerial approval of study programs are updated (implemented 1989). The Minister has to register new degrees, but it can only deny registering them in case of illegal degrees (for example, if the course program was too short or if it did not include the required credits) or in case of regular negative evaluations. Furthermore, the Ministry can decide that students enrolled in a specific course program are not eligible for funding, but that has never been applied • Universities become able to market their teaching activities. Income derived from service activities like fees and contract teaching are considered as surpluses of the universities and do not lead to decreasing public appropriations. Private funding still has to be authorized by	A2, B2, D1, D2, D3, E2

Year	Legislation	Provisions	Items
		the government and it is only allowed if it did not bias the competition on the private higher education market. Consequently, this income stream is of minor relevance. Statistical data is not available. • Universities can establish advisory boards and obtain the legal possibility to include external stakeholders into the university senate.	
1990	N/A	• The Ministry of Education updates the funding formula by differentiating cost parameter for very expensive programs like medicine and low cost programs such as law and social sciences. The approach is still problematic, as it is not linked to the development of the overall budget, which means de facto that the Ministry of Finance imposed restrictions on its application. • Overall the funding formula still cannot be described as performance-related due to the lack of transparency and the caps applied.	C1, C3
1992	Law	• Tuition fees are adapted to price developments which lead to a significantly rise (previously nominally fixed), but the law is suspended in 1995 and 1996.	E1
1993 (1994-1998)	N/A	• The new Minister, the Council of Rectors of Portuguese Universities and the Coordinating Council for Public Polytechnics negotiate a new funding formula to allocate the funds for running costs that applies to the regular teaching activities of all types of higher education institutions. • This funding formula is still problematic as the budget for each institution is still calculated without considering the overall higher education budget provided by the Ministry of Finance. Because of the latter, the formula is updated almost annually. This in turn led to less transparency. • The objective of the new formula is the convergence of institutional costs towards a general standard cost unit. These adjustments are supposed to be implemented gradually until 1998. In doing so, the allocation system is progressively changing from historically determined appropriations towards a budget based on input-orientated performance indicators where the costs were determined according to student numbers, the type of study program and staff qualifications. Starting with the first 20%-share in 1994, the system is fully implemented in 20%-steps by 1998. • The correction of historically biased ratios between student and staff numbers between the different universities was achieved by defining ideal staff/student ratios for each course program (for both academic and non-academic personnel) and a ratio for administrative staff/student as overhead costs. Following the ideal staff/student ratios, the forecasted student numbers in each course program and the course portfolio offered by each university, the standard staff numbers for each university are defined. Multiplied with the average salaries for academic and non-academic staff at each institution, the standard personnel budget is calculated.	C1, C3
1994 (1997)	Law	• A quality assurance system based on self-evaluation of the universities and external evaluations is established. In 1993 pilot projects start and the Foundation of Portuguese Universities conducts the first external evaluations by 1997.	A1
1997 (1997-1998)	Framework Act on Higher Education Finance	• Universities become more autonomous in transferring surpluses to the next budget year. Such transferred surpluses can be spent more freely than the regular funds provided by the government. • Short-term program contracts as well as long-term development contracts between the Ministry of Education and each university are introduced for providing earmarked funds (not implemented within the study period). These agreements are only applied to additional activities included in the contract (not implemented within study period). • Access to higher education is reformed. The Ministry of education is still responsible for selecting and placing the students. A *numerus clausus* still applied to all courses, but universities can determine their own entrance requirements for their course programs. These are based on governmental guidelines. • A new level of tuition fees for all students in public institutions is defined and linked to the national monthly minimum wage. Fees are fully considered as surpluses of the universities with the academic year 1997/98 and do not lead to decreasing public appropriations. • The universities become more autonomous in acquiring and managing income from marketed activities.	B3, C2, D1, E1, E2

Year	*Legislation*	*Provisions*	*Items*
1997 (1997-)	Decree-Law	• Universities are able to determine the staff numbers on their own within the limits of their budgets (though staff salaries are still regulated). • Universities obtain the ownership of university buildings from the state (except in case of opposing public interest), but despite full responsibility capital investments are still subject to approval by the government. Also in case universities sell any part of that received capital stock, 50% of the revenue goes to the state.	D2, D3
1998	Decree-Law on the Creation of the National Council for Assessment	• The National Council for the Evaluation of Higher Education (CNAVES) is established as a national body coordinating the evaluation system. The Decree-Law defines the general framework for quality evaluation (for example, the indicators used and the focus on programs and institutions).	A1

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: Amaral and Magalhães 2005, 2007; Assunção and Paiva Dias 1998; Costa, Nobre and Serrano 1999: 44; Dima 2005; EC 1990, 2000, 2004; ENQA 2006; Eurydice 1999, 2000b, 2003; File 2008; Garrouste 2010; Grilo and Rosa 1999; Fritsch et al. 1997; Kaiser et al. 1992; Kirstein 1999; Kyvik 2004; Lutran 2007; Magalhães and Amaral 2000; NARIC 1999; Panaretos 2000; OECD 2006c, 2006e, 2007; Teixeira, Rosa and Amaral 2004: 296f, Teixeira, Rosa and Amaral 2006; Teixeira and Koryakina 2011; Rosa, Amado and Amaral 2006, Rosa, Amado and Amaral 2009; Santiago and Carvalho 2004: 433; Seixas 1998; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.

L. Finland (FI)

Year	Legislation	Provisions	Items
1980	-	• The government provides direct funding in terms of prepared budget items for the different departmental activities. • The direct public appropriations are earmarked in relatively great detail in terms of salaries, current expenditures (also for buildings), equipment, contract services (according to national priorities) and investments (for example, in new buildings). • In addition, the universities can offset lump sums from broad categories of the budget items to finance successful university projects specifically (extended by ministerial subsidies) (similar to funding research projects at the national level). • Ministries also earmarked funds for specified educational projects (according to national or regional priorities), but the cost types are not earmarked in detail. • Posts are also steered in detail. The internal allocation in terms of salaries is fixed • Universities do not own the buildings. Most belong to the state agency and the rest to other building organizations. Universities have to negotiate on the usage of buildings with the state-owned authorities. • The allocation of appropriations is calculated on the base of full-time student places in each discipline as unit cost that is laid down in the Higher Education Development Act and subsequent Decrees. The development plans impose minimum level of resources for each institution (based on disciplinary surveys at the intuitions). • The government sets the unit cost. The unit is not based on detailed calculation, but incrementally on the previous years' appropriations while adapted to changes according to cost developments. • The institutional appropriations are determined on behalf of fixed minimum student/teacher ratios, minimum square meters per student (both according to broad subject areas) and a ratio of non-teaching staff. Sometimes the government adapt these numbers and figures. In addition, the need for funds concerning new additional activities (for example, new course programs, supplementary training) is taken into consideration. • The higher education institutions submit budget proposals to the Ministry of Education. The Ministry of Education then drafts its own budget (in consultation with the Ministry of Finance). The final budget is determined after revision and approval by the Cabinet and the parliament. • This includes determining appropriations for teaching, research and additional activities, but also the needs for funds concerning new additional activities (for example, new course programs, supplementary training) are taken into consideration. • Institution-specific higher education instructions are provided by Ministry of Education also recommending access numbers for institutions and across disciplines. • Although these plans are not legally binding (they are not confirmed by the Cabinet), they are instructive for resource planning both for the Ministries of Education and Finance as well as for the institutions themselves. • University admission is usually restricted. The overall student numbers are determined in the Development Act (according to subject-areas). The disciplinary numbers are planned according to the projected need for graduates in each field. Institutional capacities are determined on the base of funds, labour market developments and a quorum for "mature" students. • The Ministry of Education has to approve higher education degrees and programs (formally the power for approval is also with the Council of State). The Finnish government has to approve the founding of higher education institutions (decided by the Council of State – that means, the cabinet – based on a law). • Universities usually follow the governmental recommendations for access numbers, but the institutions enjoy full responsibility for selection. • There are no tuition fees for students. Registration fees are of minor amount for first year students. • Private funding from enterprises, foundations etc. for educational projects are possible. Teaching contracts are mainly relate to education in engineering and science. Students in adult and continuing education pay fees as this activity is considered as business activity (only a minor percentage of participants is financed by the Ministry of Education). Tuition fees only cover administration costs and study materials.	B3, C1, C2, D1, E2

Year	*Legislation*	*Provisions*	*Items*
		• The participation of external stakeholders in university governance or external quality assurance systems are not implemented	
1986 (1987-1988)	Higher Education Development Act	• Posts have not been steered in detail anymore. From 1988 on posts and staffing are not regulated according to discipline, but only professorships and assistant professors. The details are left to universities. Also the President of the Republic appoints director of administration. • The overall funds are indexed according to rise in average costs for the next ten years (terminated in 1994). Certain cost categories increase by a minimum of 15% in real costs until 1991 (for example, staff, current expenditure and equipment for research). • The basic grant component is still determined by past expenditures and cost indices. More specifically, public appropriations have been preserved at least on the level of the previous year. • The annual increase in personnel funding is allocated according to indices based on the ratio between staff and faculty and the relative number of postgraduate degrees awarded in institutions during the last five years. • The Cabinet has to approve a 5-year higher education development plan every four years. The "Government Development Plans for Higher Education and Research" are based on decrees. Previously funds were allocated separately, but now system treated as a whole in national budget. The higher education institutions have to link their own operational and economic plans to the governmental development plan (legally not binding; for 5-year **r**evised every two years). The Ministry of Education and each university negotiate their objectives and the size of the appropriations. The universities later have to report on the achievement and their costs. • The cost calculations are based on the budgetary proposals of the institutions and the data on the institutional cost structures for teaching and research activities provided by the institutions via the database on Finnish Higher Education (KOTA). This system compiles information on the activities and funding of higher education institutions since 1986. • The Higher Education Development Plan recommends the student intake per discipline, but the total intake represents the projected graduate numbers. It is up to the universities with high drop out rates to take in more students, but this does not lead to additional funds. This governmental plan merely advises on freshmen numbers in its Appendix.	B1, C1, C2, C3, D2
1988 (1988-94)	N/A	• A voluntary agreement between the Ministry of education and the higher education institutions introduced and modified several policies on an experimental base what are incrementally extended to the whole sector by 1994. • With this reform, the sub-items in university budgets are combined. The Ministry is providing budgets in terms of two block grants (one category for operational expenses and one for investments expenses). That means, allowances are increasingly provided as lump sums that are free for internal allocation. The final goal is to convert the appropriations into transferable money credits. • The funding system starts to gradually switch from a fixed and cost-based allocation to a performance-orientated funding formula. Direct appropriations are based on a basic component and a smaller output-driven component. To put it differently, public appropriations have been preserved at least on the level of the previous year. Only additional funds for staff and current expenses are allocated on a flexible funding base. These are targeted at a 15% increase. • The usage off buildings and equipment also becomes the full responsibility of the universities.	C1, C3, D1, D3
1991 (1992-94)	Decree on the Government Development Plan for Education and University Research	• Several national evaluation activities have been carried out on behalf of the Ministry of Education and the higher education institutions. Pilots on quality audits are carried in 1992. System-wide program evaluations have been carried out selectively for some disciplines (starting in 1994).	A1
1993	Decree on the Government	• The revision of the government development plan of 1991 reforms the degree structure and introduces a three-year Bachelor's degree between 1994 and 1996 in most of the university disciplines (with extra decrees according to subject area). The corresponding governmental	B2

Year	*Legislation*	*Provisions*	*Items*
(1996)	Development Plan for Education and University Research	decree redefines the degree and qualification system (implemented by 1996). With this reform, universities obtain more autonomy regarding course planning within the degree framework provided by the government. • The institutions submit their degree programs a proposal to the Ministry of education for approval, but the institution decides on the curriculum for each programme and how the course will be organised.	
1995 (1995-98)	Decree on the Development Plan for Education and University Research for 1995-2000	• Universities are able to decide independently on the construction of facilities (government determines principles of rent collection). Universities still negotiate on the usage of buildings with the state-owned authorities. A governmental permission required for new rental agreements taking into account price developments and overall state budget). • The government imposes target numbers on graduates for each discipline. That means, student intake was limited according to the agreed target numbers (part of their three-year performance agreements to be negotiated with the Ministry since 1998). • The universities have to determine the actual number of applicants admitted to obtain the targeted graduate numbers (only technical universities use a central admission system (UAF) established by universities themselves).	B1, D3
1995 (1996)	Governmental decree on the Higher Education Evaluation Council	• The Finnish Higher Education Evaluation Council (*Korkeakoulujen arviointineuvosto* - FINHEEC) is established in 1996. The FINHEEC is an independent expert body assisting higher education institutions and the Ministry of Education in the external quality assurance system (for example, by organizing evaluations). It replaces the former advisory body to the Ministry of Education, namely the Higher Education Council. • Despite its permanent status, the FINHEEC is following a rather selective approach in external quality assurance. Though the FINHEEC has to carry out audits for all higher education intuitions from 1996 to 2000 (for universities the focus is on management quality rather than academic quality).	A1
1996 (1998-)	Joint proposal on university finance by the Ministry of Education and the universities	• The core funds is not distinguished according to current and capital expenses anymore, but provided in one lump sum. Earmarked are only provided for specific purposes like postgraduate education salaries or jointly agreed development targets. • A phased implementation of a new formula-based budgeting system for the basic university funding is introduced. With the reform, public funding consists of three components (regulated in the target agreements): a core budget (around 90%), a performance-based component (ca. 5%) and a component for institutional development projects (ca. 5%). • The Ministry of Education allocates the performance component on the base of different quality indicators (the criteria change gradually). For example, funds are allocated to universities nominated for centres of excellence in research and teaching (based on quality evaluation by FINHEEC) or other achievements like their ranking in terms of international students. • Starting in 1998 with a share of 10% the core funding is adjusted step-wise from incremental funding to output-orientated funding based on agreed targeted graduate numbers in master (65% of formula funding) and doctoral (35% of formula funding) degrees (according to subject-area). The phased implementation of the formula-based budgeting system is supposed to be finished by 2003, which means, after the study period. In 1998 85% of core budget is still fixed according to past costs. The value of a Master's degree is weighted with different coefficients (according to study-field). • The higher education institutions do not submit budgetary proposals anymore, but start to negotiate performance agreements on graduate numbers, performance-funds, development projects and the financial appropriations (covering a three-year period). The final performance agreement includes an analysis of the university's performance, its goals for the upcoming four years (in terms of the annual average number of master and doctoral graduates), and the financial resources to be provided by the Ministry of Education. • The contract also includes development programmes and projects of national importance to be carried out at the university (including funding). • Beginning in the contract period 1998-2000, the funding frame is agreed for the period (and adapted over the following contractual periods). The financial aspects of the target agreement are monitored and negotiated every year, but can be transferred to other fiscal years.	D1, C1, C2, C3

Year	*Legislation*	*Provisions*	*Items*
1997 (1998)	Act on Universities (and the subsequent decree adopted in 1998)	• The 1997 Act on Universities (and the subsequent decree adopted in 1998) is the first integrated legislative framework on higher education (in force since 1998). It abolishes the system of institution-specific and detailed regulations, but describes functions, organization and objectives of higher education institutions in general terms. • The appointment of professors became the full responsibility of the institution (implemented in 1998). Universities recruit and appoint their own personnel. The Ministry only signs collective wage agreements. • All universities have to carry out internal evaluations on both teaching and research. Universities also are obliged to participate in external quality evaluations. • The university senates can now include external members, but the universities have only rarely nominated external members.	A1, A2, D2
1998	N/A	• The FINHEEC's duties are extended by 1998 Decree on the responsibility for the evaluation and accreditation of professional courses offered by higher education institutions.	A1

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.

Data sources: EC 2000: 92, 2004; Eurydice 1999, 2000b; Felt 2003: 41; Hölttä 1988, 1998, 2000: 468f; 2000; Hölttä and Malkki 2000; Hölttä and Rekilä 2003; Jäppinen 1989; Kirstein 1999; Kivinen and Rinne 1990, 1992; Kyvik and Tvede 1998; Lestinen 1988; Leszczensky et al. 2004; Liuhanen 2005; Myllymäki 2009; NARIC 1999; Nevala 2010: 7; OECD 2005a; OKM 1998, 2000; Rekilä 1988; 1995; Rinne 2004: 114f; Silius 1987: 418; Schwarz and Westerheijden 2007; Thorpe 1995; Tuomi 1998; Välimaa 1994, 2004, Välimaa 2005; Vossensteyn 1997, Vossensteyn 2008: 79 Wielemans and Herpelinck 2000 Zawacki-Richter and Reith 2009. For full bibliographical details see list of references.

M. Sweden (SE)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• The Ministry of Education provides basic funding for the running of universities (sometimes extended by special grants). Allowances are provided according to (five educational sector and) faculties (items and areas). This includes appropriations for undergraduate studies, research and postgraduate studies as well as capital expenses and others costs. The regular budget is subdivided into different line items according to five educational sector and faculties (previously one grant for salaries and one grant for other operating expenditures). Teaching and research (together with postgraduate studies) is funded separately. Also capital expenses are funded separately. • Furthermore, the government appoints (and abolishes) professors. Also a uniform salary system exists for professors. • Universities have only very limited autonomy on facility management. For example, they do not own them and have to rent the buildings from state-owned companies. Also the responsibilities for premises and investment in furniture and equipment are transferred before 1992. • The funds are not determined on a formula. The governmental appropriations are following negotiations based on the institutional budget proposals, but the Ministry usually cuts down institutional budget proposals. The progression of funds are largely based on historical data, but adapted to specific circumstances and needs (for example, special appropriations for improving teaching quality). All appropriations are only provided if expenses are proofed, that means, based on reimbursements (did not apply to private funds). • The overall student numbers is based on institutional capacities and imposed target numbers. The Government and the Parliament determines the student numbers and the institutional admission capacities (based on proposals from the UHÄ and its different planning and budgeting councils). A *numerus clausus* is applied to all undergraduate studies. The final decision has to be weighted against available resources and individual demands. • The approval of programs and institutions is the responsibility of the Ministry of education, but no additional external quality assurance system exists. Undergraduate programs are usually organized according to fixed “study lines” corresponding to vocational sectors. Degrees are nationally organized on a modular credit-based structure. Undergraduate degrees are distinguished in terms of general or professional degrees. • The National Board of Universities and Colleges and local program committees jointly developed the programs, but all curricula aspects are subject to approval by the Ministry of education. This also includes the question, which degrees an institution was allowed to award or the length of programs. Furthermore, the degree structure is too fragmented to describe a general pattern. • The National Board of Universities and Colleges (*Universitetes och Högskoleämbetet*) (UHÄ) is supporting the government by drafting the budget and the admission of students (organized he admission procedures). • No student voucher system is in operation. Also no tuition and registration fees exist at public universities (only for membership in student union). • Universities are able to contract educational activities and to generate additional income, but this is relatively rare. For example, is possible to draw fees from companies to finance continuing education activities (but not from the student themselves). The Higher Education Act only emphasizes the obligation of universities to provide service to its surrounding community, but does not explicitly mention university continuing education. • The participation of external stakeholders from outside the university is not implemented in the university sector.	D1, D3, E2
1982	N/A	• Universities become responsible for staff numbers and universities can install new (non-)tenured chairs.	D2
1983	N/A	• A reform in 1983 determines that local governing boards had to consist to 1/3 of external stakeholders (appointed by the government).	A2
1986	N/A	• Commissioned education by industry or public authorities becomes regulated in 1986. Universities are encouraged to provide regular course programs for public or private employers paying for in-service training on tertiary level (individuals are not allowed to buy teaching services).	E2

Year	*Legislation*	*Provisions*	*Items*
1987 (1988)	Amendment to the Higher Education Act	• The role of external stakeholders in the institutional boards is strengthened and they obtain a structural majority (implemented in 1988). The government nominates the external members	A2
1987 (1988)	N/A	• Line item expenditures are reformed in 1987. Block grants are linked to broad program functions (implemented in 1988). Universities gain much discretion regarding the internal resource allocation.	D1
1989	N/A	• The government grants individual institutions the right to design own programs (still subject to ministerial approval). (that means, can apply). With this additional freedom, it becomes increasingly possible for students to combine single courses to obtain a degree, rather than to opt for a general program.	B2
1989 (1990)	Parliamentary decision	• Since 1990 funds for undergraduate ere provided annually in terms of three-year (rolling) budgets.	C2
1992 (1993-1995)	Higher Education Act and ordinance	• One institutional block grant for undergraduate studies is provided (implemented in fiscal year 1993/94). The block grant is supposed to cover all kinds of costs linked to teaching activities and - also including capital funds for– annual costs of premises, furniture, and equipment from the fiscal year 1994/95 on. • In addition, research and postgraduate studies–are still funded by special grants (provided on bilateral negotiations between universities and the Ministry of Education). • Government budgets are provided on a yearly base, but surpluses are transferable to the next fiscal year (deficits had to be balanced). But institutions could only save grants or FTE (see below) study results that correspond to a maximum 10% of the budget for the next fiscal year. • Furthermore, universities obtain the legal responsibility for hiring (and firing) lifetime and temporary lecturer positions. Salaries are now determined locally based on qualifications and market prices. • Universities also obtained the ownership of all assets (except for real estate buildings). The National Admissions Office to HE also provides expertise on the purchase of equipment • The reform also introduces a performance-orientated funding formula to finance undergraduate studies. Appropriations are based on a function based on input and output factors. The Formula is based on the number of registered students (this enrolment-based tariff made up 40% of formula-based allocation) and the number of study credit achieved by students (this performance-tariff made up 60% of formula-based allocation). Both tariffs made up the yearly per capita allocation for a full time equivalent (FTE) undergraduate student. The calculation of tariffs is based on specific cost calculation in higher education (updated yearly). And the rates also consist of an overhead tariff compensating for capital costs and an activity tariff for the direct teaching costs, but different rates applied to the various study disciplines. • The institutions still have to provide a budget proposal to the Ministry of Education, but institution-specific targets are part of the annual budget document (both long-term goals as well as short-term objectives). Universities were required to full fill these long-term goals. These so-called educational task contracts are negotiated between the Ministry and each university for undergraduate teaching (annual budget document also included objectives for degrees in postgraduate education). • The 3-year contracts states the maximum amount of teaching funds granted to the university over the whole period, the maximum student number numbers (full-time) eligible for governmental funding and the minimum study achievements expected, and special grants (for example, for specific studies or for particular objectives to be achieve like increasing student numbers in particular fields). • Allocations are based on forecasts and planned activities are abolished, but the ministry still sets minimum enrolment numbers and the maximum funding allowances (tariff) per full-time equivalent student (FTE). Also minimum graduate numbers across disciplines are set. Universities are free to admit more students, but this does not increase the budget appropriations.	B1, B2, C1, C2, C3, D1, D2, D3.

Year	*Legislation*	*Provisions*	*Items*
		• All universities obtain responsibility for setting new programs at their own discretion. Except for professional degrees that can only be obtained from specific universities and university colleges. This abolishes the so-called "line system and credit accumulation becomes simpler. But this did not change the organization of courses. Instead of regulating institutional study programs in detail, guidelines are provided, that means, specific objectives for each degree and the length of programs are formulated in the subsequent degree ordinance from 1993.	
1992 (1992-1993)	Ordinance	• The government transfers the responsibilities to regulate entry requirements and selection criteria to an agency – the National Agency for Higher Education (*Verket för högskoleservice*/ VHS). Institution may set additional criteria for study programs (according to national admission standards and procedures). Despite the right to manage admission on their own, most universities use the service. The actual admissions are based on contracts with higher education institutions and the institutions formally decide on university access. • The National Swedish Board of Universities and Colleges (*Universitets och högskoleämbetet*/ UHÄ) is replaced by several agencies. The Office of the University Chancellor (*Kanslersâmbetet*) is established. The office is an independent government agency and becomes responsible for quality assurance between 1993 and 1995. Furthermore, since 1992, new study programs are subject to accreditation of the Office of the University Chancellor. Degrees recognized according to the accreditation scheme are included into the degree ordinance.	A1, B3
1995 (1996)	N/A	• Several agencies merge to forma a new central agency responsible for legal supervision of universities, and their coordination, but also for quality assurance – the National Agency for Higher Education (*Högskoleverket*). The National Agency for Higher Education also carries out audits evaluating the institutional quality assurance systems (starting in 1996 on a three-year-cycle	A1
1996 (1997)	N/A	• Study programs offered have to be adapted to labour market developments and student demand. • The institutional contracts become more extensive and detailed with the period from 1997-99.	B2, C2
1996 (1997)	Amendment to the 1992 Higher Education Act	• In addition to teaching and research activities, the cooperation and interaction with societal groups becomes an explicit task of universities. The Amendment aims at promoting contracts and activities with business and other public sectors.	E2
1997 (1998)	Amendment to the 1992 Higher Education Act	• All higher education boards have to be chaired by external stakeholders from 1998 on.	A2

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. The Ministry of Education is responsible for public funding of higher education throughout the study period, but the National Board of Universities and Colleges, (*Universitetes och Högskoleämbetet*) (UHÄ) is supporting the government by drafting the budget and the admission of students. Regional boards are providing extra-funding for undergraduate studies. Financial allocations are decided yearly by the parliament. In 1992 the UHÄ is replaced by several agencies, but in 1995 these were merged into a new agency (the National Agency for Higher Education (*Högskoleverket*)). As institutions gain more autonomy, not all functions and responsibilities are transferred to the new agencies. For example, the new agencies have not a planning role at national level as higher education institutions have now full responsibility within the framework set by the public authorities. Also higher education institutions now deal directly with the Ministry of education in financial matters.

Year	*Legislation*	*Provisions*	*Items*
Data sources: Askling 2001; Askling, Bauer and Marton 1999; Askling and Foss-Fridlizius 2000; Bauer and Henkel 1997; Burn and Opper 1982; CHEPS 2010a; Deen 2007; EC 2000, 2004; Ertl 2002; Eurydice 1999, 2000b; Fägerlind and Strömqvist 2004: 247; Fritzell 1998; Fritsch et al. 1997; Hämäläinen et al. 2001; Härnqvist 1988; IBE 2007; Kaiser et al. 2001; Kim 2004; Kirstein 1999; Kyvik 2004; Kyvik and Tvede 1998; Lane 1991; Lane and Stenlund 1983; Leszczensky et al. 2004; Lutran 2007; Mähler 2004; Maassen 2000; Musiał 2010; NARIC 1999; OECD 2006b; Salerno 2002; Sandberg 1998; Svanfeldt 1993; Wahlén 2004; Wielemans and Herpelinck 2000. For full bibliographical details see list of references.			

N. United Kingdom (UK)

Year	Legislation	Provisions	Items
1980	N/A	• University funding is based on block grants awarded for five years awarded by the University Grants Committee (UGC) (known as the "*quinquennium*"). • The grants are supposed to cover teaching and research activities as well as capital investments. • The government only specified in very broad terms, how to use the money (in accordance with royal charters and kept within their income). The UGC issued non-obligatory guidelines on how to spent the money. • Funding allocations are mainly incremental. Only a very general indication of the bases on which the grant has been calculated is provided. • Universities are legally independent corporate institutions and decide on their own regarding staff recruitment and the conditions for employment. • Though salaries are fixed according to a national pay scale. • Universities are responsible for managing buildings and equipment – though formally the local authorities own buildings and all building projects can be evaluated independently by the UGC. • The total size of the block grants is determined incrementally in relation to the expected increases in student numbers. Student projections are partly based on the existing buildings and facilities. • The UGC as intermediary body negotiate funds with the government's Department of Education on behalf of the universities. Every five years the UGC provides guideless to the universities on the overall development of the higher education sector. In response, universities provide their own five-year development plans. Funding negotiations re based on these guidelines and development plans. • Universities can select their students. Although there are minimum standards regarding school qualifications. Selectivity varies across institutions and departments. Funding allocations are broadly based on estimated student numbers, which means no additional money is provided if universities accept more students. • Universities are autonomous on curricula and to offer study programs and degrees. Once recognized by the state, university title can only be removed with a special parliamentary act. • The Universities and Colleges Admissions Service (UCAS) functions as a clearing house for university applications, but it does not determine the admission requirements or decides on the actual admission of students. That is the responsibility of universities themselves. • Students have to pay tuition fees. Fees accounted for ca. 10% of universities' teaching costs. But universal grants are provided for students covering tuition fees up to a level specified by the government. The subsidies are directly paid to the universities. Though universities can in principle charge any fees they like to, most universities adopted the level reimbursed by the government • Universities can provide commercial services (for example, providing conference facilities, consultancy and continuing education courses). But the UGC takes into account private income flows when determining the recurrent grant allocations. • Universities are free to decide on their own management and administrative structures.	B1, B2, B3, C4, D1 D2, D3, E1, E2
1985	UGC	• The UCG provided matching grants for additional income derived from private sources.	E2
1986	UGC	• A first funding formula is introduced based on average teaching costs per full-time equivalent student (differentiated by subject groups). In addition a research component is included and institutional characteristics are considered too. The underlying number of students is based on forecasts on student numbers in various subject groups provided by universities to the UGC.	C1, C3
1988 (1998-1994)	Education Reform Act	• The UGC is abolished and replaced by the Universities Funding Council (UFC). The UFC is under direct control of the Department of Education and, a majority of its members are not from academia. • The Secretary of State provides funds to UFC to allocate across universities. The secretary can formula conditions, but not regarding individual higher education institutions. • The UFC split the grant allocation into funding for teaching and funding for research.	A1, A2, B1, C2, D1, D2, D3, E2

Year	*Legislation*	*Provisions*	*Items*
		• Principally the grants are provided as lump sums, but the UFC can formulate conditions to individual universities. But conditions are subject to consultation with the university in question or its representative body. • Lifetime-tenured appointments are abolished for all new academic appointments. • The UFC requires that institutions develop and maintain an estate strategy and imposes restrictions on capital transactions above specific thresholds. The UFC can also specify conditions for borrowing and leasing assets. • Funding provisions are now based on financial memoranda between the UFC and individual universities. These memoranda are contracts setting out the requirements as well as the funding formula (that means the public allowances) for each university. • Universities bid for student places on the basis of historic guidelines minus projected "efficiency gains". • UGC allocations included a (moderate) premium of universities obtained additional private income. And the government funds suggested that about 1/3 of a university's funds should come from private sources. • According to the act, the UFC can also deal with quality assurance issues (not specified in more detail). • The university council must compromise senior staff and a majority of independent members who are neither employees or students of the institution.	
1989	UFC/Government (sets the fees)	• The government used 20% of the core funding for universities to directly subsidize the payment of tuition fees paid by students. In effect this is a student voucher scheme • In this context, tuition fees are raised substantially to cover 25% of the teaching costs.	C4, E1
1990	UFC	• Funds are allocated according to a tendering system. In 1990 all universities have to bid for the number of student places in different subject areas. The number of study places follows historic developments and estimated efficiency gains. • The system is supposed to be implemented gradually from the academic year 1991/92 to 1994/95. But the system kinds of fails as 93% of all student places are tendered at the guide price, meaning the average costs. • The tendering system is based on contracts between the UGC and universities	C1, C2, C3
1992 (1993-1994)	Further and Higher Education Act	• Councils with a responsibility for the Higher Education system within their regions (England, Scotland and Wales) replace the existing funding bodies. The UFC becomes Higher Education Funding Council for England (HEFCE) (implemented in 1994). • The Secretary of State for Education and Employment introduced target figures for full-time undergraduate enrolments (from 1994 on). • Universities are only allowed to increase enrolment by about 2% to 3% per year in terms of their regular students (that means those students covered by the HEFCE grant). • Regular and obligatory teaching quality assessment (TQA) on all subjects is introduced (administered by the HEFCE) (starting in 1993 and fully operational from 1994 on). In addition, the Higher Education Quality Council (HEQC) conducts external audits of quality assurance procedures at the universities from 1992 on (approximately every five years).	A1, B1, B3
1993 (1992-1994)	HEFCE Circular	• The HEFCE also provides funds for teaching and research that are allocated by formulae and are distributed as a block grant, which institutions can spend freely. • The core teaching funding is determined by adjusting the previous year's funding to the inflation and the efficiency gains the government expects from higher education institutions. The specific efficiency goals depend on the average unit of council funding (AUCF) per academic subject area and the type of student. Institutions with the lowest AUCF suffer from the lowest reduction. Accepting so-called fees-only students that are not financially supported by the government can also lower the AUCF (for example, international students). • Furthermore, funds for increasing student numbers in certain academic subject categories are distributed to institutions with well-developed plans for attracting students and a low AUCF. • Each year a funding agreement (or contract) is drawn up between the institution and the HEFCE. This agreement is constructed in broad terms. • Following the merger of the Universities Central Council on Admissions (UCCA), and the Polytechnics Central Admissions System (PCAS),	C1, C2, C3, D1

Year	*Legislation*	*Provisions*	*Items*
		the Universities and Colleges Admissions Service (UCAS) for all first-degree courses is created (in 1993). Although UCAS acts as a clearinghouse for admissions to higher education institutions, the institutions are autonomous bodies and each determines its own admissions policy. The UCAS can also give policy advice to universities and students. • The university council as main governing body is made up of a majority of external (lay) members, one of whom chairs it.	
1996 (1997-1998)	HEFCE	• Universities receive funds in terms of a HEFCE grant and student fees. • The HEFCE grant is based on four steps. First, the standard resource is calculated for each institution (based on its students number of students (as FTE), but also considering factors related to subject, students and institutions). Second, the actual resources are calculated. This is based on the teaching grant received the previous year adapted to various factors like inflation and estimated student tuition exemptions. Third, the results of the first two steps are compared to calculate the percentage difference. A tolerance band of +/- 5% is allowed. Fourth, in case of falling outside of the tolerance band, the student numbers and/or funding for the upcoming budget year are adapted to match the +/- 5% band-when compared with the previous budget. • Universities can bid for additional funded student places according to criteria determined yearly by the HEFCE. There are also extra-funds for additional costs caused by recruiting students that are under-represented or having disabilities.	C1, C3
1997	HEFCE	• Responsibilities for external quality assessment are talking over from the independent Quality Assurance Agency (QAA). The dual procedures of audits and TQAs are continued (changes after study period). • The QAA is an independent body funded by universities and colleges and operating on behalf of contracts with the HEFCE.	A1
1998	Teaching and Higher Education Act	• Regular students now have to pay part of the tuition fees themselves (starting in the academic year 1998/99). The amount varies with respect to students', spousal or parental income. • As a consequence, universities are no longer allowed to freely determine the maximum amount charged for tuition to domestic and EU students if they want to continue receiving public allowances. The government determines subject-related maximum levels for the reimbursement of tuition fees and the contribution of students.	C4; E1

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. An advisory body for higher education funding supports the English government. Its actual title varies throughout the study period (see country report).

Data sources: Barnett and Bjarnason 1999; Bauer and Henkel 1997; Brennan and Williams 2004; Callender 2006; Cave, Dodsworth and Thompson 1992; EC 2004; Eurydice 1999, Eurydice 2000b; Eustace 1982; Greenaway and Haynes 2003; Kaiser et al. 1992; Kogan 2000; Kirstein 1999; Leszczensky et al. 2004; Löscher 2004; Maassen 2000; McIlroy 1989; Panaretos 2000 Steedman 1982; Taylor 2003a, Taylor 2003b; Theisens 2001, Theisens 2003, Theisens 2004; Wielemans and Herpelinck 2000; Williams 1988, Williams 1998, Williams 2004, Woodhall and Richards 2006. For full bibliographical details see list of references.

O. Iceland (IS)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• Public appropriations are earmarked. The government is providing funding in terms of detailed itemized budgets. • De facto no possibilities for own staff employment and management exist. The university staffs are determined by the parliament according to the General Budget Bill. The formal authority is located at the ministerial level on staff appointment and negotiating wages is the responsibility of the Ministry of Finance. Furthermore, legal restrictions apply to recruitment procedures (for example, on assessments of promotions and salaries). • The construction and maintenance of buildings is the responsibility of the Ministry of Education. In fact, most university buildings are state-owned. The University of Iceland is allowed to run a lottery to fund infrastructure projects. • The appropriations are assigned incrementally based on the previous allocations and adjusted by the forecasted inflation. There is no systematic inclusion of changes in the activities of the universities, which means, the appropriations are fixed regardless of the actual performance of universities. Sometimes institutions are successful in lobbying for additional funds to compensate unexpected costs, but this is not a regular action program. Only the University of Iceland derives additional funds to finance the construction and maintenance of buildings from it's own Lottery (this item is not part of the state budget). • The Ministry of Education drafts a budget proposal to be approved by the Parliament (part of the General Budget Bill). This proposal is based on negotiations with the universities. Sometimes institutions are successful in lobbying for additional funds to compensate unexpected costs, but this is not a regular action program. • A constitutional right to study exists. Except for the University of Iceland that is obliged to guarantee student access, institutions can limit the student intake. The Ministry for Education does not limit student numbers. • The Ministry of Education is responsible for approving courses and programs and provided a list of recognized degrees. Each institution is regulated separately and the Ministry provides a list of recognized degrees (that means, legislation is required). • Universities are responsible for selecting criteria for over-subscribed courses (except for the University of Iceland with its open admission). • Student aid is only provided in terms of loans. The state does not provide assistance to pay for registration fees. • Public universities are not allowed to charge tuition fees. Registration fees are set by the parliament. The income derived from registration fees is deduced from the direct public appropriations. • Universities are allowed to derive income from private sources (for example, for continuing education which was provided in cooperation with private institutions). But possibilities are limited.	C1, D3, E1, E2
1990 (1991)	N/A	• In 1990 the parliament decides to introduce block grants to the funding of the University of Iceland as the biggest and most important university and the only one providing the full range of disciplines and doctoral studies. The pilot begins in 1991 with the parliaments' budget decision. • Another component of the pilot project is the use of block grants in the funding of the main provider of university education, the University of Iceland. This pilot began in 1991 with the parliaments' budget decision. The numbers of budget items are reduced and therefore University is increasingly required to distribute the funds across its faculties at its own discretion. The University of Iceland's lottery income for capital expenses for constructing new buildings and maintenance is not subject of this pilot. • The reform already introduces a funding formula for the University of Iceland on an experimental base only. A financial committee set up by the University drafts a formula functioning as base for the negotiations with the government on the actual size of the block grant. This formula becomes the reference model for the system-wide implementation in the 1997 reform (though in a simplified version provided by the government). • The formula is based on the number of active students – that means, the number of full-time equivalent students (FTEs) – as output-orientated funding indicator. FTEs are used as funding base by multiplying them with the annual contribution per subject category and the	D1, C1, C3

Year	Legislation	Provisions	Items
		square footage per category. Some income has to be deducted from these appropriations (for example, the main part stemming from registration fees, but also capital expenses calculated for the state-owned buildings provided to the universities).	
1997 (1998-99)	Reform Act	• The framework law applies the pilot project on funding at the University of Iceland to the whole higher education system. • The Block grants for teaching and research are separated, but budget allocations for teaching and facilities (that means, capital funds were integrated into teaching grant) are based on a pre-defined formula. Institutions are able to distribute the annual block grant at their own discretion across faculties, which means, they do not have to distribute the funds to the departments or faculties generating the costs. This lump sum policy applies partially to the University of Iceland's income from the lottery. These funds are now at the university's discretion, but still have to be used for constructing and maintaining buildings. • The law is implemented within the following two years (for example, regarding more specific regulation by the Ministry of Education on quality assurance). • The responsibility for managing university staff is transferred to the institutional level (except for the formal appointment of the university rector). A committee including two university members and a representative from the Ministry of Education evaluates permanent staff before the appointment. The Faculty General Meeting must adopt this judgment. That means, the formal authority is transferred from ministerial level to universities regarding staff appointment. • The funding formula considers all general costs related to the teaching (for example, staff salaries, administration, running of facilities, equipment or construction costs), which means, capital funds are integrated into the funds for operational expenses. • Each cost indicator in the funding formula is weighted according to study disciplines. The formula is based on payments for the number of active students – that means, the number of full-time equivalent students (FTEs) – as output-orientated funding indicator. One FTE is equivalent to taking examinations worth 30 credit points within one the academic year. FTE were weighed according to different subject-areas to reflect different costs structures. In addition, the needed square footage of facilities was set per FTE. • A target agreement specifies the maximum number of FTEs and their distribution across subject-related categories (this did not prescribe the internal allocation of funds). In addition, square footage was set per FTE. • The Ministry is now permitted to contract services and projects with each university individually (agreements for public universities and service contracts with private ones). The yearly budget allocations are supposed to be based on three-year service agreements between the Ministry and each institution (one for teaching and one for research). The agreement on teaching is linking the financial appropriations to the number of active students and subject-related price categories (does not determine the internal allocation of funds). This policy is not obligatory for the Ministry and the institutions and the first contracts are signed after the study period. • The government still does not limit the intake of students, but its sets the numbers of students eligible for funding in different subject categories, that means, there is no reimbursement for additional intake of students. Universities are allowed to accept more students (for example, by balancing teaching costs with cutting administrative expenses). Contrary to other universities, the University of Iceland is still not allowed to restrict its access numbers (some exceptions apply). • The universities become fully responsible for course planning. Higher education institutions become free to establish new courses and programs. But the Ministry of Education is only providing funds if it wants new programs to be implemented. • Higher education institutions also obtain more opportunities to finance research or teaching activities based on contracts with private enterprises. • Universities are required to implement internal and external quality assurance procedures. The Ministry of Education is in charge of external quality assurance. External quality assurance is supposed to consist of an evaluation based on peer reviews and self-evaluation reports for different institutional units (for example, faculties, study programs). The law is implemented within the following two years. The Ministry of Education still has to provide more detailed regulations on the underlying rules to be implemented by the higher education institutions. • The university senate must include two external members appointed by the Minister of Education (in force since 1998).	A1, A2, B1, B2, C1 C2, C3, D1, D2, E2

Year	*Legislation*	*Provisions*	*Items*
Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed.			
Data sources: Adalbjarnardóttir 2008; Björnsdottir 1998; EC 2000; EC 2004 Eurydice 2000b; Hämäläinen et al. 2001; Hannibalsson 2000; IBE 2007; Jensen, Seifert and Kettle 2008; Jónasson 2002, 2004; Kirstein 1999; Kyvik 2009; MoESC 1998; MoESC 2007; Musiał 2010; NARIC 1999; Neave et al. 2006 ; OECD 2005a, OECD 2005b; Panaretos 2000. For full bibliographical details see list of references.			

P. Norway (NO)

Year	*Legislation*	*Provisions*	*Items*
1980	N/A	• Public allowances are supposed to cover most of the expenditures necessary for running each institution. The appropriations also include funds for research activities. But these are not big enough to allow a consistent intuitional policy. Correspondingly, universities can apply for additional research grants in terms of third-party project-based funds. • The governmental allowance is subdivided into different item lines in terms of salaries, other current expenditures, investments and other transfers for individual departments. The transfer between budget lines is possible according to general and relatively strict public guidelines only. The budgets are provided on a yearly base and are not transferable to the next fiscal year (except for 5% of the running costs). • New teaching positions in each subject field are centrally fixed. (Academic and non-academic) staff numbers has to be approved by the parliament (on proposition of the Ministry of Education). • Only few universities own buildings (based on own funding). The Norwegian Public Construction and Property Management (*Statsbyg*) is responsible for providing and managing property. • The governmental appropriations are based on annual budget proposals from each institution and institutional development plans for the upcoming years. The budget allocation is determined incrementally based on its historic size (that means, past costs), the institutional budget proposals and price developments (for example, for wages). No systematic normative cost estimation is applied, that means, allowances are determined by reimbursement. The number of positions within the different groups (academic staff and technical-administrative staff) is the main driver of budget allocation. The parliament decides on the number of positions in the various categories. The number of positions indirectly follows the student numbers. • The ministry of education determines the number of student places per subjects (talking into account institutional capacity and labour market demands). Universities are allowed to admit more students than the governmentally set target numbers, but they do not receive additional funds. Nearly all university studies within higher education have limited student intake. The restrictions are varying between institutions and courses. • The Ministry of education is responsible for the approval of programs and courses of at least ten credits, respectively one semester, and institutions is the responsibility of Ministry of education. Although a small expert panel usually is consulted, the authorization process is mainly an administrative procedure. Study visits or in-depth evaluations are not conducted. From this point of view, the universities themselves largely determine course planning. Another external quality assurance system does not exist. • Universities can decide upon their own admission policy, but it was subject to approval by the government. No tuition and registration fees exist at public universities. Correspondingly, no system of fee exemption existed. • Despite a lack of governmental regulations, universities are able to contract educational activities, but this is relatively rare and it mainly occurred in conjugation with private continuing education providers (financed by students themselves or on behalf of contracted with organizations). • The participation of external stakeholders from business is not implemented in the university sector (only at regional colleges in a facultative way).	B1, B2, B3, C1, C2, D1, D3, E2
1988 (1989)	N/A	• Regulations on contract activities are introduced (before it is possible, but no regulation governing these activities existed). And from 1989 on, institutions are allowed to develop and provide commissioned education based on fees. That means `tailor-made' courses developed for firms, public services and other customers. Also if credit number over 10 points then subject to approval.	E2

Year	*Legislation*	*Provisions*	*Items*
1989 (1989-1990)	Universities and University Colleges Act	• Institutions obtain the right to appoint staff on their own (came into force in 1990). Still the government regulates the maximum number of posts. Also the act requires the adaptation of the Civil Service Act from 1983 that includes provisions relating to the appointment and dismiss of staff to academic, technical and administrative posts. • The general *numerus clausus* is formally abolished. The provisions regarding a *numerus clausus* for specific study programs or faculties at universities are decided by the parliament on a yearly basis. Student intake is still varying between institutions and courses, but overall the restriction are less severe due to better coordination between institutions and increasing provision of student places.	B1, D2
1990 (1991-)	N/A	• The Ministry of Education introduces a new planning system focusing on management according to objectives and results. This includes a more systematic approach on collecting and using performance indicators for strategic planning. • Following a binding parliamentary instruction in 1991, this reform implemented formula-based funding. Costs are determined normatively with students as cost carriers. That means institutional activities in terms of teaching, research, administration etc. largely follow the development of student numbers and become increasingly input-orientated. In addition, funding appropriations are also supposed to be gradually redistributed according to output-orientated performance measures. • From 1992 the performance-orientated funding base is supposed to be expanded both in terms if budget share and subjects covered on (full implementation of principle after study period). More specifically, higher unit prices per graduate students and appropriations based on obtained study credit are introduced. • Most of the funding allocated to research is included in the basic funding, which also covers wages, running expenses and capital expenses. • In addition, institutions have to submit strategic development plans on their goals and how to achieve these objectives (also included details on internal resource allocation). Previously, the negotiation process is less formalized. The Ministry of Education issues guidelines on these institutional objectives in their annual allotment letters. • Institutions still have to provide budget proposals and report expenses on a regular base to the Ministry, but the budgetary directives from government to the institutions diminish and discretion on the internal resource allocation increased gradually both in terms if budget share and subjects covered. Appropriations start to be provided in terms of block grants from 1992 on (full implementation of principle after study period). • The institutional autonomy is limited with regard to buildings but full autonomy is now enjoyed in relation to equipment. Constructions still have to be approved by the government whereas equipment costs are provided as lump sum.	C1, C2, C3, D1, D3
1991 (1992)	N/A	• The Universities and Colleges Admissions Service was established in 1991. Starting in 1992 with applications for teacher education and social work as Pilot, its scope of responsibility have been gradually expanded to coordinate and simplify the admission procedures of all public universities (based on a 1995 regulation).	B3
1992		• The Ministry of Education initiates a 5-year pilot project with nation-wide evaluations of five selected academic disciplines in 1992 (conducted by the Nordic Institute for Studies in Innovation, Research and Education (NIFU).	A1
1995 (1996)	N/A	• The responsibilities of the Universities and Colleges Admissions Service have been gradually expanded to coordinate and simplify the admission procedures of all public universities. A national standard for ranking student candidates in the (implemented in academic year 1996/97). The system is based on points for the marks obtained in school-leaving exam and the subjects studied were applied. After applications are registered and processed, the higher education institutions assess those students whose first choice is their particular institution.	B3
1995 (1996)	Universities and Colleges Act	• The Act does not regulate teaching in detail, but it still determines degrees and titles institutions are allowed to award. Details like duration and specific requirements are regulated in Royal Decrees. The freedom of teaching and research are highlighted, but study programs still have to be approved by the Ministry of Education. • The Act also introduces external actors as advisory members to the governing boards of universities (2-4 members, but the majority belongs to academics and students).	A2, B2

Year	*Legislation*	*Provisions*	*Items*
1995	Circular on Common Appointments Structure	• Following consultations with the trade unions of the sector, the Ministry determines the qualification and assessment criteria for appointment to the various categories of academic posts at higher education institutions.	D2
1996	Royal Decree	• Stricter regulations concerning the managing and reporting the use of public funds have been implemented for all public institutions (that means also universities).	D1
1997 (1998-)	N/A	• The Network Norway Council (NNR) is set up in 1998 and it acts as a new advisory and coordinating body under the Ministry of Education (appointed in 1997 by the parliament). • The council becomes responsible for coordinating quality evaluation and assessment in higher education. One task becomes the development of a national system for evaluating higher education (not implemented within study period). • Furthermore, new study programs have to be considered in relation to an overall national plan. The Network Norway Council advises the Minister in this area.	A1, B2

Notes: Own inventory based on data collection from secondary data sources (see below). The table presents the adoption, reform and/or abolition of regulations on higher education. It presents national policy outputs on the public higher education system and tertiary education dealing with a selected range of components and items within higher education policy. A detailed description on each policy item from A1 to E2 is provided in Annex I. The focus is on regulating the public university system and their activities in tertiary education. The regulation of non-university higher education institutions like polytechnics or research-related activities is excluded. The third column provides the corresponding provisions that deal with the items of interest. The last column displays the policy items affected by the listed actions. The time frame covers 1980 until 1998. Years listed in the first column refer to the calendar year corresponding policy outputs were passed. In case of gradual or delayed implementation years in spates refer to the implementation (period) of the specific regulation. Dates on implementation are only listed if they do not match the year the corresponding policy outputs is passed. Policy change in Norwegian higher education policy was often gradual and not based on legislations, but on binding appropriation guidelines (*bevilgningsreglement*) that regulated budgets and accounting of the national government (cf. Monsen 2008). In a similar vein, the parliament also made binding decisions on propositions of the government provided to the parliament that are not related to laws (*proposisjon til Stortinget*).

Data sources: Aamodt 1990; Beerkens 2011; Bjørkquist 2009; Blumberg 1986; Brandt 1999; Brandt 2000; Broch and Hyllseth 2004; Campbell and Rozsnyai 2002; EC 2000; Eide 1988; Eurydice 1999, 2000b, 2003; Fetveit 1992; Frølich 2006; Frølich and Strøm 2008; Haakstad 2001; Kirstein 1999; Kvil 2004; Kyvik 2002, Kyvik 2004; Kyvik and Skoie 1982; Kyvik and Tvede 1998; Leszczensky et al. 2004; MER 2002; Musiał 2010; NARIC 1999; NOU 2000; OBHE 2006; OECD 2005c; Sizer, Spee and Ron 1992; Stensaker 2005; UNESCO/CEPES 1983; Vaagland 1998. For full bibliographical details see list of references.

IV. Data Description and Sources for Variables[24]

This section reports the summary statistics for the variables used in the empirical analysis. The tables also provide the data sources and operational definitions used for constructing the variables. The configuration of variables tested across the various event history models differs, but this does not apply to the actual operationalization of variables. For example, every time an explanatory model also checks for the impact of the reform capacity in a country at risk in terms of veto players, it is measured on behalf of the veto players constructed by Jahn et al. (2012). Therefore, summary statistics for the used variables are not provided for every single event history model tested in chapter four of the study, but they are organized according to the different theoretical approaches. That means the variables are grouped in tables relating to the explanatory models on learning, socialization, externalities and common responses. The variables used in section 4.9 are not provided in a supplementary table, but can be found in tables IV.B through IV.E.

To operationalize most independent variables of the diffusion approaches, one needs to know about the policies previously adopted by the other countries. To model independent variables, policies of countries are weighted according to their current state rather than according to the adoption of specific legislation (or their frequency) (cf. Boehmke 2009). Countries often modify or update policies without substantially changing the scope of the policy. To better deal with the qualitative differences in the reform processes, senders are weighted according to the scope of performance-orientated policies. The underlying assumption is that governments are influenced by the content of the policies adopted by other countries rather than the number of their legislative outputs. When a policy innovation is only on a very limited scale, countries are not also counted as potential senders. For example, budgetary discretion might apply to minor parts of the budget like the overhead costs only.[25] Therefore, the policy innovations under consideration are ordinally scaled according to qualitative anchors described in higher education research. Table IV.A lists the scope of the different policy items under consideration. Higher education systems are usually counted as sender countries in case the policy scope is matching one of the two highest states described here.[26]

[24] The full dataset is available upon request from the author.

[25] See also the country reports in Annex III. This rather qualitative logic is also used in chapter three on the performance-orientated reforms in the various countries.

[26] See notes on table A.

Countries are grouped as adopters of a policy (or sender) if they formally adopted the policies (in case of learning its practical implementation is counted).[27] Furthermore, policies have to be obligatory (except of contract services which are by definition facultative) and they require system-wide application. In other words, pilots and facultative regulations are not counted as sufficient indicators for an actual policy change. Of course adopting pilot projects or facultative legislation might be measured for estimating diffusion effects in a country at risk (cf. Annex III), but merely adopting legislation promoting a performance-orientated policy does not necessarily indicate if a country can be considered as a potential sender of that policy. The underlying assumption is that the successful adoption and implementation of a policy requires obligatory regulations to ensure the actual implementation of policies.

A. Measuring the Scope of Adopting and Implementing Policies

No.	*Policy item*	*Scope of policy*
A1	External quality assurance system	(0) Ministerial approval only.
		(1) External activities only ad hoc (for example, at request of universities themselves).
		(2) External quality assurance activities only apply to specific institutions and/or study programs.
		(3) System-wide and regular quality assurance activities.
A2	Participation of external stakeholders	(0) No inclusion of representatives from external interest groups like business or industry in institutional governance bodies.
		(1) Structural minority of external stakeholders' representatives in institutional governance bodies.
		(2) Structural majority of external stakeholders' representatives in institutional governance bodies.
B1	Responsibility for student intake	(0) Open admission policy or centrally fixed student numbers (for example, on behalf of a general *numerus clausus*).
		(1) Universities determine the institutional student intake within a national framework and/or target numbers determining the institutional funding from the public authorities.
		(2) Universities determine institutional student intake.
B2	Responsibility for course planning	(0) Course structures and study programmes at universities are specified in national laws and degrees and/or new study programs and curricula require ministerial approval.
		(1) Guidelines or framework regulation on course programs exist

[27] The diffusion variables usually apply to the formal policy adoption of sender countries, but learning is based on the question if other countries implemented the policy under consideration. Remember, the idea of learning is about the experience of others with specific policies. But gaining insights on the functioning of policies usually requires not only the formal adoption of a policy, but also the practical implementation of this policy.

No.	*Policy item*	*Scope of policy*
		(for example, institutions do not have to proof the necessity of study programs, but the public authorities usually have to proof that a degree is illegal or that a university does not have sufficient funds to guarantee the quality of programs).
		(2) The universities are responsible for the curriculum and organisation of study programs.

No.	*Policy item*	*Scope of policy*
B3	Responsibility for student selection	(0) Public authorities carry out student selection and/or an open admission policy exists.
		(1) Universities can determine their own entrance requirements within a national framework on access to higher education.
		(2) Student selection is a generic university task.
C1	Formula-funding	(0) Institutional budgets for regular teaching activities are negotiated with each individual university.
		(1) Funding formulas used to determine the institutional budgets are only indicative or not transparent to university managers.
		(2) Formula funding is limited to certain cost categories (for example, to overhead costs or smaller investments. Or sometimes staff expenses are excluded from institutional budgets as personnel are provided directly by the state).
		(3) Current institutional funds from public authorities for regular teaching activities are allocated on behalf of general, pre-formulated and objective criteria.
C2	Target agreements	(0) Institutional budgets for regular teaching activities are based on yearly budget requests and proposals.
		(1) Institutional budgets for regular teaching activities are based on extended planning periods by softening the annuality principle.
		(2) The application of performance contracts refers to the assignment of extra funds by the public authorities, rather than covering the complete institutional budget for teaching activities.
		(3) Regular public funds are based on performance contracts between the responsible public authority and each university.
C3	Performance-driven funding	(0) Institutional budget allocations for teaching activities are ad hoc and incremental (for example, by using cost-based indicators).
		(1) Only a minor amount of the institutional budget is allocated according to performance indicators (for example, the performance-based budgetary share reserved is limited to the yearly budgetary increases).
		(2) A substantial amount of the institutional budget is provided according to university performance, but the public authorities guarantee a specific funding level as basic funding (for example, the main cost categories like staff costs are not included in the funding formula).
		(3) Regular public funding depends on shortly changeable performance indicators like student numbers (input-driven) or graduate numbers (output-driven)

No.	*Policy item*	*Scope of policy*
C4	Study vouchers	(0) Public authorities do not provide financial support for students to cover study fees.
		(1) Financial student aid is only targeted at specific student groups and/or restricted in terms of benefits (for example, based on merit or needs or study fees are only partially waived).
		(2) Demand-side vouchers aiming at widespread support for full-time undergraduate students are provided by the public authorities.
D1	Lump-sum funding	(0) Institutional budgets for regular teaching activities are earmarked (for example, in terms of itemized budgets or ministerial approval).
		(1) Funding discretion in terms of institutional budgets faculty-specific and/or restricted to minor parts of the funding allowances (for example, discretion applies to overhead costs only or if personal expenses as main cost driver are exempted from budget).
		(2) Funding discretion in terms of institutional budgets limited as some restriction in terms of inter-institutional funding allocation applies (for example, offsetting specific cost types like material and personal applies only partially).
		(3) Regular public funds come in terms of block grants with no significant restrictions on the internal distribution within the universities.
D2	Responsibility for staff management	(0) Universities cannot hire and manage their staff themselves (for example, university staff is directly provided by the public authorities, detailed staff plans exist and/or are subject to ministerial approval).
		(1) The public authorities can withdraw staff and/or the staff appointment and internal allocation of staff at universities is applied to a specific staff category (for example, junior researchers).
		(2) Public authorities determine the maximum number of posts at a university only and/or recruitment and appointment of key staff like the university rector or lifetime professorships is exempted.
		(3) Universities manage their staff numbers themselves (for example, they are free to choose the academic and non-academic staffing).

No.	*Policy item*	*Scope of policy*
D3	Responsibility for buildings and equipment	(0) Buildings and equipment are provided and managed directly by the public authorities.
		(1) Universities are responsible for the operation of existing buildings and/or equipment only.
		(2) Universities are responsible for managing facilities and purchasing their own equipment, but do not obtain far-reaching competencies for the buildings themselves (for example, capital expenses are subject to ministerial approval or only limited to smaller investments).
		(3) The acquisition and operation of buildings and equipment is up to the universities themselves (for example, the public authorities grant the full ownership on buildings and equipment).
E1	Study fees	(0) A no-fees policy for undergraduate full-time students exists.
		(1) Fees for full-time students are not at the discretion of the universities (for example, fees are not considered as institutional surpluses and are withdrawn from the institutional budget provided by the public authorities).
		(2) Undergraduate full-time students only have to pay a fee for registering and certification at universities (registration fees).
		(3) Undergraduate full-time students have to pay a fee for the costs of the educational courses.at universities (tuition fees).
E2	Contract-based services	(0) Public universities are fully funded by the state (for example, generating private income is not allowed or it is not considered as additional institutional income).
		(1) Public authorities allow universities to acquire private income, but activities focus on research or on individual activities of scholars and professors (that means the institutions are functioning merely as intermediary buffer administrating the funds).
		(2) Contract activities of universities have to be reported and are subject to approval by the responsible public authorities (for example, ministerial approval is usually conditional on the non-interference with the professor's and the institution's regular obligations).
		(3) Marketing and selling teaching services to customers is considered as a university task itself.

Note: Own listing based on country reports in Annex III. A policy scope of "0" indicates that the policy item (or innovation) is not present in the country under consideration, whereas the values "1" to "3" describe the scope of the policy innovation under consideration. These ordinal distinctions are also used to operationalize the independent variables referring to the behaviour of sender countries (for example, in case of learning from comparative country performance). In case two country groups are operationalized (that means, potential sender and recipient countries) higher education systems are usually grouped as sender countries in case the policy scope is matching one of the two highest states described here. A different logic applies to policy item C4 as targeted support for student to cover their study fees is usually a matter of social policy and not an issue of university steering like it is envisioned in systems based on demand-side voucher schemes (cf. Salmi and Hauptman 2006).

B. Variables Used in the Models Related to Learning

Type	Variable	Mean	Standard Deviation	Min	Max	Source
DV	Policy adoption (as hazard rate)	0.0737494	0.2613963	0	1	Average rate of countries having adopted legislation on policy items (cf. Annex III).
IV	Comparative country performance (on public spending)	5.02524	13.64252	-40.24447	51.90101	Average absolute difference percentage in total public funding spent (in one hundreds per cent of constant price GDP) per 10% gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population between sender countries having implemented policy *i* and country at risk in previous year (cf. UOE 2011; Barro and Lee 2010). Missing values derived from Körnert et al. (2005) and IS (2007) or interpolated. Previous 3-years moving average.
IV	Comparative country performance (on completion ratios)	0.5635799	4.783547	-11.94	14.46889	Average absolute difference percentage in completion ratios at tertiary level (as percentage of students in population age group 25-34) between country at risk and sender countries having implemented policy *i* in previous year (cf. Barro and Lee 2010). Missing values interpolated. Previous 3-years moving average.
IV	Policy experience (on budget cuts)	-0.8351388	2.158617	-13.05744	5.018881	Regression coefficient between the (scope of) implementation of policy *i* in other countries and the yearly percentage change in total public funding per student on ISCD level 5 and 6 (in constant price PPP-$) (cf. UOE 2011). Missing values derived from Körnert et al. (2005) and IS (2007) or interpolated. Previous 3-years moving average.
IV	Policy experience (on student growth)	0.2947482	1.217641	-3.501392	10.09131	Regression coefficient between the (scope of) implementation of a policy *i* in other countries and the yearly percentage change in total student numbers on ISCD level 5 and 6 (cf. UOE 2011). Missing values interpolated. Previous 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
IV	Long term country performance (on public spending)	6.14185	14.17619	-34.94445	51.90101	Average absolute difference percentage in total public funding spent in (one hundreds per cent of constant price GDP) per 10% gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population between sender countries having implemented policy *i* and the recipient country in previous year (cf. UOE 2011; Barro and Lee 2010). Missing values derived from Körnert et al. (2005) and IS (2007) or interpolated. Previous 7-years moving average.
IV	Long term country performance (on completion ratios)	0.4486784	4.506982	-10.71762	12.47408	Average absolute difference percentage in completion ratios at tertiary level (as percentage of students in population age group 25-34) between sender countries having implemented policy *i* and the recipient country in previous year (cf. Barro and Lee 2010). Missing values interpolated. Previous 7-years moving average.
IV	Long-term policy experience (on budget cuts)	-1.040753	1.836347	-10.55354	3.040985	Regression coefficient between the (scope of) implementation of policy *i* in other countries and the yearly percentage change in total public funding per student on ISCD level 5 and 6 (in constant price PPP-$) (cf. UOE 2011). Missing values derived from Körnert et al. (2005) and IS (2007) or interpolated. Previous 7-years moving average.
IV	Long-term policy experience (on student growth)	0.3779556	1.20382	-2.525015	10.09131	Regression coefficient between the (scope of) implementation of a policy *i* in other countries and the yearly percentage change in total student numbers on ISCD level 5 and 6 (cf. UOE 2011). Missing values interpolated. Previous 7-years moving average.
CV	Country-specific problem pressure (fiscal constraints)	53.6801	22.67066	10.82	123.38	Gross general government debt in country at risk. Debt is scaled to nominal GDP (cf. IMF 2011). In case of missing values due to "breaks" (cf. Abbas et al. 2010: 6), data derived from World Economic Outlook (cf. WEO 2010). Previous 3-years moving average.
CV	Country-specific problem pressure (unemployment)	7.755712	4.448921	0.313	23.21933	Yearly unemployment rates in country at risk, general level (in per cent of total labour force) (cf. WEO 2010). In case of missing values, data derived from ILO (2012). Previous 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
CV	Neighbours' comparative performance (on public spending)	-.2609929	3.880879	-21.36927	15.60383	Comparative country performance (on public spending) weighted by a dummy variable indicating a common geographical border of sender countries and a country at risk (cf. CIA 2009). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Neighbours' comparative performance (on completion ratios)	.1920802	2.523802	-9.32	9.53	Comparative country performance (on completion ratios) weighted by a dummy variable indicating a common geographical border of sender countries and a country at risk (cf. CIA 2009). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Policy experience of neighbours (on budget cuts)	-0.1586282	3.595958	-16.27991	19.80656	Policy experience (on budget cuts) weighted by a dummy variable indicating a common geographical border of sender countries and a country at risk (cf. CIA 2009). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Policy experience of neighbours (on student growth)	0.042832	1.971534	-15.66109	15.66109	Policy experience (on student growth) weighted by a dummy variable indicating a common geographical border of sender countries and a country at risk (cf. CIA 2009). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Historical peers' comparative performance (on public spending)	0.722449	3.107772	-16.88309	13.39478	Country performance (on public spending) weighted by a dummy variable indicating a common higher education legacy of sender countries and country at risk (Humboldtian, Napoleonic or Market-based roots). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Historical peers' comparative performance (on completion ratios)	0.3864335	2.012948	-10.258	12.84111	Country performance (on completion ratios weighted by a dummy variable indicating a common higher education legacy of sender countries and country at risk (Humboldtian, Napoleonic or Market-based roots). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
CV	Historically-weighted policy experience (on budget cuts)	-0.4546696	3.280857	-13.92702	13.22122	Policy experience (on budget cuts) weighted by a dummy variable indicating a common higher education legacy of sender countries and country at risk (Humboldtian, Napoleonic or Market-based roots). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Historically-weighted policy experience (on student growth)	0.1857077	1.913269	-11.69819	10.90697	Policy experience (on student growth) weighted by a dummy variable indicating a common higher education legacy of sender countries and country at risk (Humboldtian, Napoleonic or Market-based roots). Row-standardized average. Based on country reports (cf. Annex III). Previous 3-years moving average.
CV	Ideology-weighted comparative country performance (on public spending)	3.843798	10.49226	-33.92873	50.70855	Comparative country performance (on public spending) weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Ideology-weighted comparative country performance (on completion ratios)	0.5445245	3.722643	-9.554345	11.31827	Comparative country performance (on completion ratios) weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Ideology-weighted policy experience (on budget cuts)	-0.6812426	1.746425	-11.97873	4.250006	Policy experience (on budget cuts) weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Ideology-weighted policy experience (on student growth)	0.208744	1.031705	-2.660321	9.752016	Policy experience (on student growth) weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
Ctrl.	Veto player	6.371037	6.595095	0	31.10019	Veto player index as left-right veto player range for country at risk (cf. Jahn et al. 2012). 2-years moving average

Type	Variable	Mean	Standard Deviation	Min	Max	Source
Ctrl.	Shared responsibility	0.1263538	0.3322905	0	1	Dummy variable indicating that shared responsibilities between central and sub-national governments exist on policy *i* ("1"), whereas "0" indicates the sole responsibility of the central government. Based on country reports (cf. Annex III). 2-years moving average.
Ctrl.	Tertiary enrolment	32.3916	10.62919	11.445	74.40334	Gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population in country at risk (cf. UOE 2011; Barro and Lee 2010). Missing values interpolated. 3-years moving average.
Ctrl.	Public higher education expenditure	10.06658	4.232106	3.395547	20.91506	Total public funding spent on tertiary education (in one tenth percentage of GDP) (cf. UOE 2011). Missing values interpolated. 3-years moving average
Ctrl.	Recognition of private universities	0.3862816	0.4819902	0	1	Dummy variable indicating the legal recognition of private universities in a country at risk ("1"), whereas "0" indicates that no private university sector exists. 3-years moving average. Based on Lutran (2007) and country reports (cf. Annex III).
Ctrl.	Pilot project	0.0092831	0.0959131	0	1	Dummy variable indicating that (sub-)national pilot projects on policy *i* were running in the previous year ("1"), whereas "0" indicates that no pilots were running. Based on country reports (cf. Annex III).
Ctrl.	Risk sequence	1.319495	0.662404	1	6	Event count variable indicating the ordering of events for which a country is at risk on adapting policy *i*. Based on country reports (cf. Annex III).
Note: The type of variable indicates the causal order of the used variable. "DV" indicates the dependent variable, whereas "IV" refers to the independent variables tested and "CV" describes the conditional variables. "Ctrl." Indicates the control variables.						

C. Variables Used in the Models Related to Socialization

Type	Variable	Mean	Standard Deviation	Min	Max	Source
DV	Policy adoption (as hazard rate)	0.0737494	0.2613963	0	1	Average rate of countries having adopted legislation on policy items (cf. Annex III).
IV	Policies of international partners	28.84496	19.08601	0	81.19372	Average share of other sender countries with policy *i* weighted by the percentage of state memberships in international governmental organizations shared with country at risk (IGOs) (cf. Pevehouse, Nordstrom and Warnke 2004). Previous 3-years moving average.
IV	Policies of EU partners	23.97199	25.17613	0	95.23809	Average share of other sender countries with policy *i* weighted by a dummy variable indicating the common membership in the European Union (EU). Previous 3-years moving average.
IV	EU candidate effect	7.111926	15.45411	0	80.55556	Average share of EU sender countries in sample with policy *i* weighted by a dummy variable indicating the status of a country at risk as EU accession candidate. Previous 3-years moving average.
IV	Policies of regional peers	30.43221	39.47609	0	100	Average share of sender countries with policy *i* sharing a common geographical border with the country at risk (cf. CIA 2009). Previous 3-years moving average.
IV	Policies of ideological peers	25.86627	17.71821	0	77.14589	Average share of other sender countries with policy *i* weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
IV	Policies of cultural peers	31.12171	33.4123	0	100	Average share of other sender countries with policy *i* belonging to the same cultural family. Four family groupings based on population with similar values according to World Social Value Survey can be identified in Western Europe (cf. Inglehart and Welzel 2005: 64). Previous 3-years moving average.
IV	International norm	0.5182225	0.4809115	0	1	Dummy variable for "1" indicating that over 30% of other sender countries in the sample introduced policy *i.* Based on country reports (cf. Annex III). Previous 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
CV	Ideology-weighted policies of international partners	22.4422	15.40736	0	67.68049	Policies of international partners weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Ideology-weighted policies of EU partners	18.7367	20.12289	0	76.21781	Policies of EU partners weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Ideology-weighted EU candidate effect	5.540075	12.25079	0	69.25397	EU candidate effect weighted by absolute similarity in Final Government Ideology Scores (0=right, 100=left) between sender and recipient country in previous year (cf. Kim and Fording 2002). Previous 3-years moving average.
CV	Country-specific problem pressure (unemployment)	7.755712	4.448921	0.313	23.21933	Yearly unemployment rates in country at risk, general level (in per cent of total labour force) (cf. WEO 2010). In case of missing values, data derived from ILO (2012). Previous 3-years moving average.
CV	Political uncertainty	11.62987	6.264852	1.25	41.7	Electoral volatility in terms of the average changes in vote shares won or lost (in percentage points) (cf. Carmignani 2003). Previous 3-years moving average.
Ctrl.	Veto player	6.371037	6.595095	0	31.10019	Veto players index as left-right veto player range for country at risk (cf. Jahn et al. 2012). 2-years moving average.
Ctrl.	Shared responsibility	0.1263538	0.3322905	0	1	Dummy variable indicating that shared responsibilities between central and sub-national governments exist on policy *i* (“1”), whereas “0” indicates the sole responsibility of the central government. Based on country reports (cf. Annex III). 2-years moving average.
Ctrl.	Tertiary enrolment	32.3916	10.62919	11.445	74.40334	Gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population in country at risk (cf. UOE 2011; Barro and Lee 2010). Missing values interpolated. 3-years moving average.
Ctrl.	Public higher education expenditure	10.06658	4.232106	3.395547	20.91506	Total public funding spent on tertiary education (in one tenth percentage of GDP) (cf. UOE 2011). Missing values interpolated. 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
Ctrl.	Recognition of private universities	0.3862816	0.4819902	0	1	Dummy variable indicating the legal recognition of private universities in a country at risk ("1"), whereas "0" indicates that no private university sector exists. 3-years moving average. Based on Lutran (2007) and country reports (cf. Annex III).
Ctrl.	Pilot project	0.0092831	0.0959131	0	1	Dummy variable indicating that (sub-)national pilot projects on policy *i* were running in the previous year ("1"), whereas "0" indicates that no pilots were running. Based on country reports (cf. Annex III).
Ctrl.	Risk sequence	1.319495	0.662404	1	6	Event count variable indicating the ordering of events for which a country is at risk on adapting policy *i*. Based on country reports (cf. Annex III).
Note: The type of variable indicates the causal order of the used variable. "DV" indicates the dependent variable, whereas "IV" refers to the independent variables tested and "CV" describes the conditional variables. "Ctrl." Indicates the control variables.						

D. Variables Used in the Models Related to Externalities

Type	Variable	Mean	Standard Deviation	Min	Max	Source
DV	Policy adoption (as hazard rate)	0.0737494	0.2613963	0	1	Average rate of countries having adopted legislation on policy items (cf. Annex III).
IV	Policies of competitors	28.3057	18.92294	0	78.12133	Average share of other sender countries with policy *i* weighted by structural (or sectorial) similarity with country at risk (in %). Structural similarity based on comparing the shares of the added value contributed by each industrial sector to the GDP of the countries under consideration (cf. O'Mahoney and Timmer 2009; Timmer et al. 2011). The overall similarity then is calculated according to the Bray-Curtis formula (cf. Benedictis and Tajoli 2007).
IV	Competitiveness of higher education systems	0.1412528	1.346531	-6.869762	9.622296	Average absolute difference percentage of share of foreign students compared to total number of students on ISCD level 5 and 6 (cf. UOE 2011) between other sender countries having adopted policy *i* and country at risk. Previous 3-years moving average. Missing values have been inter-, respectively extrapolated.
IV	Competitiveness of higher education policies	0.676744	3.128116	-13.76739	27.78394	Regression coefficient between the implementation of a policy *i* in other countries and the yearly percentage change in total foreign student numbers on ISCD level 5 and 6 (cf. UOE 2011). Previous 3-years moving average. Missing values have been inter-, respectively extrapolated.
IV	Brain drain effect	33.19635	28.87816	0	99.35056	Average share of other sender countries with policy *i* weighted by the percentage of total student outflows attracted from the country at risk (cf. UOE 2011). Previous 3-years moving average. Missing values have been inter-, respectively extrapolated.
CV	Country-specific problem pressure (unemployment)	7.755712	4.448921	0.313	23.21933	Yearly unemployment rates in country at risk, general level (in per cent of total labour force) (cf. WEO 2010). In case of missing values, data derived from ILO (2012). Previous 3-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
CV	International openness of higher education system	6.637215	9.795564	0.7096701	53.52498	Ratio between student flows from country to other countries (in- and outgoing) and the domestic student population on ISCD level 5 and 6 (cf. UOE 2011) in a country at risk (in %). Previous 3-years moving average. Missing values have been inter-, respectively extrapolated.
Ctrl.	Veto player	6.371037	6.595095	0	31.10019	Veto players index as left-right veto player range for country at risk (cf. Jahn et al. 2012). 2-years moving average
Ctrl.	Shared responsibility	0.1263538	0.3322905	0	1	Dummy variable indicating that shared responsibilities between central and sub-national governments exist on policy *i* ("1"), whereas "0" indicates the sole responsibility of the central government. Based on country reports (cf. Annex III). 2-years moving average.
Ctrl.	Tertiary enrolment	32.3916	10.62919	11.445	74.40334	Gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population in country at risk (cf. UOE 2011; Barro and Lee 2010). Missing values interpolated. 3-years moving average.
Ctrl.	Public higher education expenditure	10.06658	4.232106	3.395547	20.91506	Total public funding spent on tertiary education (in one tenth percentage of GDP) (cf. UOE 2011). Missing values interpolated. 3-years moving average
Ctrl.	Recognition of private universities	0.3862816	0.4819902	0	1	Dummy variable indicating the legal recognition of private universities in a country at risk ("1"), whereas "0" indicates that no private university sector exists. 3-years moving average. Based on Lutran (2007) and country reports (cf. Annex III).
Ctrl.	Pilot project	0.0092831	0.0959131	0	1	Dummy variable indicating that (sub-)national pilot projects on policy *i* were running in the previous year ("1"), whereas "0" indicates that no pilots were running. Based on country reports (cf. Annex III).
Ctrl.	Risk sequence	1.319495	0.662404	1	6	Event count variable indicating the ordering of events for which a country is at risk on adapting policy *i*. Based on country reports (cf. Annex III).

Note: The type of variable indicates the causal order of the used variable. "DV" indicates the dependent variable, whereas "IV" refers to the independent variables tested and "CV" describes the conditional variables. "Ctrl." Indicates the control variables.

E. Variables Used in the Models Related to Common Responses

Type	Variable	Mean	Standard Deviation	Min	Max	Source
DV	Policy adoption (as hazard rate)	0.0737494	0.2613963	0	1	Average rate of countries having adopted legislation on policy items (cf. Annex III).
IV	Country performance (on public spending)	32.26211	11.15541	14.66969	66.56205	Percentage of total public funding spent (in one hundreds per cent of constant price GDP) per 10% gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population) in country at risk (cf. UOE 2011; Barro and Lee 2010). Missing values interpolated. Previous 3-years moving average.
IV	Country performance (on completion ratios)	10.63445	4.59652	2.75	22.22	Completion ratio at tertiary level (as percentage of students in population age group 25-34) in country at risk (cf. Barro and Lee 2010). Missing values interpolated. Previous 3-years moving average.
IV	Country experience (on budget cuts)	1.616108	5.672266	-13.97365	22.5001	Yearly percentage changes in total public funding per student on ISCD level 5 and 6 (in constant price PPP-$) (cf. UOE 2011) in country at risk. Missing values interpolated. Previous 3-years moving average.
IV	Country experience (on student growth)	4.3996	3.601823	-14.74783	17.23241	Yearly percentage changes in total student numbers on ISCD level 5 and 6 (cf. UOE 2011) in country at risk. Missing values interpolated. Previous 3-years moving average.
IV	Government preferences	3.707283	2.539452	0	12.60991	Government parties' preferences for efficiency and market-orientation (cf. Bräuninger 2005). Measured as percentage of (quasi-)sentences in government party manifestos referring to the "need for efficiency and economy in government and administration" (weighted means based on parliamentary seats). 2-years moving average.
IV	Voter preferences	54.92005	11.71769	22.14775	79.18961	Kim-Fording measure of median voter ideology (0=right, 100=left) (cf. Kim and Fording 1998; Kim and Fording 2003). Missing values for years between elections interpolated. 2-years moving average.

Type	Variable	Mean	Standard Deviation	Min	Max	Source
IV	Historical legacy	0.09350181	0.2465258	0	1	Dummy variable indicating if historically academia was following the Market model (“0”) or not (“1”) (cf. Clark 1983). Identification of historical tradition also based on country reports (cf. Annex III).
CV	Country-specific problem pressure (fiscal constraints)	53.6801	22.67066	10.82	123.38	Gross general government debt in country at risk. Debt is scaled to nominal GDP (cf. IMF 2011). In case of "breaks" (cf. Abbas et al. 2010: 6) see World Economic Outlook (cf. WEO 2010). Previous 3-years moving average.
CV	Country-specific problem pressure (unemployment)	7.755712	4.448921	0.313	23.21933	Yearly unemployment rates in country at risk, general level (in per cent of total labour force) (cf. WEO 2010). In case of missing values, data derived from ILO (2012). Previous 3-years moving average.
CV	Political uncertainty	11.62987	6.264852	1.25	41.7	Electoral volatility in terms of the average changes in vote shares won or lost (in percentage points) (cf. Carmignani 2003). Previous 3-years moving average.
Ctrl.	Veto player	6.371037	6.595095	0	31.10019	Veto players index as left-right veto player range for country at risk (cf. Jahn et al. 2012). 2-years moving average
Ctrl.	Shared responsibility	0.1263538	0.3322905	0	1	Dummy variable indicating that shared responsibilities between central and sub-national governments exist on policy *i* (“1”), whereas “0” indicates the sole responsibility of the central government. Based on country reports (cf. Annex III). 2-years moving average.
Ctrl.	Tertiary enrolment	32.3916	10.62919	11.445	74.40334	Gross enrolment ratio on ISCD level 5 and 6 (as percentage of eligible official study-age population in country at risk (cf. UOE 2011; Barro and Lee 2010). Missing values interpolated. 3-years moving average.
Ctrl.	Recognition of private universities	0.3862816	0.4819902	0	1	Dummy variable indicating the legal recognition of private universities in a country at risk (“1”), whereas “0” indicates that no private university sector exists. 3-years moving average. Based on Lutran (2007) and country reports (cf. Annex III).
Ctrl.	Pilot project	0.0092831	0.0959131	0	1	Dummy variable indicating that (sub-)national pilot projects on policy *i* were running in the previous year (“1”), whereas “0” indicates that no pilots were running. Based on country reports (cf. Annex III).

Type	Variable	Mean	Standard Deviation	Min	Max	Source
Ctrl.	Risk sequence	1.319495	0.662404	1	6	Event count variable indicating the ordering of events for which a country is at risk on adapting policy *i*. Based on country reports (cf. Annex III).
Ctrl.	International norm	0.5182225	0.4809115	0	1	Dummy variable indicating that over 30% of other sender countries in the sample introduced policy *i* ("1"). Based on country reports (cf. Annex III). Previous 3-years moving average.
Ctrl.	International linkages	86.92359	16.93784	46	128.6667	Index on state memberships in international governmental organizations (IGOs) in country at risk (cf. Pevehouse et al. 2004). Previous 3-years moving average.
Note: The type of variable indicates the causal order of the used variable. "DV" indicates the dependent variable, whereas "IV" refers to the independent variables tested and "CV" describes the conditional variables. "Ctrl." Indicates the control variables.						

V. Coefficients and Associated Statistics

This section reports the results for the Cox regressions estimated in the previous study. The previous chapters provide the hazard ratios, standard errors and the significance levels. The additional information presented here includes the estimated beta (β) coefficients, the 95% confidence intervals as well as the *p*-values for the different explanatory models and covariates tested.

The hazard rate is defined as the probability per time unit for a case having survived until the beginning of a time interval will fail until the end of that the respective time interval. Applied to the case under consideration and keeping in mind that a repeated event approach is used, the hazard rate indicates the rate of policy adaption for a specific time interval. Coefficients then indicate the impact of different covariates on the chance of the hazard rate. Positive coefficients then imply that the hazard rate is increasing with changes in the covariate, whereas negatively signed coefficients imply falling hazards.

The hazard ratio then is helpful in indicating for policy adoption in the current time intervals. It tells us how the hazard rate increases if the covariate increases by one unit (all other things being equal). The hazard ratios can be obtained by the exponentiated individual coefficients (cf. Cleves, Gould and Gutierrez 2010: 131). That means, Cox regression coefficients can be interpreted as the change in the log-hazard ratio for observations having a unit change in the value of the covariate at time *t* compared to the value of the covariate for the remaining observations in the risk set at time *t*.

A. Explanatory Models Related to Learning

1. Model A1/A2

Table V-1: Coefficients and associated statistics for model A1/A2

Covariates	*Model A1*				*Model A2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Comparative country performance on								
Public expenditure	0.0476 [0.0136,0.0816]	0.006	-0.00698 [-0.0119,-0.00209	0.005				
Completion ratios	0.0299 [0.00128,0.0586]	0.041						
Policy experience on								
Budget cuts	0.0176 [-0.212,0.247]	0.881						
Student growth	0.628 [0.244,1.012]	0.001						
Long-term comparative country performance on								
Public expenditure					0.0455 [0.0151,0.0758]	0.003	-0.00658 [-0.0101,-0.00309]	0.000
Completion ratios					0.0226 [-0.00759,0.0527]	0.143		
Long-term policy experience on								
Budget cuts					-0.203 [-0.530,0.124]	0.223		
Student growth					0.110	0.675		

Covariates	*Model A1*				*Model A2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
					[-0.404, 0.625]			
Veto players	-0.0559 [-0.104,-0.00731]	-0.0559	0.00518 [0.00173,0.00864]	0.003	-0.0533 [-0.101,-0.00530]	0.030	0.00490 [0.00148,0.00832]	0.005
Shared Responsibility	1.371 [0.379,2.363]	1.371	-0.157 [-0.252,-0.0615]	0.001	1.349 [0.334,2.363]	0.009	-0.155 [-0.252,-0.0584]	0.002
Tertiary enrolment	0.0402 [0.0000313,0.0803]	0.0402			0.0342 [0.00321,0.0652]	0.031		
Public higher education expenditure	0.230 [0.110,0.351]	0.230	-0.0238 [-0.0354,-0.0122]	0.000	0.229 [0.115,0.343]	0.000	-0.0220 [-0.0311,-0.0129]	0.000
Recognition of private universities	0.493 [0.200,0.786]	0.493			0.546 [0.258,0.834]	0.000		
Pilot projects	0.623 [-0.448,1.694]	0.623			0.664 [-0.419,1.746]	0.230		
Risk sequence	-0.237 [-0.431,-0.0441]	-0.237			-0.257 [-0.454,-0.0606]	0.010		
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald χ2 (k)	68.30 (15)				63.08 (15)			
Log pseudolikelihood	-730.9				-732.2			
BIC	1585.0				1587.5			
AIC	1491.9				1494.4			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

2. Model A3a-A3d

Table V-2: Coefficients and associated statistics for model A3a/A3b

Covariates	*Model A3a*				*Model A3b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Comparative country performance on								
Public expenditure	0.0124	0.520			0.00939	0.396		
	[-0.0253,0.0500]				[-0.0123,0.0311]			
Public expenditure × fiscal constraints	-0.000226	0.398						
	[-0.000751,0.000298]							
Completion ratios	0.0289	0.063			-0.0909	0.007		
	[-0.00153,0.0593]				[-0.157,-0.0251]			
Completion ratios × unemployment					0.0174	0.000		
					[0.00995,0.0248]			
Policy experience on								
Budget cuts	0.0606	0.587			0.0216	0.840		
	[-0.158,0.279]				[-0.189,0.232]			
Student growth	0.677	0.001			0.585	0.002		
	[0.295,1.059]				[0.209,0.962]			
Country-specific problem pressure								
Fiscal constraints	0.00355	0.329						
	[-0.00358,0.0107]							
Unemployment					0.0331	0.015		
					[0.00639,0.0597]			
Veto players	-0.0319	0.185	0.00342	0.049	0.00704	0.418		
	[-0.0791,0.0153]		[0.0000132,0.00682]		[-0.00998,0.0241]			
Shared Responsibility	0.962	0.043	-0.125	0.008	1.405	0.011	-0.182	0.001

Covariates	*Model A3a*				*Model A3b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
	[0.0290,1.894]		[-0.217,-0.0332]		[0.325,2.486]		[-0.291,-0.0740]	
Tertiary enrolment	0.00773	0.604			-0.0221	0.148		
	[-0.0215,0.0369]				[-0.0520,0.00787]			
Public higher education expenditure	0.0210	0.593			0.194	0.000	-0.00992	0.000
	[-0.0561,0.0981]				[0.0931,0.294]		[-0.0152,-0.00461]	
Recognition of private universities	0.436	0.003			0.232	0.161		
	[0.147,0.725]				[-0.0925,0.556]			
Pilot projects	0.667	0.223			0.961	0.107		
	[-0.406,1.740]				[-0.209,2.132]			
Risk sequence	-0.214	0.025			-0.288	0.004		
	[-0.401,-0.0264]				[-0.482,-0.0942]			
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald χ2 (k)	49.45 (15)				80.36 (15)			
Log pseudolikelihood	-738.7				-724.2			
BIC	1600.5				1571.5			
AIC	1507.4				1478.4			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

Table V-3: Coefficients and associated statistics for model A3c/A3d

Covariates	*Model A3c*				*Model A3d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Comparative country performance on								
Public expenditure	0.0454 [0.0103,0.0805]	0.011	-0.00707 [-0.0122,-0.00199]	0.006	0.0560 [0.0222,0.0899]	0.001	-0.00766 [-0.0126,-0.00269]	0.003
Completion ratios	0.0249 [-0.00604,0.0558]	0.115			0.0371 [0.00687,0.0674]	0.016		
Policy experience on								
Budget cuts	0.139 [-0.125,0.404]	0.302			0.00584 [-0.219,0.230]	0.959		
Budget cuts × fiscal constraints	-0.00256 [-0.00493,-0.000182]	0.035						
Student growth	0.586 [0.197,0.975]	0.003			0.418 [-0.0457,0.882]	0.077		
Student growth × unemployment					0.0271 [-0.00357,0.0578]	0.083		
Country-specific problem pressure								
Fiscal constraints	-0.0264 [-0.0470,-0.00581]	0.012	0.00199 [0.000524,0.00346]	0.008				
Unemployment					0.0410 [0.0120,0.0699]			
Veto players	-0.0668 [-0.116,-0.0177]	0.008	0.00545 [0.00193,0.00897]	0.002	-0.0446 [-0.0913,0.00215]	-0.0446	0.00449 [0.00116,0.00782]	0.008
Shared Responsibility	1.103 [0.112,2.095]	0.029	-0.136 [-0.232,-0.0393]	0.006	1.146 [0.151,2.141]	1.146	-0.150 [-0.246,-0.0530]	0.002

Covariates	*Model A3c*				*Model A3d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Tertiary enrolment	0.0441	0.029			0.0323	0.0323		
	[0.00451,0.0838]				[-0.00816,0.0728]			
Public higher education expenditure	0.231	0.000	-0.0234	0.000	0.260	0.260	-0.0254	0.000
	[0.101,0.361]		[-0.0361,-0.0108]		[0.136,0.384]		[-0.0373,-0.0135]	
Recognition of private universities	0.578	0.000			0.417	0.417		
	[0.270,0.886]				[0.120,0.715]			
Pilot projects	0.661	0.234			0.642	0.642		
	[-0.428,1.750]				[-0.438,1.721]			
Risk sequence	-0.271	0.012			-0.258	-0.258		
	[-0.483,-0.0585]				[-0.454,-0.0626]			
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald $\chi 2$ (k)	81.88 (18)				72.02 (17)			
Log pseudolikelihood	-726.7				-726.8			
BIC	1601.1				1593.1			
AIC	1489.5				1487.7			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

3. Model A4a-A4c

Table V-4: Coefficients and associated statistics for model A4a/A4b/A4c

Covariates	*Model A4a*				*Model A4b*				*Model A4c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Neighbours' comparative performance on												
Public expenditure	-0.164 [-0.242,-0.0873]	0.000	0.0121 [0.00566,0.0186]	0.000								
Completion ratios	-0.00233 [-0.0379,0.0332]	0.898										
Policy experience of neighbours on												
Budget cuts	-0.135 [-0.248,-0.0218]	0.019	0.0147 [0.00637,0.0229]	0.001								
Student growth	-0.0139 [-0.0699,0.0420]	0.625										
Historical peers' comparative performance on												
Public expenditure					-0.154 [-0.231,-0.0766]	0.000	0.0169 [0.0102,0.0236]	0.000				
Completion ratios					0.0504 [0.00385,0.0970]	0.034						
Historically-weighted policy experience on												
Budget cuts					0.0787 [0.0254,0.132]	0.004						
Student					0.0193	0.669						

Covariates	*Model A4a*				*Model A4b*				*Model A4c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
growth					[-0.0690,0.108]							
Ideology-weighted comparative country performance on												
Public expenditure									0.0677 [0.0211, 0.114]	0.004	-0.00784 [-0.0138,-0.00185]	0.010
Completion ratios									0.0400 [0.00452, 0.0756]	0.027		
Ideology-weighted policy experience on												
Budget cuts									-0.0765 [-0.325, 0.172]	0.547		
Student growth									0.442 [0.0390, 0.844]	0.032		
Veto players	-0.0642 [-0.112,-0.0163]	0.009	0.00606 [0.00273,0.00939]	0.00606	-0.0410 [-0.0898,0.00774]	0.099	0.00346 [-0.000108,0.00702]	0.057	-0.0536 [-0.105,-0.00175]	0.043	0.00485 [0.00115, 0.00854]	0.010
Shared Responsibility	1.710 [0.729,2.690]	0.001	-0.196 [-0.288,-0.103]	-0.196	2.023 [1.108,2.938]	0.000	-0.243 [-0.335,-0.151]	0.000	1.261 [0.260, 2.263]	0.014	-0.152 [-0.248,-0.0550]	0.002
Tertiary enrolment	0.136 [0.0703,0.202]	0.000	-0.0102 [-0.0152,-0.00526]	-0.0102	0.0785 [0.0109,0.146]	0.023	-0.00620 [-0.0112,-0.00123]	0.014	0.0231 [-0.0127, 0.0589]	0.207		
Public higher education expenditure	0.0230 [-0.0159,0.0619]	0.246			0.0565 [0.0139,0.0990]	0.009			0.257 [0.135, 0.380]	0.000	-0.0223 [-0.0337,-0.0108]	0.000
Recognition of private universities	0.664 [0.399,0.929]	0.000			-0.0923 [-0.746,0.561]	0.782	0.0698 [0.0161,0.123]	0.011	0.516 [0.237, 0.795]	0.000		
Pilot projects	0.527	0.357			0.733	0.159			0.657	0.230		

Covariates	*Model A4a*				*Model A4b*				*Model A4c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Risk sequence	[-0.593,1.646] -0.274 [-0.471,-0.0768]	0.006			[-0.288,1.754] -0.223 [-0.422,-0.0245]	0.028			[-0.415, 1.730] -0.238 [-0.426,-0.0511]	0.013		
Observations	3654				3654				3654			
Number of Failures	284				284				284			
Time at Risk	3654				3654				3654			
Wald $\chi 2$ (k)	77.85 (16)				93.47 (16)				69.79 (15)			
Log pseudolikelihood	-724.3				-725.5				-731.9			
BIC	1579.9				1582.2				1586.9			
AIC	1480.7				1482.9				1493.9			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

B. Explanatory Models Related to Socialization

1. Model B1/B2

Table V-5: Coefficients and associated statistics for model B1/B2

Covariates	*Model B1*				*Model B2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Common networks								
Policies of international partners	0.126 [0.00790,0.245]	0.037	-0.00759 [-0.0166,0.00145]	0.100				
Policies of EU partners	-0.00905 [-0.0159,-0.00221]	0.010						
EU candidate effect								
Policies of EU members	0.00440 [-0.00433,0.0131]	0.324						
Ideology-weighted policies of								
International partners					0.0591 [0.0178,0.101]	0.005		
EU partners					-0.0127 [-0.0211,-0.00436]	0.003		
EU members					0.0387 [0.0148,0.0625]	0.002	-0.00307 [-0.00516,-0.000972]	0.004
Veto players	-0.0455 [-0.0988,0.00775]	0.094	0.00410 [0.000380,0.00781]	0.031	-0.0463 [-0.0967,0.00410]	0.072	0.00410 [0.000497,0.00771]	0.026
Shared Responsibility	1.596 [0.530,2.662]	0.003	-0.181 [-0.279,-0.0816]	0.000	1.599 [0.546,2.651]	0.003	-0.185 [-0.283,-0.0860]	0.000
Tertiary enrolment	0.0105 [-0.00921,0.0302]	0.297			0.0149 [-0.00503,0.0349]	0.143		

Covariates	*Model B1*				*Model B2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Public higher education expenditure	0.185 [0.101,0.269]	0.000	-0.0136 [-0.0195,-0.00772]	0.000	0.199 [0.112,0.285]	0.000	-0.0135 [-0.0195,-0.00757]	0.000
Recognition of private universities	0.758 [0.477,1.039]	0.000			0.898 [0.611,1.184]	0.000		
Pilot projects	0.689 [-0.409,1.787]	0.219			0.661 [-0.428,1.750]	0.234		
Risk sequence	-0.213 [-0.401,-0.0244]	0.027			-0.191 [-0.372,-0.0103]	0.038		
Observations	3878				3878			
Number of Failures	286				286			
Time at Risk	3878				3878			
Wald $\chi 2$ (k)	66.17 (14)				74.93 (14)			
Log pseudolikelihood	-738.1				-735.0			
BIC	1592.0				1585.7			
AIC	1504.3				1498.0			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

2. Model B3

Table V-6: Coefficients and associated statistics for model B3

Covariates	*Model B3*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Policies of				
Regional peers	0.00126 [-0.00219,0.00472]	0.474		
Ideological peers	0.0292 [-0.00430,0.0626]	0.088		
Cultural peers	-0.0133 [-0.0242,-0.00244]	0.016	0.000865 [0.0000222,0.00171]	0.044
International norms				
Policies of other countries (30%)	0.0370 [-0.886,0.960]	0.937		
Veto players	-0.0422 [-0.0955,0.0111]	0.121	0.00385 [0.0000589,0.00765]	0.047
Shared Responsibility	1.506 [0.457,2.555]	0.005	-0.180 [-0.280,-0.0802]	0.000
Tertiary enrolment	0.00940 [-0.0102,0.0290]	0.347		
Public higher education expenditure	0.156 [0.0837,0.229]	0.000	-0.0109 [-0.0165,-0.00543]	0.000
Recognition of private universities	0.578 [0.330,0.825]	0.000		
Pilot projects	0.718 [-0.372,1.808]	0.196		
Risk sequence	-0.182 [-0.375,0.0115]	0.065		
Observations	3878			
Number of Failures	286			
Time at Risk	3878			
Wald $\chi 2$ (k)	65.13 (15)			
Log pseudolikelihood	-742.0			
BIC	1608.0			
AIC	1514.0			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

3. Model B4a-B4d

Table V-7: Coefficients and associated statistics for model B4a/B4b

Covariates	*Model B4a*				*Model B4b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Policies of								
Regional peers	0.00918 [0.00189,0.0165]	0.014			0.00121 [-0.00222,0.00465]	0.488		
Regional peers × unemployment	-0.00103 [-0.00188,-0.000181	0.017						
Ideological peers	0.0355 [0.00144,0.0696]	0.041			0.0414 [0.00586,0.0770]	0.022		
Ideological peers × unemployment					-0.00152 [-0.00304,0.00000727]	0.051		
Cultural peers	-0.0113 [-0.0218,-0.000797]	0.035	0.000835 [0.0000155,0.00165]	0.046	-0.0145 [-0.0250,-0.00400]	0.007	0.000867 [0.0000432,0.00169]	0.039
Cultural peers × unemployment								
International norms								
Policies of other countries (30%)	0.113 [-0.797,1.024]	0.807			0.168 [-0.740,1.076]	0.717		
Policies of other countries (30%) × unemployment								
Domestic problem pressure								
Unemployment	0.0773 [0.0328,0.122]	0.001			0.0812 [0.0279,0.135]	0.003		
Veto players	-0.0300 [-0.0810,0.0211]	0.250	0.00308 [-0.000547,0.00670]	0.00308	-0.0328 [-0.0842,0.0185]	0.210	0.00351 [-0.000131,0.00714]	0.059

Covariates	*Model B4a*				*Model B4b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Shared Responsibility	1.245 [0.205,2.284]	0.019	-0.175 [-0.276,-0.0741]	-0.175	1.320 [0.263,2.376]	0.014	-0.177 [-0.280,-0.0745]	0.001
Tertiary enrolment	0.00198 [-0.0194,0.0233]	0.856			0.00561 [-0.0155,0.0267]	0.602		
Public higher education expenditure	0.157 [0.0823,0.231]	0.000	-0.0107 [-0.0163,-0.00514]	-0.0107	0.161 [0.0876,0.235]	0.000	-0.0108 [-0.0164,-0.00529]	0.000
Recognition of private universities	0.479 [0.233,0.725]	0.000			0.541 [0.292,0.790]	0.000		
Pilot projects	0.811 [-0.315,1.936]	0.158			0.796 [-0.303,1.895]	0.156		
Risk sequence	-0.194 [-0.391,0.00218]	0.053			-0.209 [-0.404,-0.0130]	0.037		
Observations	3878				3878			
Number of Failures	286				286			
Time at Risk	3878				3878			
Wald $\chi 2$ (k)	75.35 (17)				75.90 (17)			
Log pseudolikelihood	-736.8				-738.2			
BIC	1614.2				1616.9			
AIC	1507.7				1510.4			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

Table V-8: Coefficients and associated statistics for model B4c/B4d

Covariates	*Model B4c*				*Model B4d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Policies of								
Regional peers	0.00204 [-0.00168,0.00577]	0.283			0.00109 [-0.00235,0.00453]	0.534		
Regional peers × unemployment								
Ideological peers	0.0332 [-0.000524,0.0670]	0.054			0.0292 [-0.00380,0.0622]	0.083		
Ideological peers × unemployment								
Cultural peers	0.00585 [-0.00397,0.0157]	0.243			-0.0142 [-0.0247,-0.00370]	0.008	0.000849 [0.0000186,0.00168]	0.045
Cultural peers × unemployment	-0.00106 [-0.00197,-0.000160]	0.021						
International norms								
Policies of other countries (30%)	0.284 [-0.610,1.178]	0.534			0.561 [-0.530,1.652]	0.314		
Policies of other countries (30%) × unemployment					-0.0484 [-0.107,0.0101]	0.105		
Domestic problem pressure								
Unemployment	0.0823 [0.0339,0.131]	0.001			0.0658 [0.0207,0.111]			
Veto players	-0.0308 [-0.0828,0.0213]	0.247	0.00344 [-0.000285,0.00717]	0.070	-0.0320 [-0.0831,0.0191]	0.004	0.00339 [-0.000236,0.00703]	0.067
Shared Responsibility	1.228 [0.152,2.303]	0.025	-0.176 [-0.282,-0.0693]	0.001	1.333 [0.295,2.372]	0.219	-0.176 [-0.277,-0.0755]	0.001
Tertiary enrolment	-0.000420	0.969			0.00398	0.012		

Covariates	*Model B4c*				*Model B4d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
	[-0.0216,0.0207]				[-0.0166,0.0246]			
Public higher education expenditure	0.152 [0.0733,0.230]	0.000	-0.00981 [-0.0155,-0.00408]	0.001	0.163 [0.0895,0.236]	0.705	-0.0109 [-0.0164,-0.00535]	0.000
Recognition of private universities	0.500 [0.255,0.744]	0.000			0.544 [0.293,0.795]	0.000		
Pilot projects	0.897 [-0.228,2.021]	0.118			0.774 [-0.316,1.863]	0.000		
Risk sequence	-0.205 [-0.394,-0.0154]	0.034			-0.207 [-0.402,-0.0125]	0.164		
Observations	3878				3878			
Number of Failures	286				286			
Time at Risk	3878				3878			
Wald χ2 (k)	75.35 (17)				75.90 (17)			
Log pseudolikelihood	-736.8				-738.2			
BIC	1614.2				1616.9			
AIC	1507.7				1510.4			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

4. Model B5a-B5d

Table V-9: Coefficients and associated statistics for model B5a/B5b

Covariates	*Model B5a*				*Model B5b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Policies of								
Regional peers	0.00111 [-0.00633,0.00854]	0.770			0.000391 [-0.00309,0.00388]	0.826		
Regional peers × political uncertainty	-0.0000444 [-0.000518,0.000429]				-			
Ideological peers	0.0357 [0.00123,0.0703]	0.042			0.0450 [0.00797,0.0819]	0.017		
Ideological peers × political uncertainty					0.000837 [-0.00172,0.0000425]	0.062		
Cultural peers	-0.000508 [-0.00518,0.00416]	0.831			-0.000685 [-0.00517,0.00380]	0.765		
Cultural peers × political uncertainty								
International norms								
Policies of other countries (30%)	0.105 [-0.792,1.001]	0.819			0.0602 [-0.827,0.948]	0.894		
Policies of other countries (30%) × political uncertainty								
Political uncertainty								
Electoral accountability	0.0935 [0.0594,0.128]	0.000	-0.00535 [-0.00870,-0.00201]	0.002	0.0608 [0.0314,0.0902]	0.000		
Veto players	0.00450 [-0.0139,0.0229]	0.632	-0.149 [-0.256,-0.0422]		0.000455 [-0.0180,0.0189]	0.961		
Shared Responsibility	1.111 [0.00769,2.214]	0.048		0.006	1.137 [0.0456,2.228]	0.041	-0.146 [-0.252,-0.0391]	0.007

Covariates	*Model B5a*				*Model B5b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Tertiary enrolment	0.00859 [-0.0119,0.0291]	0.411	-0.0119 [-0.0178,-0.00605]		0.00954 [-0.0103,0.0294]	0.347		
Public higher education expenditure	0.180 [0.0988,0.262]	0.000		0.000	0.161 [0.0844,0.237]	0.000	-0.0104 [-0.0160,-0.00484]	0.000
Recognition of private universities	0.645 [0.379,0.911]	0.000			0.614 [0.351,0.876]	0.000		
Pilot projects	0.658 [-0.460,1.775]	0.249			0.714 [-0.401,1.828]	0.210		
Risk sequence	-0.209 [-0.412,-0.00585]	0.044			-0.224 [-0.419,-0.0296]	0.024		
Observations	3878				3878			
Number of Failures	286				286			
Time at Risk	3878				3878			
Wald χ2 (k)	78.13 (16)				73.51 (15)			
Log pseudolikelihood	-734.6				-737.4			
BIC	1601.3				1598.7			
AIC	1501.1				1504.7			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

Table V-10: Coefficients and associated statistics for model B5c/B5d

Covariates	*Model B5c*				*Model B5d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Policies of								
Regional peers	-0.000154 [-0.00371,0.00340]	0.932			0.000442 [-0.00306,0.00395]	0.805		
Regional peers × political uncertainty								
Ideological peers	0.0363 [0.00181,0.0709]	0.039			0.0348 [0.00115,0.0685]	0.043		
Ideological peers × political uncertainty								
Cultural peers	0.00537 [-0.00333,0.0141]	0.226			-0.000773 [-0.00526,0.00371]	0.736		
Cultural peers × political uncertainty	-0.000521 [-0.00113,0.0000905]	0.095						
International norms								
Policies of other countries (30%)	0.0688 [-0.820,0.958]	0.879			0.572 [-0.419,1.564]	0.258		
Policies of other countries (30%) × political uncertainty					-0.0413 [-0.0731,-0.00957]	0.011		
Political uncertainty								
Electoral accountability	0.0529 [0.0285,0.0773]	0.000			0.0603 [0.0360,0.0846]	0.000		
Veto players	0.00122 [-0.0172,0.0196]	0.897			0.00121 [-0.0172,0.0196]	0.897		
Shared Responsibility	1.157 [0.0848,2.230]	0.034	-0.145 [-0.251,-0.0401]	0.007	1.091 [-0.00778,2.190]	0.052	-0.142 [-0.249,-0.0348]	0.009
Tertiary enrolment	0.0114 [-0.00878,0.0316]	0.268			0.00895 [-0.0112,0.0291]	0.383		

Covariates	*Model B5c*				*Model B5d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Public higher education expenditure	0.156 [0.0806,0.232]	0.000	-0.0101 [-0.0157,-0.00462]	0.000	0.162 [0.0857,0.239]	0.000	-0.0104 [-0.0159,-0.00483]	0.000
Recognition of private universities	0.587 [0.326,0.848]	0.000			0.617 [0.356,0.879]	0.000		
Pilot projects	0.690 [-0.431,1.810]	0.228			0.676 [-0.437,1.789]	0.234		
Risk sequence	-0.222 [-0.419,-0.0239]	0.028			-0.237 [-0.429,-0.0450]	0.016		
Observations	3878				3878			
Number of Failures	286				286			
Time at Risk	3878				3878			
Wald $\chi 2$ (k)	74.45 (15)				76.69 (15)			
Log pseudolikelihood	-737.4				-736.4			
BIC	1598.7				1596.8			
AIC	1504.8				1502.9			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

C. Explanatory Models Related to Externalities

1. Model C1

Table V-11: Coefficients and associated statistics for model C1

Covariates	*Model C1*			
	Main		TVC	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Competitive interdependencies				
Policies of competitors	0.173 [0.0480,0.297]	0.007	-0.0139 [-0.0227,-0.00518]	0.002
Competitiveness of higher education system	0.100 [-0.0520,0.252]	0.197		
Competitiveness of higher education policies	0.0482 [-0.0623,0.159]	0.393		
Cooperative interdependencies				
Brain drain effect	0.000664 [-0.00514,0.00647]	0.822		
Veto players	-0.0552 [-0.111,0.000407]	0.052	0.00542 [0.00154,0.00930]	0.006
Shared Responsibility	1.492 [0.432,2.552]	0.006	-0.183 [-0.283,-0.0825]	0.000
Tertiary enrolment	0.0116 [-0.00842,0.0315]	0.257		
Public higher education expenditure	0.161 [0.0850,0.238]	0.000	-0.0119 [-0.0175,-0.00621]	0.000
Recognition of private universities	0.641 [0.379,0.904]	0.000		
Pilot projects	0.759 [-0.348,1.867]	0.179		
Risk sequence	-0.245 [-0.431,-0.0584]	0.010		
Observations	3654			
Number of Failures	284			
Time at Risk	3654			
Wald $\chi 2$ (k)	58.70 (15			
Log pseudolikelihood	-733.6			
BIC	1590.3			
AIC	1497.3			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

1. Model C2a-C2c

Table V-12: Coefficients and associated statistics for model C2a/C2b/C2c

Covariates	*Model C2a*				*Model C2b*				*Model C2c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Competitive interdependencies												
Policies of competitors	0.196 [0.0703,0.322]	0.002	-0.0154 [-0.0242,-0.00655]	0.001	0.177 [0.0508,0.303]	0.006	-0.0145 [-0.0235,-0.00555]	0.001	0.189 [0.0623,0.316]	0.003	-0.0158 [-0.0249,-0.00677]	0.001
Policies of competitors × unemployment	-0.00132 [-0.00279,0.000157]	0.080										
Competitiveness of higher education system	0.0758 [-0.0794,0.231]			0.338	0.0354 [-0.154,0.225	0.715			0.0745 [-0.0791,0.228]	0.342		
Competitiveness of higher education system × unemployment					0.00622 [-0.00886,0.0213]	0.419						
Competitiveness of higher education policies	0.0476 [-0.0719,0.167]			0.435	0.0408 [-0.0727,0.154]	0.481			0.0966 [-0.0461,0.239]	0.185		
Competitiveness of higher education policies ×									-0.00476 [-0.0127,0.00317]	0.239		

Covariates	*Model C2a*				*Model C2b*				*Model C2c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
unemploy-ment												
Country-specific problem pressure												
Unemploy-ment	0.0725 [0.0184,0.127]	0.009			0.0282 [-0.00157,0.0579]	0.063			0.0358 [0.00715,0.0644]	0.014		
Veto players	-0.0422 [-0.0945,0.0102]	0.114	0.00481 [0.00115,0.00848]	0.010	-0.0447 [-0.0994,0.0101]	0.110	0.00481 [0.00104,0.00859]	0.012	-0.0429 [-0.0955,0.00974]	0.110	0.00481 [0.00115,0.00847]	0.010
Shared Responsibility	1.290 [0.264,2.316]	0.014	-0.178 [-0.275,-0.0806]	0.000	1.416 [0.352,2.480]	0.009	-0.187 [-0.290,-0.0845]	0.000	1.395 [0.390,2.401]	0.007	-0.186 [-0.281,-0.0900]	0.000
Tertiary enrolment	0.00590 [-0.0154,0.0272]	0.588			0.00601 [-0.0142,0.0262]	0.560			0.00283 [-0.0179,0.0236]	0.789		
Public higher education expenditure	0.148 [0.0717,0.224]	0.000	-0.0101 [-0.0158,-0.00432]	0.001	0.167 [0.0908,0.244]	0.000	-0.0119 [-0.0175,-0.00624]	0.000	0.150 [0.0743,0.226]	0.000	-0.0101 [-0.0158,-0.00433]	0.001
Recognition of private universities	0.0660 [-0.570,0.702]	0.839	0.0490 [-0.00361,0.102]	0.068	0.614 [0.351,0.878]	0.000			0.0824 [-0.563,0.728]	0.802	0.0466 [-0.00714,0.100]	0.089
Pilot projects	0.730 [-0.359,1.820]	0.189			0.830 [-0.295,1.955]	0.148			0.704 [-0.414,1.821]	0.217		
Risk sequence	-0.297 [-0.500,-0.0939]	0.004			-0.260 [-0.451,-0.0682]	0.008			-0.293 [-0.498,-0.0885]	0.005		
Observations	3654				3654				3654			
Number of Failures	284				284				284			
Time at Risk	3654				3654				3654			
Wald $\chi 2$ (k)	66.18 (17)				62.48 (16)				64.86 (17)			
Log pseudolikelihood	-729.7				-731.9				-730.5			

Covariates	*Model C2a*				*Model C2b*				*Model C2c*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
BIC	1598.9				1595.1				1600.5			
AIC	1493.5				1495.9				1495.0			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

2. Model C3a-C3d

Table V-13: Coefficients and associated statistics for model C3a/C3b

Covariates	*Model C3a*				*Model C3b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Competitive interdependencies								
Policies of competitors	0.143 [0.0221,0.263]	0.020	-0.0128 [-0.0213,-0.00430]	0.003	0.142 [0.0233,0.260]	0.019	-0.0124 [-0.0208,-0.00397]	0.004
Policies of competitors × international openness of higher education system	0.00193 [0.000505,0.00334]	0.008						
Competitiveness of higher education system	0.0970 [-0.0536,0.248]	0.207			0.211 [-0.00203,0.425]	0.052		
Competitiveness of higher education system × international openness of higher education system					-0.0318 [-0.0664,0.00273]	0.071		
Competitiveness of higher education policies	0.0436 [-0.0729,0.160]	0.463			0.0447 [-0.0759,0.165]	0.468		
Competitiveness of higher education policies × international openness of higher education system								
Cooperative								

Covariates	*Model C3a*				*Model C3b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
interdependencies								
Brain drain effect	-0.000365 [-0.00625,0.00552]	0.903			0.000208 [-0.00551,0.00593]	0.943		
Brain drain effect × international openness of higher education system								
International openness of higher education system	-0.0915 [-0.162,-0.0205]	0.012			-0.159 [-0.296,-0.0217]	0.023	0.0117 [0.00251,0.0208]	0.013
Veto players	-0.0384 [-0.0853,0.00855]	0.109	0.00469 [0.00127,0.00810]	0.007	-0.0402 [-0.0881,0.00766]	0.100	0.00490 [0.00144,0.00835]	0.005
Shared Responsibility	0.754 [-0.110,1.617]	0.087	-0.130 [-0.214,-0.0463]	0.002	0.505 [-0.348,1.359]	0.246	-0.115 [-0.197,-0.0323]	0.006
Tertiary enrolment	-0.00265 [-0.0248,0.0195]	0.814			0.00352 [-0.0191,0.0262]	0.761		
Public higher education expenditure	0.0140 [-0.0258,0.0539]	0.491			0.00838 [-0.0300,0.0468]	0.669		
Recognition of private universities	-0.452 [-1.096,0.191]	0.168	0.0823 [0.0278,0.137]	0.003	-0.598 [-1.273,0.0780]	0.083	0.102 [0.0443,0.160]	0.001
Pilot projects	0.556 [-0.507,1.620]	0.305			0.570 [-0.485,1.626]	0.289		
Risk sequence	-0.313 [-0.515,-0.110]	0.002			-0.289 [-0.492,-0.0872]	0.005		
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald $\chi 2$ (k)	48.55 (17)				53.45 (18)			
Log pseudolikelihood	-729.0				-725.9			

Covariates	*Model C3a*				*Model C3b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
BIC	1597.4				1599.5			
AIC	1492.0				1487.8			
Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).								

Table V-14: Coefficients and associated statistics for model C3c/C3d

Covariates	*Model C3c*				*Model C3d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Competitive interdependencies								
Policies of competitors	0.149 [0.0314,0.268]	0.013	-0.0127 [-0.0211,-0.00428]	0.003	0.154 [0.0357,0.273]	0.011	-0.0127 [-0.0211,-0.00423]	0.003
Policies of competitors × international openness of higher education system								
Competitiveness of higher education system	0.0873 [-0.0623,0.237]	0.253			0.0767 [-0.0715,0.225]	0.310		
Competitiveness of higher education system × international openness of higher education system								
Competitiveness of higher education policies	0.0346 [-0.0879,0.157]	0.580			0.0510 [-0.0663,0.168]	0.394		
Competitiveness of higher education policies × international openness of higher education system	0.00301 [-0.0122,0.0182]	0.698						
Cooperative								

Covariates	*Model C3c*				*Model C3d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
interdependencies								
Brain drain effect	-0.000499 [-0.00633,0.00533]	0.867			-0.00890 [-0.0166,-0.00116]	0.024		
Brain drain effect × international openness of higher education system					0.00144 [0.000562,0.00232]	0.001		
International openness of higher education system	-0.163 [-0.303,-0.0232]	0.022	0.0112 [0.00193,0.0204]	0.018	-0.0940 [-0.165,-0.0232]	0.009		
Veto players	-0.0440 [-0.0916,0.00363]	0.070	0.00522 [0.00178,0.00865]	0.003	-0.0413 [-0.0886,0.00594]	0.087	0.00486 [0.00143,0.00828]	0.005
Shared Responsibility	0.548 [-0.292,1.389]	0.201	-0.115 [-0.197,-0.0334]	0.006	0.701 [-0.162,1.564]	0.112	-0.125 [-0.209,-0.0408]	0.004
Tertiary enrolment	0.00235 [-0.0202,0.0249]	0.838			0.00102 [-0.0213,0.0234]	0.929		
Public higher education expenditure	0.0114 [-0.0266,0.0495]	0.556			0.0131 [-0.0262,0.0524]	0.513		
Recognition of private universities	-0.642 [-1.316,0.0331]	0.062	0.102 [0.0442,0.160]	0.001	-0.500 [-1.154,0.153]	0.133	0.0844 [0.0297,0.139]	0.002
Pilot projects	0.539 [-0.515,1.592]	0.316			0.583 [-0.483,1.648]	0.284		
Risk sequence	-0.276 [-0.481,-0.0716]	0.008			-0.301 [-0.505,-0.0967]	0.004		
Observations	3654				3654			
Number of Failures	284				284			

Covariates	*Model C3c*				*Model C3d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Time at Risk	3654				3654			
Wald χ2 (k)	49.93 (18)				53.25 (17)			
Log pseudolikelihood	-727.2				-726.1			
BIC	1602.1				1591.7			
AIC	1490.4				1486.2			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

D. Explanatory Models Related to Common Responses

1. Model D1

Table V-15: Coefficients and associated statistics for model D1

Covariates	*Model D1*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Country performance on				
Public spending	0.00628 [-0.00761,0.0202]	0.375		
Completion ratios	-0.0335 [-0.0672,0.000286]	0.052		
Country experience on				
Budget cuts	0.0379 [-0.0199,0.0957]	0.198	-0.00696 [-0.0121,-0.00186]	0.007
Student growth	-0.0549 [-0.0944,-0.0154]	0.006		
Historical legacy	-1.569 [-2.687,-0.450]	0.006	0.113 [0.0310,0.194]	0.007
Veto players	0.00480 [-0.0124,0.0220]	0.584		
Shared Responsibility	1.289 [0.202,2.375]	0.020	-0.145 [-0.249,-0.0407]	0.006
Tertiary enrolment	0.0118 [-0.0166,0.0402]	0.414		
Public higher education expenditure	-	-	-	-
Recognition of private universities	-1.428 [-2.485,-0.371]	0.008	0.139 [0.0620,0.215]	0.000
Pilot projects	0.699 [-0.402,1.800]	0.213		
Risk sequence	-0.229 [-0.424,-0.0328]	0.022		
International norm	0.408 [-0.473,1.289]	0.364		
International interlinkages	0.0564 [0.0274,0.0855]	0.000	-0.00421 [-0.00630,-0.00212]	0.000
Observations	3654			
Number of Failures	284			
Time at Risk	3654			
Wald $\chi 2$ (k)	94.68 (18)			
Log pseudolikelihood	-719.3			
BIC	1586.2			
AIC	1474.6			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

1. Model D2a-d

Table V-16: Coefficients and associated statistics for model D2a/D2b

Covariates	*Model D2a*				*Model D2b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Country performance on								
Public spending	-0.0110 [-0.0622,0.0401]	0.673			0.00984 [-0.00221,0.0219]	0.110		
Public spending × fiscal constraints	0.000264 [-0.000473,0.00100]	0.482						
Completion ratios	-0.0364 [-0.0716,-0.00118]	0.043			0.0976 [0.0208,0.174]	0.013		
Completion ratios × unemployment					-0.0200 [-0.0296,-0.0104]	0.000	-0.00450 [-0.00626,-0.00275]	(0.000)
Country experience on								
Budget cuts	0.0368 [-0.0215,0.0951]	0.216	-0.00686 [-0.0120,-0.00171]	0.009	-0.0330 [-0.0559,-0.0101]	0.005		
Budget cuts × fiscal constraints								
Student growth	-0.0548 [-0.0959,-0.0137]	0.009			-0.0493 [-0.0947,-0.00380]	0.034		
Student growth × unemployment								
Historical legacy	-1.796 [-3.158,-0.433]	0.010	0.126 [0.0317,0.220]	0.009	-0.121 [-0.658,0.415]	0.657		
Country-specific problem pressure								
Fiscal constraints	-0.00670 [-0.0261,0.0127]	0.498						

Covariates	*Model D2a*				*Model D2b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Unemployment					0.274 [0.160,0.388]	0.000		
Veto players	0.00719 [-0.0110,0.0254]	0.439			0.00345 [-0.0142,0.0211]	0.701		
Shared Responsibility	1.224 [0.171,2.277]	0.023	-0.140 [-0.243,-0.0375]	0.007	0.492 [-0.588,1.573]	0.372		
Tertiary enrolment	0.0126 [-0.0171,0.0423]	0.405			-0.00320 [-0.0306,0.0242]	0.819	-0.102 [-0.209,0.00482]	(0.061)
Public higher education expenditure								
Recognition of private universities	-1.495 [-2.593,-0.398]	0.008	0.144 [0.0627,0.225]	0.001	-1.270 [-2.148,-0.392]	0.005		
Pilot projects	0.666 [-0.420,1.752]	0.229			0.816 [-0.304,1.937]	0.153	0.107 [0.0489,0.165]	(0.000)
Risk sequence	-0.230 [-0.428,-0.0321]	0.023			-0.281 [-0.491,-0.0709]	0.009		
International norm	0.436 [-0.452,1.323]	0.336			0.582 [-0.328,1.492]	0.210		
International interlinkages	0.0573 [0.0273,0.0872]	0.000	-0.00432 [-0.00653,-0.00212]	0.000	0.0581 [0.0324,0.0838]	0.000		
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald $\chi 2$ (k)	95.12 (20)				110.4 (18)			
Log pseudolikelihood	-719.1				-711.9			
BIC	1602.2				1571.5			
AIC	1478.1				1459.9			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items

Covariates	*Model D2a*				*Model D2b*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).								

Table V-17: Coefficients and associated statistics for model D2c/D2d

Covariates	*Model D2c*				*Model D2d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Country performance on								
Public spending	0.00533 [-0.00909,0.0197]	0.469			0.00740 [-0.00704,0.0218]	0.315		
Public spending × fiscal constraints								
Completion ratios	-0.0349 [-0.0689,-0.000903]	0.044			-0.0385 [-0.0746,-0.00244]	0.036		
Completion ratios × unemployment								
Country experience on								
Budget cuts	0.00326 [-0.0750,0.0815]	0.935	-0.00764 [-0.0127,-0.00262]	0.003	0.0428 [-0.0153,0.101]	0.149	-0.00710 [-0.0123,-0.00194]	0.007
Budget cuts × fiscal constraints	0.000728 [-0.000250,0.00171]	0.145						
Student growth	-0.0534 [-0.0944,-0.0124]	0.011			-0.0329 [-0.119,0.0537]	0.457		
Student growth × unemployment					-0.00486 [-0.0185,0.00877]	0.485		
Historical legacy	-1.674 [-2.848,-0.501]	0.005	0.121 [0.0343,0.208]	0.006	-1.288 [-2.361,-0.215]	0.019	0.0896 [0.00991,0.169]	0.028
Country-specific problem pressure								
Fiscal constraints	0.000693 [-0.00572,0.00711]	0.832						
Unemployment					0.0670 [-0.00443,0.138]	0.066		

Covariates	*Model D2c*				*Model D2d*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Veto players	0.00720 [-0.00996,0.0244]	0.411			0.00556 [-0.0128,0.0239]	0.553		
Shared Responsibility	1.314 [0.235,2.393]	0.017	-0.144 [-0.248,-0.0402]	0.007	1.065 [0.00622,2.124]	0.049	-0.141 [-0.244,-0.0385]	0.007
Tertiary enrolment	0.0152 [-0.0143,0.0447]	0.313			0.00553 [-0.0229,0.0340]	0.703		
Public higher education expenditure								
Recognition of private universities	-1.473 [-2.558,-0.389]	0.008	0.144 [0.0636,0.224]	0.000	-1.528 [-2.521,-0.535]	0.003	0.139 [0.0671,0.212]	0.000
Pilot projects	0.674 [-0.424,1.773]	0.229			0.725 [-0.390,1.839]	0.202		
Risk sequence	-0.224 [-0.420,-0.0275]	0.025			-0.245 [-0.441,-0.0481]	0.015		
International norm	0.413 [-0.485,1.310]	0.367			0.539 [-0.338,1.415]	0.229		
International interlinkages	0.0545 [0.0248,0.0842]	0.000	-0.00414 [-0.00628,-0.00199]	0.000	0.0591 [0.0305,0.0878]	0.000	-0.00449 [-0.00655,-0.00244]	0.000
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald χ2 (k)	96.37 (20)				99.56 (20)			
Log pseudolikelihood	-718.6				-716.1			
BIC	1601.3				1596.3			
AIC	1477.2				1472.2			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

2. Model D3a-D4b

Table V-18: Coefficients and associated statistics for model D3/D4a/D4b

Covariates	*Model D3*				*Model D4a*				*Model D4b*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Partisan politics												
Government preferences	0.250 [0.144,0.356]	0.000	-0.0125 [-0.0206,-0.00438]	0.003					0.124 [0.0739,0.174]	0.000		
Government preferences × political uncertainty					0.184 [0.107,0.261]	0.000						
Voter preferences	0.00890 [-0.00486,0.0226]	0.205			-0.00657 [-0.0119,-0.00127]	0.015			0.0450 [0.0199,0.0700]	0.000		
Voter preferences × political uncertainty					0.00788 [-0.00715,0.0229]	0.304			-0.00302 [-0.00471,-0.00134]	0.000		
Historical legacy	-0.535 [-1.011,-0.0597]	0.027							-0.750 [-1.254,-0.247]	0.004		
Political uncertainty												
Electoral accountability					-1.098 [-1.628,-0.567]	0.000			0.275 [0.159,0.391]	0.000	-0.00638 [-0.0101,-0.00262]	-0.00638
Veto players	0.0332 [0.0109,0.0556]	0.003			0.0218 [-0.00203,0.0455]	0.073	0.0943 [0.0570,0.132]	0.000	0.0179 [-0.00529,0.0410]	0.131		
Shared Responsibility	0.250 [-0.673,1.174]	0.595	-0.0768 [-0.164,0.00995]	0.083	-0.306 [-0.716,0.103]	0.142			-0.425 [-0.855,0.00544]	0.053		
Tertiary enrolment	0.00454 [-0.0244,0.0335]	0.758			0.00509 [-0.0221,0.0323]	0.714			0.00553 [-0.0232,0.0342]	0.706		

Covariates	*Model D3*				*Model D4a*				*Model D4b*			
	Main		*TVC*		*Main*		*TVC*		*Main*		*TVC*	
	Coef.	*P*>|*z*|	*Coef.*	*P*>|*z*|	*Coef.*	*P*>|*z*|	*Coef.*	*P*>|*z*|	*Coef.*	*P*>|*z*|	*Coef.*	*P*>|*z*|
Public higher education expenditure	0.00169 [-0.0364,0.0397]	0.931			0.0159 [-0.0227,0.0545]	0.419			0.0341 [-0.00437,0.0726]	0.082		
Recognition of private universities	-0.947 [-1.835,-0.0598]	0.036	0.0986 [0.0394,0.158]	0.001	-1.064 [-1.930,-0.198]	0.016	0.0976 [0.0401,0.155]	0.001	-0.713 [-1.519,0.0930]	0.083	0.0723 [0.0169,0.128]	0.0723
Pilot projects	0.437 [-0.580,1.454]	0.400			0.276 [-0.619,1.171]	0.545			0.221 [-0.657,1.098]	0.622		
Risk sequence	-0.219 [-0.420,-0.0183]	0.033			-0.270 [-0.472,-0.0679]	0.009			-0.271 [-0.470,-0.0718]	0.008		
International norm	0.255 [-0.635,1.146]	0.574			0.406 [-0.471,1.284]	0.364			0.414 [-0.502,1.330]	0.376		
International interlinkages	0.0619 [0.0348,0.0890]	0.000	-0.00432 [-0.00620,-0.00243]	0.000	0.0679 [0.0400,0.0957]	0.000	-0.00469 [-0.00667,-0.00271]	0.000	0.0629 [0.0352,0.0906]	0.000	0.00426 [-0.00632,-0.00220]	-0.00426
Observations	3878				3878				3878			
Number of Failures	286				286				286			
Time at Risk	3878				3878				3878			
Wald $\chi 2$ (k)	80.89 (16)				112.2 (16)				118.7 (17)			
Log pseudolikelihood	-728.8				-719.5				-715.6			
BIC	1589.8				1571.2				1571.6			
AIC	1489.6				1471.0				1465.2			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

E. Comparison of Explanatory Models

1. Model A5

Table V-19: Coefficients and associated statistics for model A5

Covariates	*Model A5*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Comparative Country performance				
On completion ratios	0.0282 [0.000728,0.0557]	0.044		
Policy experience				
On Student growth	0.602 [0.254,0.950]	0.001		
Policy experience of neighbours				
On budget cuts	-0.128 [-0.243,-0.0117]	0.031	0.0138 [0.00546,0.0221]	0.001
Historical peers' comparative performance on				
Public expenditure	-0.148 [-0.223,-0.0720]	0.000	0.0146 [0.00843,0.0208]	0.000
Veto players	-0.0618 [-0.114,-0.00951]	0.021	0.00523 [0.00155,0.00892]	0.005
Shared Responsibility	1.512 [0.526,2.497]	0.003	-0.185 [-0.280,-0.0902]	0.000
Tertiary enrolment	0.110 [0.0480,0.172]	0.001	-0.00835 [-0.0129,-0.00380]	0.000
Public higher education expenditure	0.0403 [-0.00219,0.0828]	0.063		
Recognition of private universities	0.628 [0.321,0.934]	0.000		
Pilot projects	0.584 [-0.508,1.676]	0.294		
Risk sequence	-0.225 [-0.414,-0.0351]	0.020		
Observations	3654			
Number of Failures	284			
Time at Risk	3654			
Wald $\chi 2$ (k)	107.6 (16)			
Log pseudolikelihood	-721.5			
BIC	1574.3			
AIC	1475.0			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

2. Model B6

Table V-20: Coefficients and associated statistics for model B6

Covariates	*Model B6*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Common networks				
Policies of international partners	0.114 [-0.00309,0.232]	0.056	-0.00807 [-0.0170,0.000901]	0.078
Ideology-weighted EU candidate effect				
Policies of EU members	0.0149 [0.00571,0.0241]	0.001		
Veto players	-0.0413 [-0.0937,0.0110]	0.122	0.00361 [-0.0000640,0.00728]	0.054
Shared Responsibility	1.509 [0.465,2.554]	0.005	-0.175 [-0.272,-0.0771]	0.000
Tertiary enrolment	0.00606 [-0.0135,0.0256]	0.544		
Public higher education expenditure	0.173 [0.0917,0.255]	0.000	-0.0125 [-0.0184,-0.00670]	0.000
Recognition of private universities	0.634 [0.390,0.878]	0.000		
Pilot projects	0.676 [-0.416,1.768]	0.225		
Risk sequence	-0.225 [-0.420,-0.0295]	0.024		
Observations	3878			
Number of Failures	286			
Time at Risk	3878			
Wald $\chi 2$ (k)	65.74 (13)			
Log pseudolikelihood	-739.7			
BIC	1586.8			
AIC	1505.4			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

3. Model C4

Table V-21: Coefficients and associated statistics for model C4

Covariates	*Model C4*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Competitive interdependencies				
Policies of competitors	0.156 [0.0420,0.270]	0.007	-0.0127 [-0.0208,-0.00451]	0.002
Cooperative interdependencies				
Brain drain effect	-0.00893 [-0.0164,-0.00146]	0.019		
Brain drain effect × international openness of higher education system	0.00140 [0.000552,0.00224]	0.001		
International openness of higher education system	-0.0919 [-0.159,-0.0244]	0.008		
Veto players	-0.0374 [-0.0847,0.00986]	0.121	0.00455 [0.00106,0.00805]	0.011
Shared Responsibility	0.613 [-0.253,1.478]	0.165	-0.115 [-0.198,-0.0313]	0.007
Tertiary enrolment	-0.00125 [-0.0234,0.0209]	0.912		
Public higher education expenditure	0.0127 [-0.0269,0.0523]	0.529		
Recognition of private universities	-0.486 [-1.161,0.190]	0.159	0.0795 [0.0234,0.136]	0.005
Pilot projects	0.544 [-0.513,1.600]	0.313		
Risk sequence	-0.283 [-0.488,-0.0776]	0.007		
Observations	3878			
Number of Failures	286			
Time at Risk	3878			
Wald $\chi 2$ (k)	50.18 (15)			
Log pseudolikelihood	-733.9			
BIC	1591.8			
AIC	1497.9			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

4. Model D5

Table V-22: Coefficients and associated statistics for model D5

Covariates	*Model D5*			
	Main		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*
Country experience on				
Student growth	-0.116 [-0.210,-0.0226]	0.015	0.0114 [0.00313,0.0197]	0.007
Partisan politics				
Government preferences	0.134 [0.0819,0.186]	0.000		
Voter preferences	0.0298 [0.00830,0.0513]	0.007		
Voter preferences × political uncertainty	-0.00200 [-0.00342,-0.000592]	0.005		
Political uncertainty				
Electoral accountability	0.159 [0.0856,0.233]	0.000		
Historical legacy	-1.049 [-1.576,-0.522]	0.000		
Veto players	0.0206 [-0.00294,0.0442]	0.086		
Shared Responsibility	-0.0803 [-0.527,0.367]	0.725		
Tertiary education enrolment	0.00196 [-0.0248,0.0287]	0.886		
Public higher education expenditure	0.0286 [-0.00974,0.0670]	0.144		
Recognition of private universities	-0.156 [-0.610,0.298]	0.501		
Pilot projects	0.494 [-0.435,1.423]	0.297		
Risk sequence	-0.263 [-0.459,-0.0669]	0.009		
International norm	0.452 [-0.443,1.348]	0.322		
International interlinkages	0.0508 [0.0262,0.0755]	0.000	-0.00283 [-0.00465,-0.00102]	0.002
Observations	3654			
Number of Failures	284			
Time at Risk	3654			
Wald $\chi 2$ (k)	117.6 (17)			
Log pseudolikelihood	-713.4			
BIC	1566.3			
AIC	1460.8			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

5. Model E1/E2

Table V-23: Coefficients and associated statistics for model E1/E2

Covariates	*Model E1*				*Model E2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Comparative Country performance								
On completion ratios	-0.0264 [-0.0605,0.00771]	0.129			-0.0193 [-0.0528,0.0143]	0.260		
Policy experience								
On Student growth	0.672 [0.317,1.026]	0.000			0.660 [0.309,1.011]	0.000		
Policy experience of neighbours								
On budget cuts	-0.111 [-0.235,0.0129]	0.079	0.0118 [0.00312,0.0205]	0.008	-0.105 [-0.227,0.0157]	0.088	0.0111 [0.00261,0.0195]	0.010
Historical peers' comparative performance on								
Public expenditure	-0.126 [-0.227,-0.0256]	0.014	0.0123 [0.00354,0.0211]	0.006	-0.122 [-0.220,-0.0240]	0.015	0.0125 [0.00408,0.0209]	0.004
Common networks								
Policies of international partners	0.191 [0.0638,0.317]	0.003	-0.0133 [-0.0231,-0.00354]	0.008	-	-	-	-
Ideology-weighted EU candidate effect								
Policies of EU members	0.0165 [0.00530,0.0276]	0.004			0.0163 [0.00490,0.0276]	0.005		
Competitive interdependencies								
Policies of competitors	-	-	-	-	0.183	0.002	-0.0134	0.001

Covariates	*Model E1*				*Model E2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
					[0.0674,0.300]		[-0.0215,-0.00527]	
Cooperative interdependencies								
Brain drain effect	-0.00326 [-0.0110,0.00445]	0.407			-0.00193 [-0.00949,0.00563]	0.616		
Brain drain effect × international openness of higher education system	0.000768 [0.000150,0.00139]	0.015			0.000614 [0.0000112,0.00122]	0.046		
International openness of higher education system	-0.0628 [-0.106,-0.0197]	0.004			-0.0583 [-0.0995,-0.0171]	0.006		
Country experience on								
Student growth	-0.169 [-0.274,-0.0643]	0.002	0.0129 [0.00408,0.0218]	0.004	-0.156 [-0.259,-0.0529]	0.003	0.0119 [0.00323,0.0206]	0.007
Partisan politics								
Government preferences	0.140 [0.0739,0.206]	0.000			0.134 [0.0703,0.198]	0.000		
Voter preferences	0.0318 [0.00760,0.0560]	0.010			0.0322 [0.00759,0.0567]	0.010		
Voter preferences × political uncertainty	-0.00163 [-0.00325,-0.0000143]	0.048			-0.00172 [-0.00337,-0.0000758]	0.040		
Political uncertainty								
Electoral accountability	0.139 [0.0556,0.222]	0.001			0.144 [0.0593,0.228]	0.001		
Historical legacy	-1.137 [-1.637,-0.637]	0.000			-1.094 [-1.588,-0.601]	0.000		
Veto players	0.0218 [-0.000254,0.0439]	0.053			0.0205 [-0.00209,0.0430]	0.075		
Shared Responsibility	-0.265 [-0.767,0.236]	0.299			-0.282 [-0.779,0.215]	0.266		

Covariates	*Model E1*				*Model E2*			
	Main		*TVC*		*Main*		*TVC*	
	Coef.	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*	*Coef.*	*P>|z|*
Tertiary enrolment	-0.00242 [-0.0290,0.0242]	0.859			-0.00503 [-0.0320,0.0219]	0.715		
Public higher education expenditure	0.0393 [-0.0130,0.0915]	0.141			0.0367 [-0.0171,0.0906]	0.181		
Recognition of private universities	0.380 [-0.0591,0.819]	0.090			0.331 [-0.123,0.784]	0.153		
Pilot projects	0.144 [-0.744,1.032]	0.750			0.223 [-0.684,1.129]	0.630		
Risk sequence	-0.295 [-0.504,-0.0858]	0.006			-0.288 [-0.490,-0.0873]	0.005		
Observations	3654				3654			
Number of Failures	284				284			
Time at Risk	3654				3654			
Wald χ2 (k)	203.3 (26)				214.2 (26)			
Log pseudolikelihood	-694.0				-694.3			
BIC	1601.3				1601.9			
AIC	1440.0				1440.6			

Note: Estimates are coefficients from stratified conditional gap-time Cox proportional hazard models on repeated events (95% confidence interval in parentheses). Policy items are used for stratification. The models are based on Efron method for ties and robust standard errors. Standard errors are calculated by clustering on country-policies. Covariates violating the proportional hazard assumption have been included as time-varying coefficient (TVC) multiplied with current analysis time (cf. Annex VI).

VI. Diagnostics

This section provides several diagnostics to assess the accuracy of the Cox regressions estimated in the previous study (cf. Cleves et al. 2010). The Plotting the martingale residuals against the (linear) predictors can be used to evaluate the functional form of the covariates following subsection provides the results of the testing of the proportional hazard assumption according to Therneau and Grambsch that has been implemented in Stata (cf. 2000). To check for multicollinearity between the covariates the Variance Inflation Factor (VIF) and the Tolerance are listed on the following subsections too.

In addition, the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are provided to compare and rank the overall fit of the various explanatory models (cf. Allison 2010b; Box-Steffensmeier and Jones 2004).

Las but not least, graphs for the underlying baseline hazard (and the corresponding survivor and cumulative hazard function) are provided. The graphs showing the function across all polity items can be found in chapter three. The graphs describe the rates of event occurrence over time and give a sense on the censoring of data (cf. Allison 2010a; Box-Steffensmeier and Sokhey 2010).

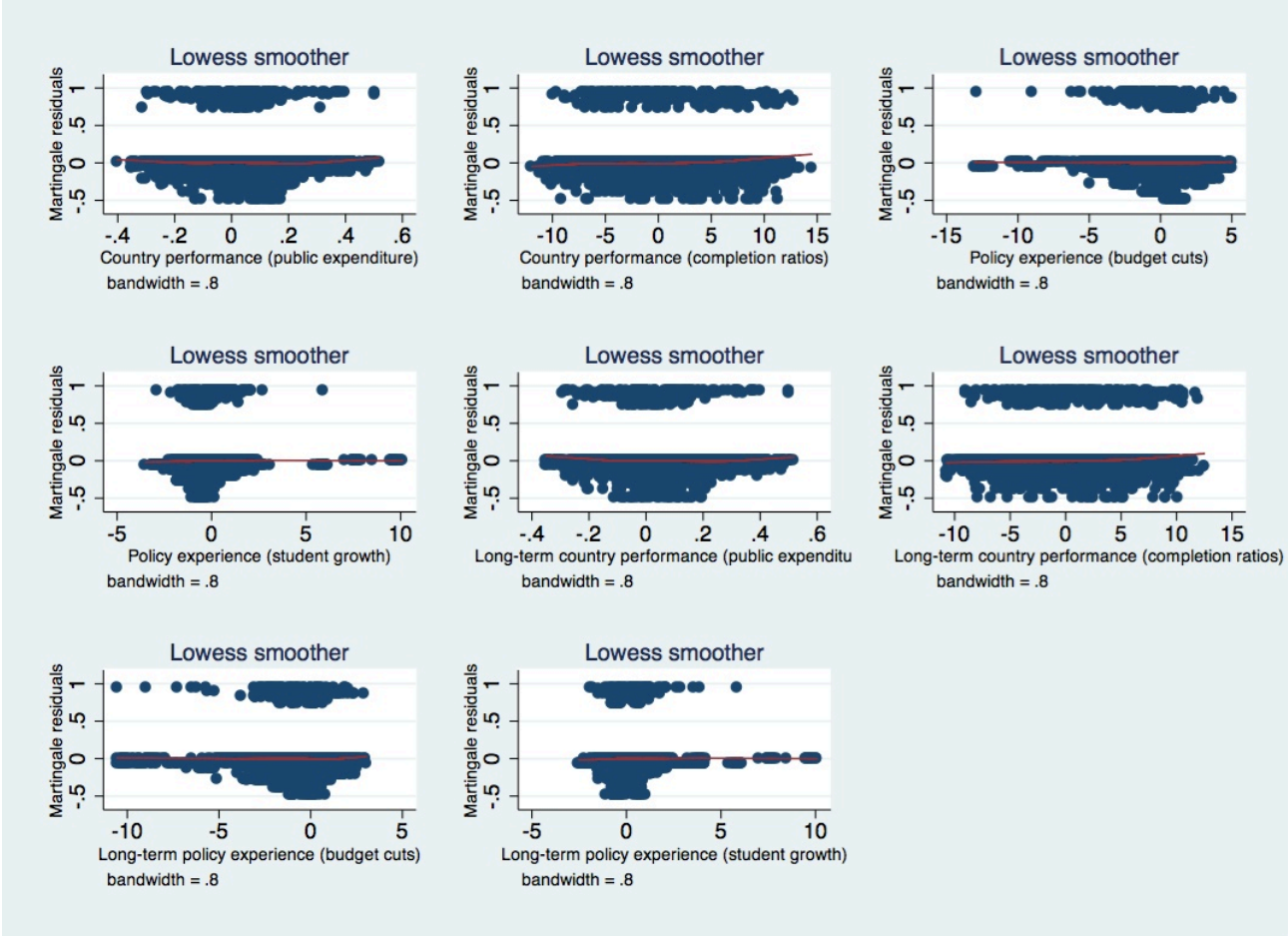
A. Functional Fit of Covariates: Martingale residuals

Martingale residuals can be used to assess the functional form of the covariates in the estimated Cox models. The smoothed residuals are then plotted against each of the covariates used in the various Cox regression models. The plot graphs for the control variables are provided separately.

The martingale residuals have an expected value of cero, that means any systematic deviation from the cero reference line indicates a non-linear and therefore incorrect functional form that requires adjustments of the covariates (cf. Cleves et al. 2010: 215). The pictures support the assumption that the covariates used do not have to be transformed.

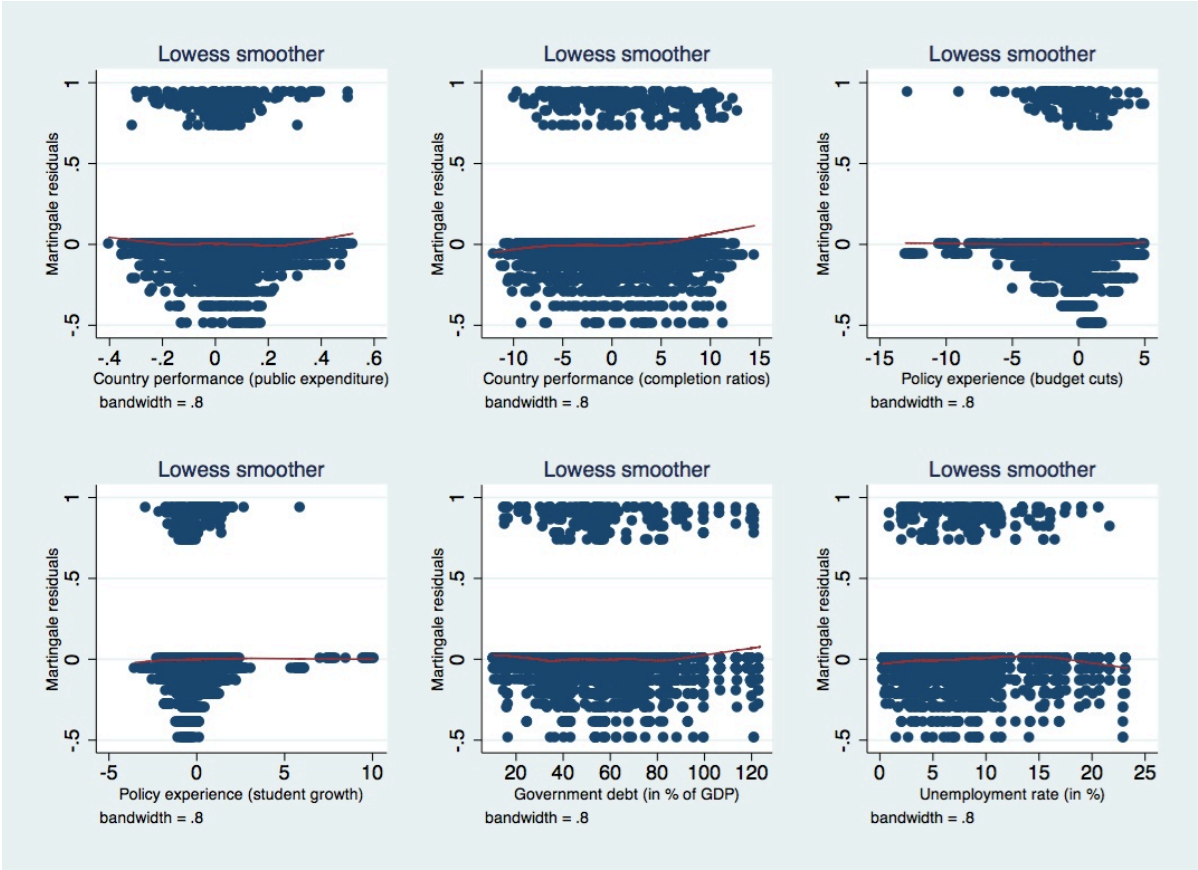
1. Model A1/A2

Figure VI-1: Martingale residuals versus linear predictors (Model A1/A2)



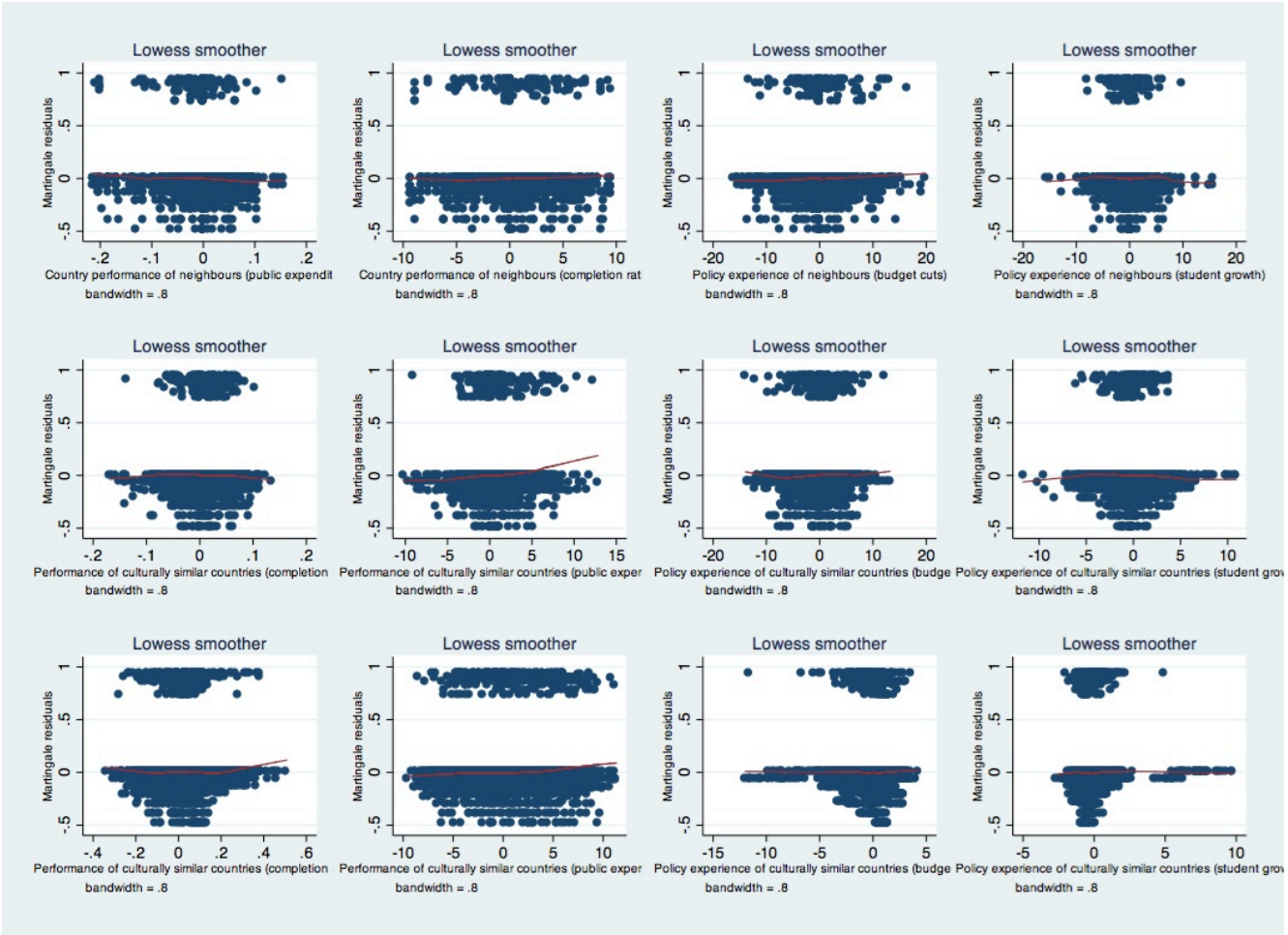
2. Model A3a-A3d

Figure VI-2: Martingale residuals versus linear predictors (Model A3a/A3b/A3c/A3d)



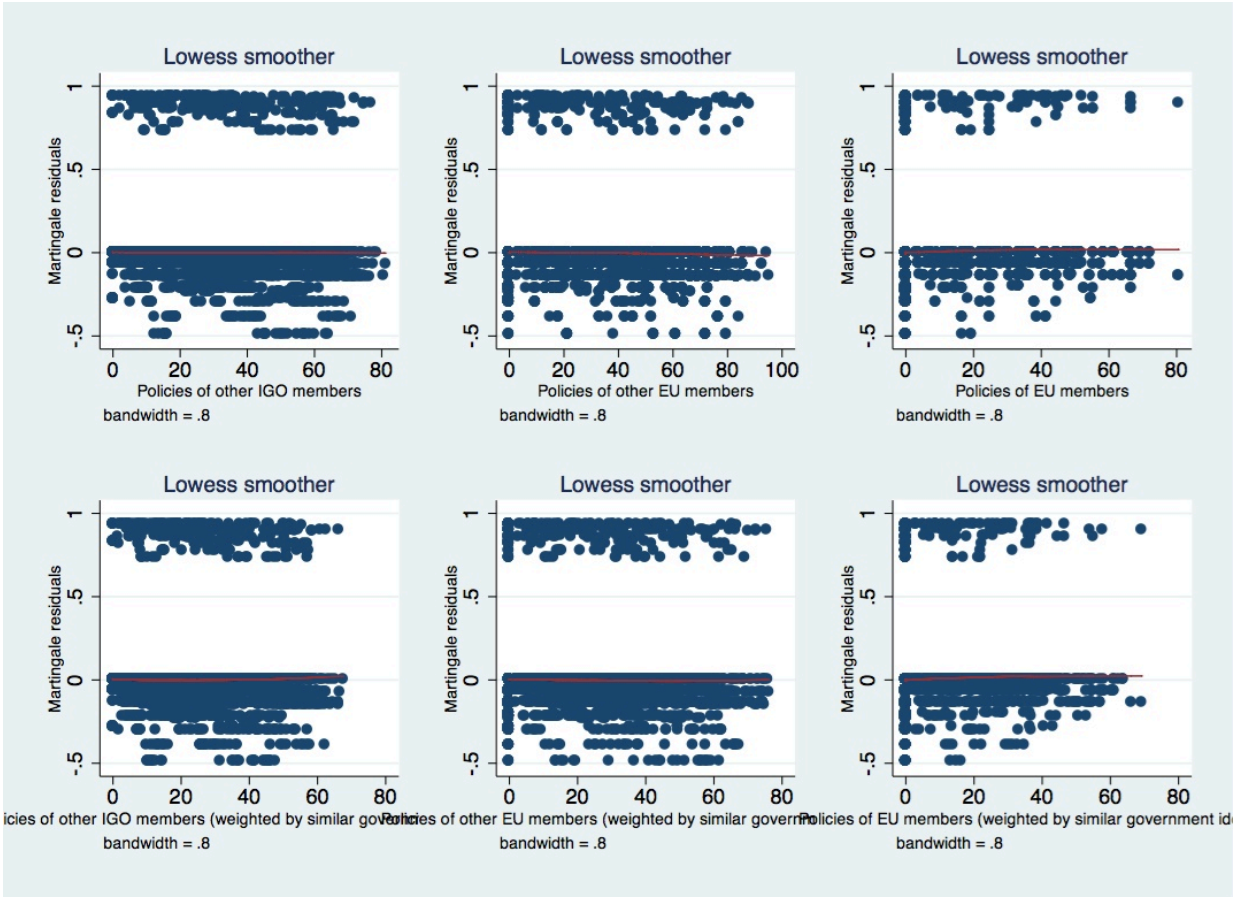
3. Model A4a-A4c

Figure VI-3: Martingale residuals versus linear predictors (Model A4a/A4b/A4c)



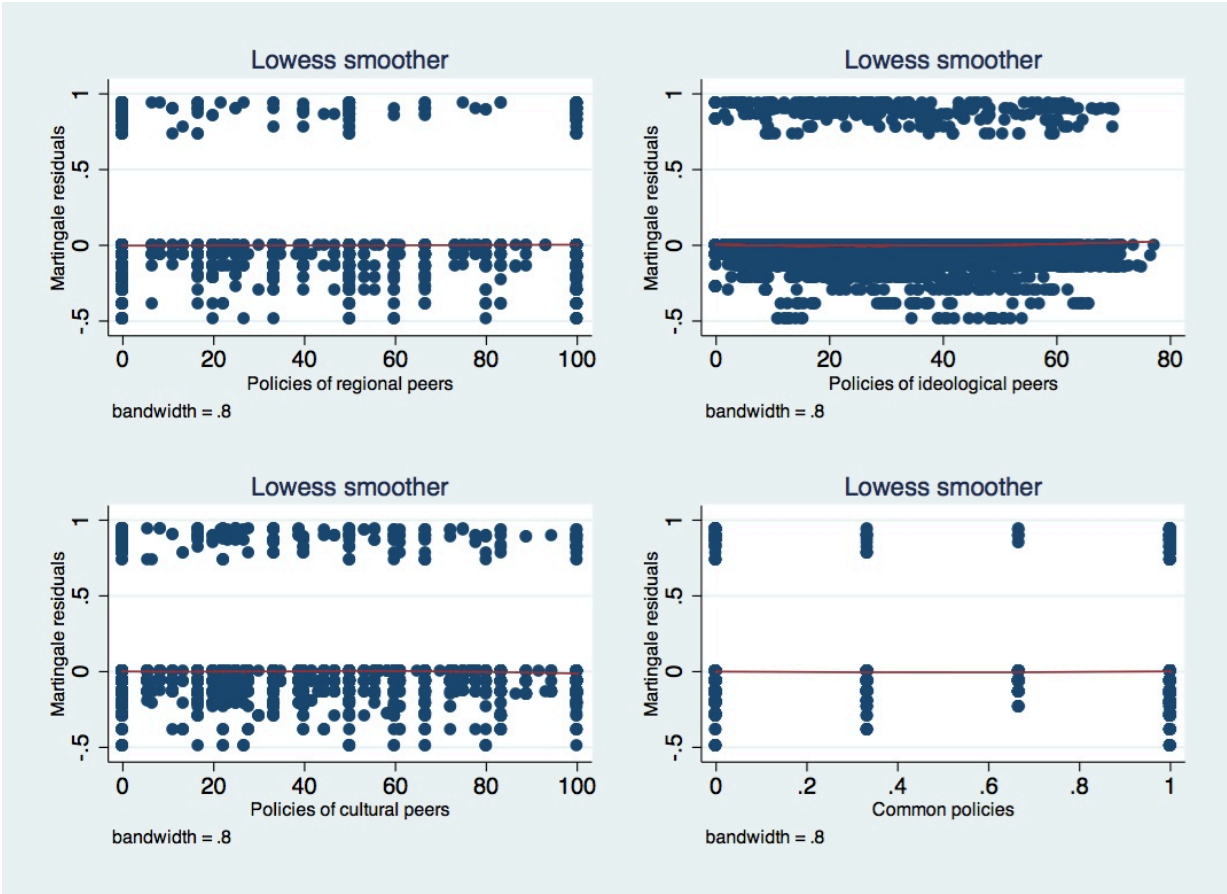
4. Model B1/B2

Figure VI-4: Martingale residuals versus linear predictors (Model B1/B2)



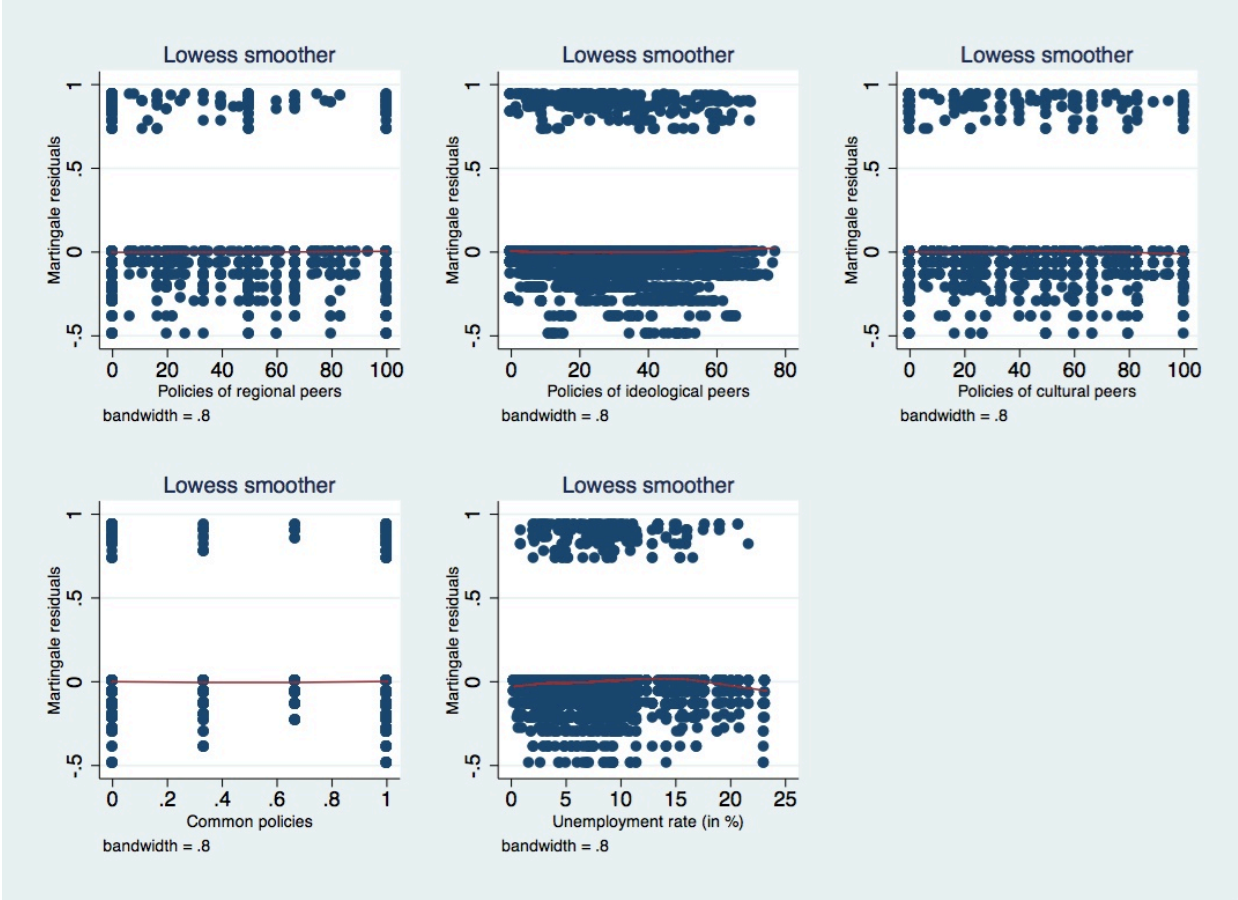
5. Model B3

Figure VI-5: Martingale residuals versus linear predictors (Model B3)



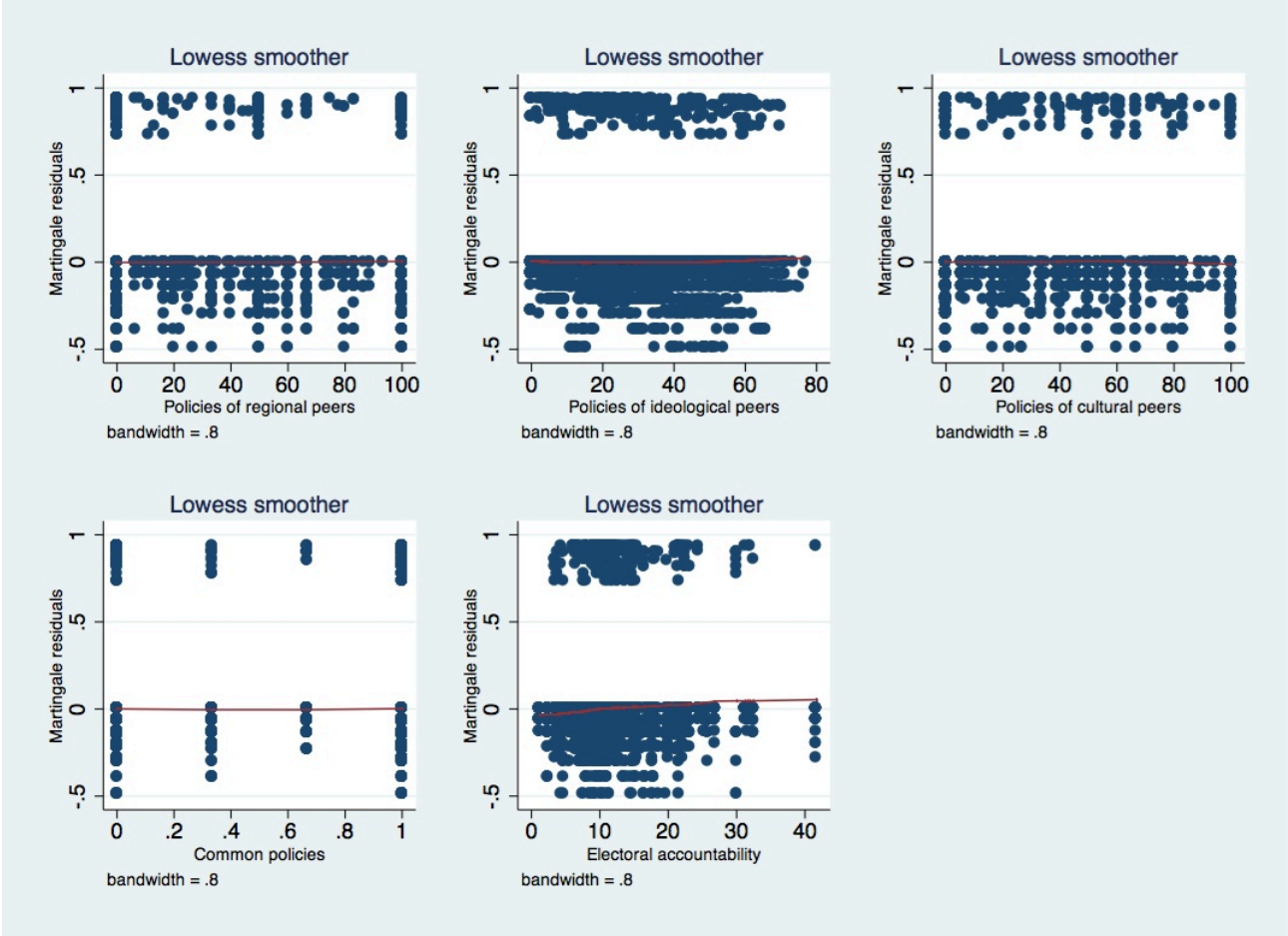
6. Model B4a-B4d

Figure VI-6: Martingale residuals versus linear predictors (Model B4a/4b/4c/B4d)



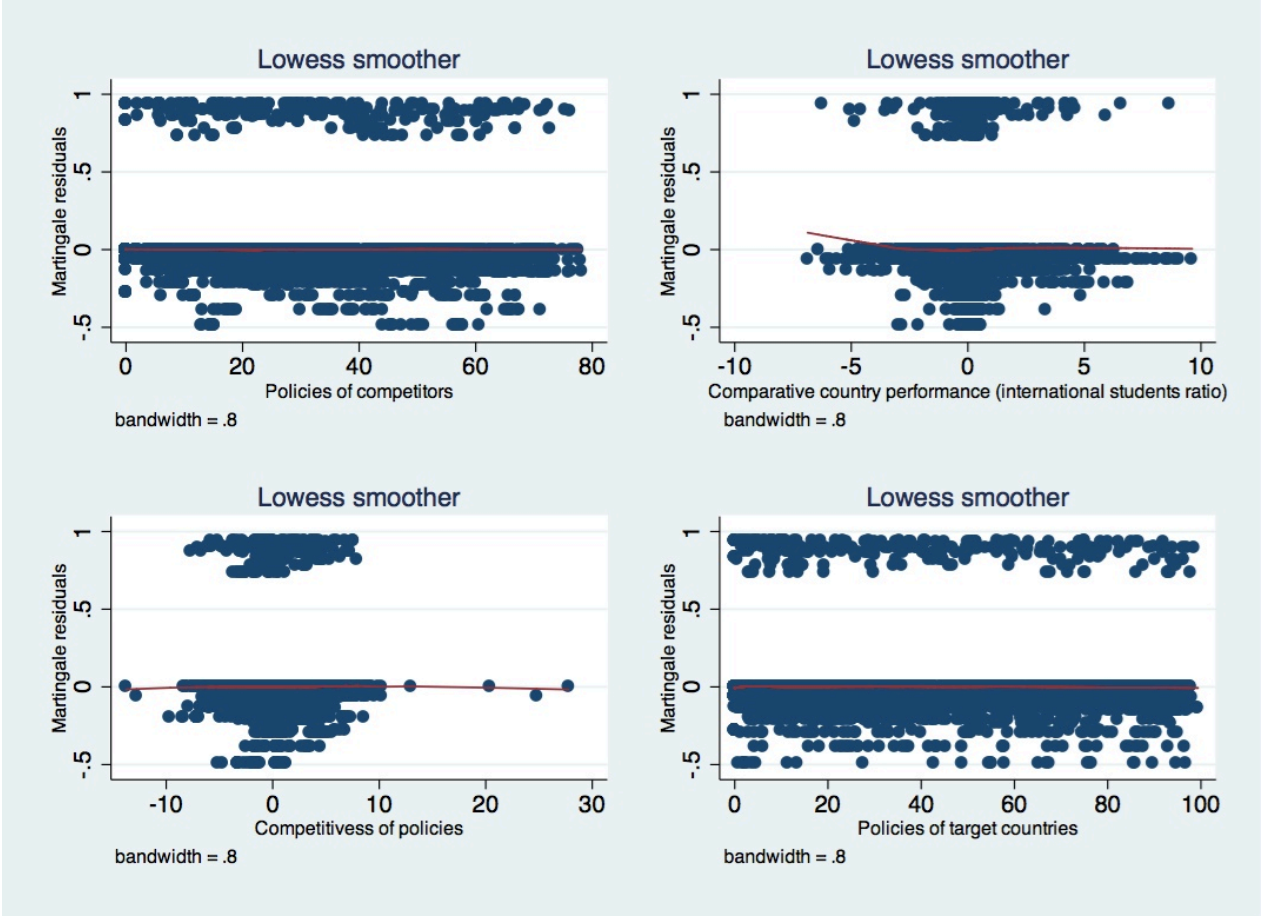
7. Model B5a-B5d

Figure VI-7: Martingale residuals versus linear predictors (Model B5a/5b/5c/B5d)



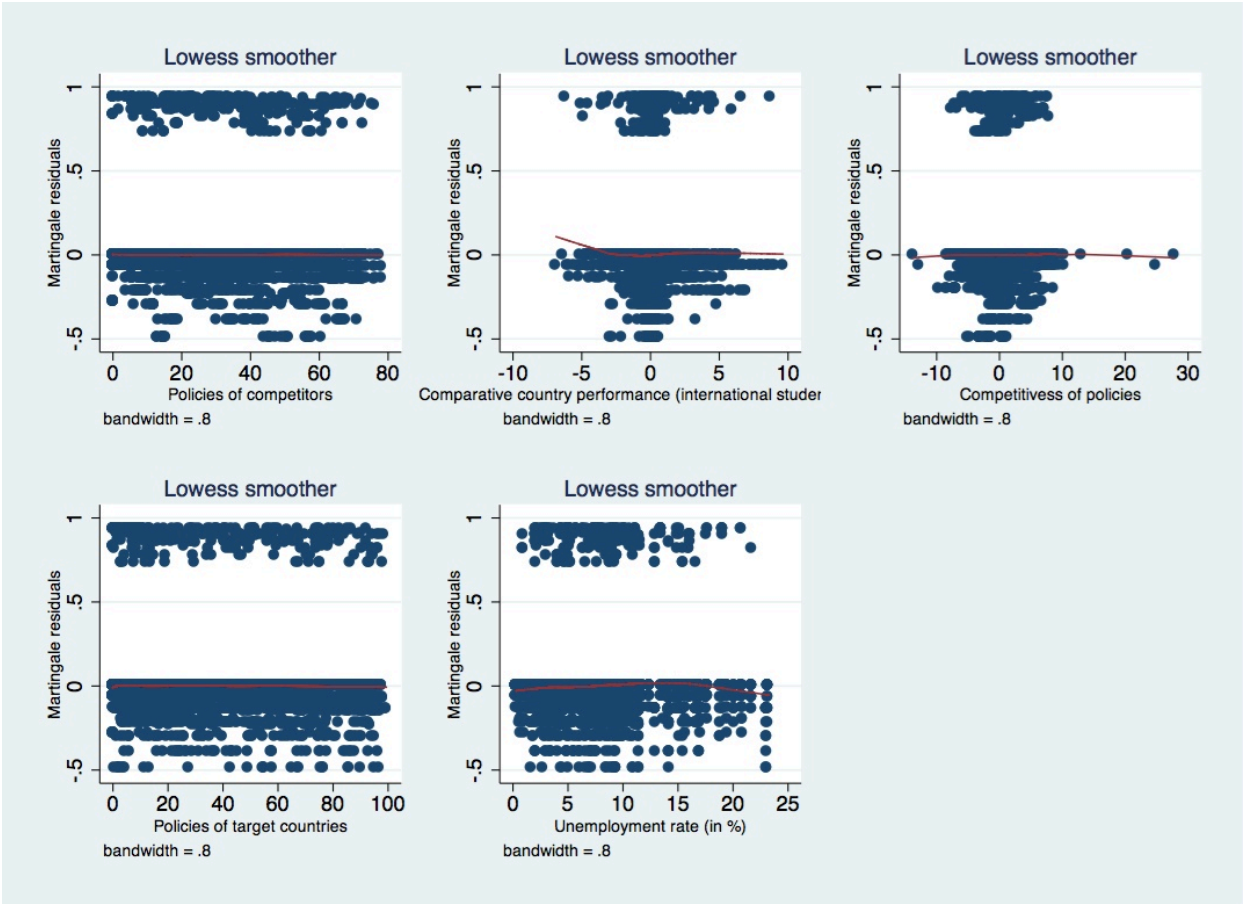
8. Model C1

Figure VI-8: Martingale residuals versus linear predictors (Model C1)



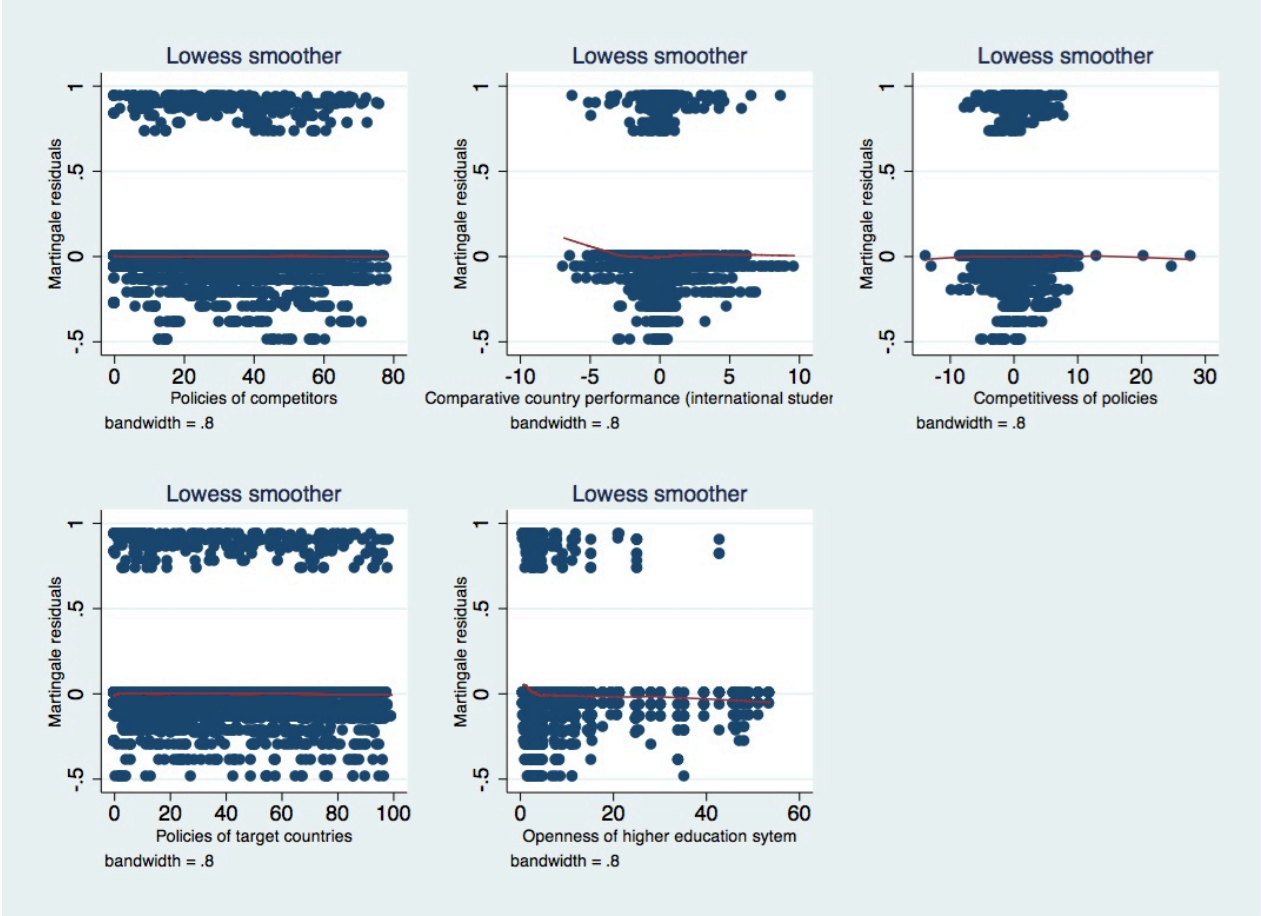
9. Model C2a-C2d

Figure VI-9: Martingale residuals versus linear predictors (Model C2a/C2b/C2c/C2d)



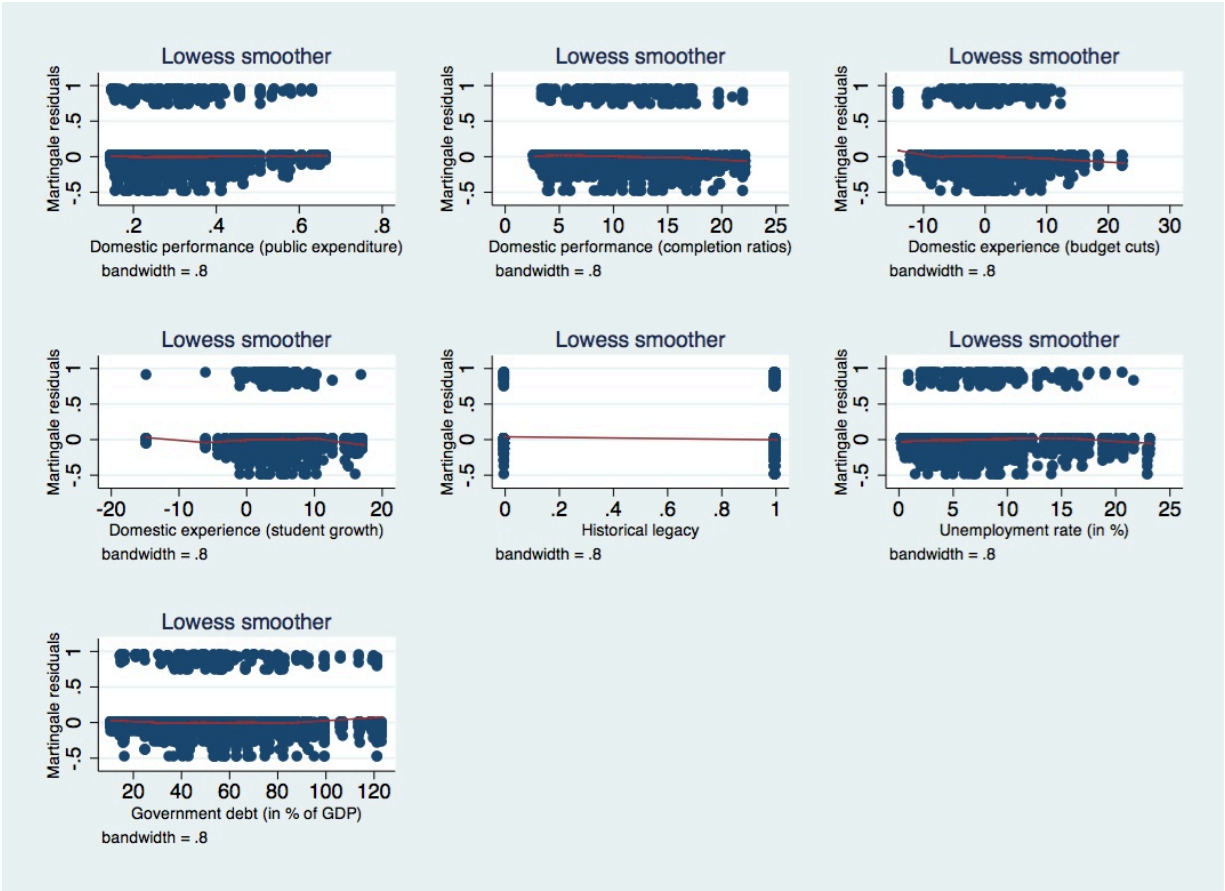
10. Model C3a-C3c

Figure VI-10: Martingale Residuals Versus Linear Predictors (Model C3a/C3b/C3c)



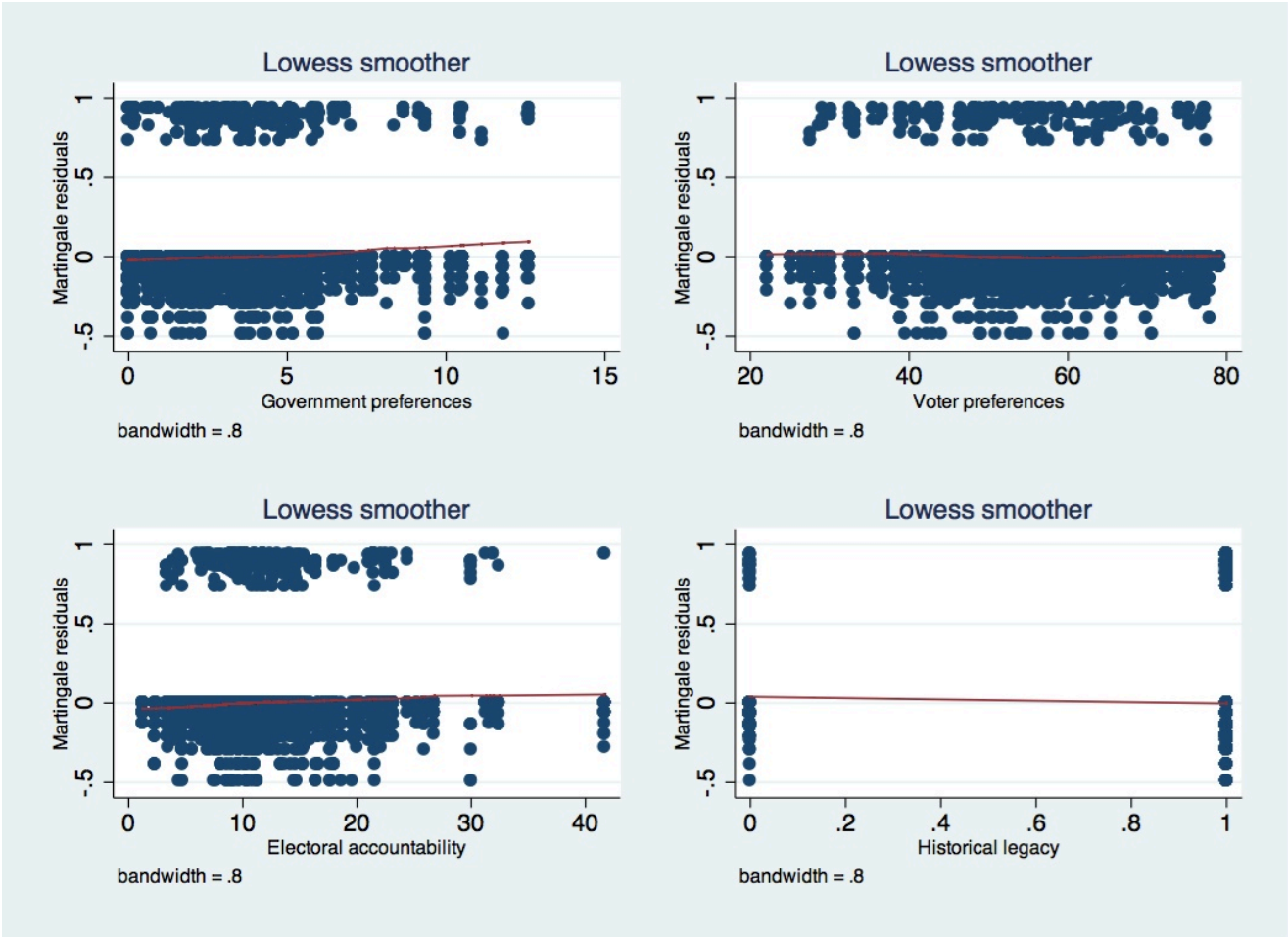
11. Model D1-D2d

Figure VI-11: Martingale residuals versus linear predictors (Model D1/D2a/D2b/D2c/D2d)



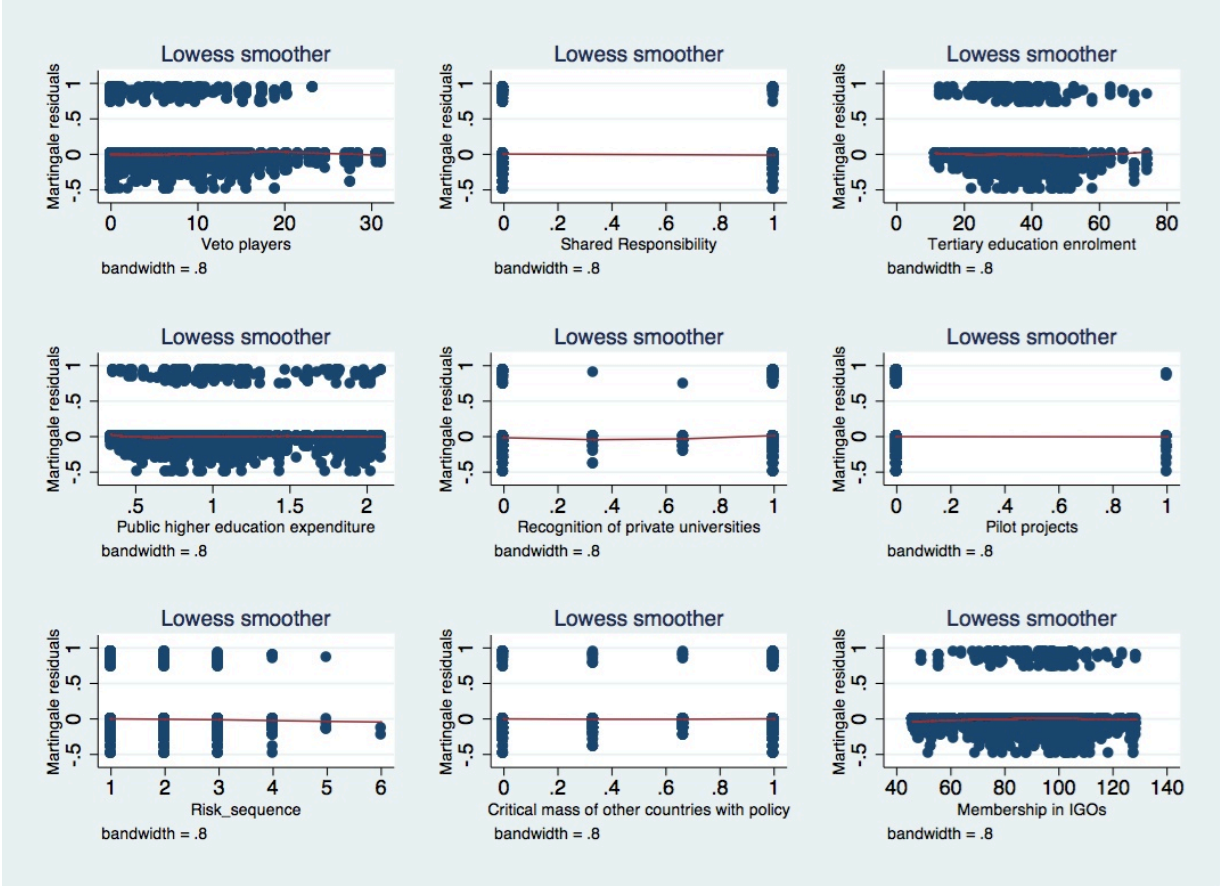
12. Model D3-D4b

Figure VI-12: Martingale residuals versus linear predictors (Model D3/D4a/D4b)



13. Control variables

Figure VI-13: Martingale residuals versus linear predictors (control variables)



B. Proportional Hazard Assumption: Schoenfeld Residuals

Cox regressions are based on the so-called proportional hazards (PH) assumption, that means the hazards for a given covariate are proportional and constant over time. The impact of the covariates on the hazard rate varies with time in case of violating this assumption. In the case of evidence for non-proportionality the offending covariate can remain in the model, but with the addition of an interaction effect between covariate and some time function of time.

This section provides the test results on the proportional-hazards assumption according to Therneau and Grambsch (2000) as implemented in Stata 12. The estimated (Schoenfeld) residuals are used to test each covariate against the null hypothesis that the proportional hazard assumptions holds.[28] In case of statistical significance, the PH assumption is violated. That means the significance level should be above 10%. In case of statistical significance, a corresponding interaction term has been included (TVC).[29]

[28] There is an ongoing debate if one should focus on the global test or on the individual covariates (cf. Box-Steffensmeier and Jones 2004; Box-Steffensmeier, Reiter and Zorn 2003: 36). I stick to evaluating individual covariates as evaluating the PH assumption again after correcting individual covariates (by adding time-varying covariates TVC) is not possible.

[29] Note, if the TVC turn out to be statistically insignificant in the non-proportional Cox regression then it has been dropped from the analysis in the previous study as that particular covariate can be considered as not non-proportional (cf. Allison 2010b).

1. Model A1/A2

Table VI-1: Test of proportional-hazards assumption (Model A1/A2)

Covariates	*Model A1*				*Model A2*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Comparative country performance on								
Public expenditure	-0.12187	4.51	1	0.0338				
Completion ratios	0.02825	0.19	1	0.6601				
Policy experience on								
Budget cuts	-0.01659	0.07	1	0.792				
Student growth	0.01291	0.03	1	0.8623				
Long-term comparative country performance on								
Public expenditure					-0.13999	5.92	1	0.015
Completion ratios					0.03644	0.31	1	0.5775
Long-term policy experience on								
Budget cuts					-0.03584	0.34	1	0.5605
Student growth					0.02587	0.14	1	0.7039
Veto players	0.17814	9.43	1	0.0021	0.17658	9.19	1	0.0024
Shared Responsibility	-0.19459	14.51	1	0.0001	-0.1903	14.2	1	0.0002
Tertiary enrolment	0.05895	0.91	1	0.3412	0.04379	0.47	1	0.4921
Public higher education expenditure	-0.15277	6.32	1	0.0119	-0.15314	5.76	1	0.0164
Recognition of private universities	0.05496	0.96	1	0.3284	0.06391	1.31	1	0.2517
Pilot projects	0.1372	5.18	1	0.0229	0.14031	5.54	1	0.0185
Risk sequence	0.0221	0.15	1	0.6951	0.01448	0.07	1	0.7954
Global test		29.7	11	0.0018		30.84	11	0.0012
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.								

2. Model A3a-A3d

Table VI-2: Test of proportional-hazards assumption (Model A3a/A3b/A3c/A3d)

Covariates	*Model A3a*				*Model A3b*				*Model A3c*				*Model A3d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Comparative country performance on																
Public expenditure	-0.14911	12.6	1	0.0004	-0.08177	1.7	1	0.1924	-0.10276	3.21	1	0.0732	-0.10731	3.37	1	0.0663
Public expenditure × fiscal constraints	0.14255	11.39	1	0.0007												
Completion ratios	-0.02478	0.21	1	0.6479	0.00124	0	1	0.9806	0.03137	0.26	1	0.6127	0.03737	0.39	1	0.534
Completion ratios × unemployment					0.01415	0.07	1	0.7892								
Policy experience on																
Budget cuts	-0.03343	0.29	1	0.5909	-0.01462	0.05	1	0.8188	0.01202	0.04	1	0.8505	-0.01577	0.06	1	0.8003
Budget cuts × fiscal constraints									-0.07449	1.12	1	0.2907				
Student growth	-0.01812	0.07	1	0.7973	-0.04316	0.37	1	0.5407	0.00856	0.01	1	0.907	0.01107	0.03	1	0.8679
Student growth × unemployment													-0.00305	0	1	0.9597
Country-specific problem pressure																
Fiscal constraints	-0.02339	0.26	1	0.6077					0.09408	2.9	1	0.0888				
Unemployment					-0.03703	0.26	1	0.6109					0.02623	0.15	1	0.6941
Veto players	0.16828	8.72	1	0.0032	0.05864	0.83	1	0.3626	0.1524	6.88	1	0.0087	0.1441	6.15	1	0.0132

Covariates	*Model A3a*				*Model A3b*				*Model A3c*				*Model A3d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Shared Responsibility	-0.172	9.82	1	0.0017	-0.17459	8.39	1	0.0038	-0.17492	11.12	1	0.0009	-0.19711	9.63	1	0.0019
Tertiary enrolment	0.01124	0.03	1	0.8539	0.00969	0.02	1	0.887	0.06215	1.07	1	0.301	0.03759	0.33	1	0.5676
Public higher education expenditure	-0.0978	2.39	1	0.1224	-0.10713	2.77	1	0.096	-0.12789	4.31	1	0.0378	-0.14888	5.53	1	0.0187
Recognition of private universities	0.0578	1.16	1	0.2813	0.01078	0.04	1	0.8433	0.04749	0.69	1	0.4056	0.03605	0.36	1	0.5472
Pilot projects	0.13936	5.09	1	0.0241	0.13227	4.37	1	0.0365	0.14868	6.11	1	0.0135	0.11664	3.38	1	0.0659
Risk sequence	0.03859	0.48	1	0.4865	0.02273	0.18	1	0.6754	0.03254	0.34	1	0.5578	0.037	0.45	1	0.5018
Global test		37.86	13	0.0003		21.08	13	0.0714		29.33	13	0.0059		25.12	13	0.0223

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

3. Model A4a-A4c

Table VI-3: Test of proportional-hazards assumption (Model A4a/A4b/A4c)

Covariates	*Model A4a*				*Model A4b*				*Model A4c*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Neighbours' comparative performance on												
Public expenditure	0.13471	4.69	1	0.0303								
Completion ratios	-0.06322	0.71	1	0.4011								
Policy experience of neighbours on												
Budget cuts	0.23043	15.55	1	0.0001								
Student growth	-0.04531	0.48	1	0.4871								
Historical peers' comparative performance on												
Public expenditure					0.22366	18.57	1	0				
Completion ratios					-0.00309	0	1	0.9637				
Historically-weighted policy experience on												
Budget cuts					-0.04411	0.75	1	0.3861				
Student growth					0.03375	0.3	1	0.5821				
Ideology-weighted comparative country performance on												
Public expenditure									-0.10633	4.42	1	0.0356

Covariates	*Model A4a*				*Model A4b*				*Model A4c*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Completion ratios									0.03703	0.33	1	0.5654
Ideology-weighted policy experience on												
Budget cuts									-0.00612	0.01	1	0.9165
Student growth									-0.03448	0.38	1	0.5377
Veto players	0.20068	10.68	1	0.0011	0.10916	3.27	1	0.0705	0.15533	7.34	1	0.0067
Shared Responsibility	-0.24258	27.79	1	0	-0.25365	35.87	1	0	-0.18496	12.55	1	0.0004
Tertiary enrolment	-0.13359	5.07	1	0.0243	-0.13529	5.82	1	0.0159	0.06586	1.25	1	0.2632
Public higher education expenditure	-0.04884	0.78	1	0.3763	0.03942	0.6	1	0.4372	-0.15729	7.2	1	0.0073
Recognition of private universities	0.12705	6.27	1	0.0123	0.17171	14.44	1	0.0001	0.05426	0.92	1	0.337
Pilot projects	0.14568	6.55	1	0.0105	0.17911	9.31	1	0.0023	0.12655	4.24	1	0.0395
Risk sequence	-0.01823	0.13	1	0.7196	0.05326	0.93	1	0.3345	0.01104	0.04	1	0.8504
Global test		55.66	11	0		49.39	11	0		26.95	11	0.0047

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

4. Model B1/B2

Table VI-4: Test of proportional-hazards assumption (Model B1/B2)

Covariates	*Model B1*				*Model B2*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Common networks								
Policies of international partners	-0.04285	0.53	1	0.4681				
Policies of EU partners	-0.13169	3.96	1	0.0466				
EU candidate effect								
Policies of EU members	-0.09234	2.29	1	0.13				
Ideology-weighted policies of								
International partners					0.01531	0.06	1	0.8112
EU partners					-0.14476	4.18	1	0.0408
EU members					-0.11458	3.55	1	0.0596
Veto players	0.17723	9.25	1	0.0023	0.18214	10.25	1	0.0014
Shared Responsibility	-0.21316	18.86	1	0	-0.20958	18.57	1	0
Tertiary enrolment	0.008	0.01	1	0.9036	-0.00441	0	1	0.9476
Public higher education expenditure	-0.13192	7.59	1	0.0059	-0.10435	4.66	1	0.0309
Recognition of private universities	0.11334	4.27	1	0.0388	0.13517	5.58	1	0.0182
Pilot projects	0.1363	5.72	1	0.0167	0.139	5.86	1	0.0155
Risk sequence	0.00978	0.03	1	0.8597	0.02807	0.23	1	0.6328
Global test		36.93	10	0.0001		35.42	10	0.0001

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

5. Model B3

Table VI-5: Test of proportional-hazards assumption (Model B3)

Covariates	*Model B3*			
	rho	chi2	df	Prob> chi2
Policies of				
Regional peers	-0.07159	1.59	1	0.2076
Ideological peers	-0.06456	1.01	1	0.3151
Cultural peers	0.14014	5.65	1	0.0175
International norms				
Policies of other countries (30%)	-0.03159	0.25	1	0.6193
Veto players	0.15523	7.48	1	0.0063
Shared Responsibility	-0.21908	21.19	1	0
Tertiary enrolment	-0.03811	0.37	1	0.5407
Public higher education expenditure	-0.10191	3.93	1	0.0473
Recognition of private universities	0.1143	5	1	0.0253
Pilot projects	0.13095	5.15	1	0.0233
Risk sequence	0.01907	0.11	1	0.7436
Global test		33.53	11	0.0004

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

6. Model B4a-B4d

Table VI-6: Test of proportional-hazards assumption (Model B4a/ B4b/ B4c/ B4d)

Covariates	*Model B4a*				*Model B4b*				*Model B4c*				*Model B4d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Policies of																
Regional peers	-0.00512	0.01	1	0.9278	-0.07569	1.75	1	0.1861	-0.05315	0.94	1	0.3333	-0.06646	1.37	1	0.2419
Regional peers × unemployment	-0.03009	0.35	1	0.5568												
Ideological peers	-0.04908	0.61	1	0.4347	-0.08412	1.83	1	0.1756	-0.06608	1.12	1	0.2897	-0.0721	1.28	1	0.2583
Ideological peers × unemployment					0.06154	0.9	1	0.343								
Cultural peers	0.10798	4.4	1	0.0359	0.12872	4.84	1	0.0278	0.07097	1.54	1	0.215	0.12611	4.73	1	0.0296
Cultural peers × unemployment									-0.01937	0.1	1	0.7513				
International norms																
Policies of other countries (30%)	-0.03528	0.31	1	0.5793	-0.04604	0.51	1	0.4741	-0.04889	0.56	1	0.4555	-0.07366	1.45	1	0.2293
Policies of other countries (30%) × unemployment													0.06444	1.22	1	0.2694
Domestic problem pressure																
Unemployment	0.0356	0.31	1	0.5774	-0.03983	0.3	1	0.583	0.04396	0.36	1	0.5474	-0.04902	0.55	1	0.4597
Veto players	0.10941	3.34	1	0.0678	0.14255	6.33	1	0.0119	0.13053	5.24	1	0.0221	0.13712	5.99	1	0.0144
Shared Responsibility	-0.21052	12.62	1	0.0004	-0.22422	14	1	0.0002	-0.22506	12.76	1	0.0004	-0.22291	14.24	1	0.0002

Covariates	*Model B4a*				*Model B4b*				*Model B4c*				*Model B4d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Tertiary enrolment	-0.03314	0.31	1	0.5782	-0.05039	0.63	1	0.4291	-0.04429	0.48	1	0.4886	-0.04513	0.48	1	0.487
Public higher education expenditure	-0.1071	4.04	1	0.0444	-0.10768	4.04	1	0.0445	-0.10977	4.2	1	0.0404	-0.11089	4.28	1	0.0386
Recognition of private universities	0.09845	2.99	1	0.0836	0.11663	4.29	1	0.0384	0.10918	3.63	1	0.0568	0.11292	3.98	1	0.0461
Pilot projects	0.10853	3	1	0.0834	0.09799	2.23	1	0.1357	0.10053	2.28	1	0.1312	0.10177	2.45	1	0.1174
Risk sequence	0.0368	0.41	1	0.5202	0.03334	0.33	1	0.5664	0.03011	0.26	1	0.609	0.02763	0.22	1	0.6375
Global test		25.15	13	0.0221		29.9	13	0.0049		27.03	13	0.0123		30.22	13	0.0044
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.																

7. Model B5a-B5d

Table VI-7: Test of proportional-hazards assumption (Model B5a/ B5b/ B5c/ B5d)

Covariates	*Model B5a*				*Model B5b*				*Model B5c*				*Model B5d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Policies of																
Regional peers	-0.07822	1.49	1	0.2218	-0.02213	0.15	1	0.6992	-0.01119	0.04	1	0.8486	-0.02994	0.28	1	0.5978
Regional peers × political uncertainty	0.08525	1.46	1	0.2263												
Ideological peers	-0.05329	0.74	1	0.3903	-0.06169	1.13	1	0.2882	-0.05326	0.82	1	0.3658	-0.05763	0.89	1	0.3451
Ideological peers × political uncertainty					0.05069	0.5	1	0.4803								
Cultural peers	0.10233	2.94	1	0.0864	0.08591	2.19	1	0.1392	0.0115	0.03	1	0.8529	0.09353	2.58	1	0.1081
Cultural peers × political uncertainty									0.04672	0.55	1	0.4564				
International norms																
Policies of other countries (30%)	-0.0587	0.85	1	0.3563	-0.06029	0.9	1	0.3429	-0.05945	0.87	1	0.3517	-0.08369	1.89	1	0.169
Policies of other countries (30%)× political uncertainty													0.06745	0.89	1	0.3466
Political uncertainty																
Electoral accountability	-0.11327	3.52	1	0.0607	-0.07573	1.33	1	0.2484	-0.06935	1.49	1	0.2229	-0.06941	1.17	1	0.2786
Veto players	0.07513	1.54	1	0.2149	0.08661	2.08	1	0.1489	0.08245	1.85	1	0.1736	0.08673	2.1	1	0.1471
Shared Responsibility	-0.18212	9.73	1	0.0018	-0.17599	8.73	1	0.0031	-0.18808	9.87	1	0.0017	-0.17634	8.14	1	0.0043
Tertiary enrolment	0.00415	0	1	0.9499	0.01198	0.03	1	0.8564	0.00174	0	1	0.9783	0.0191	0.09	1	0.7706
Public higher education	-0.14017	6.62	1	0.0101	-0.13981	6.76	1	0.0093	-0.13656	6.57	1	0.0104	-0.14568	7.32	1	0.0068

Covariates	*Model B5a*				*Model B5b*				*Model B5c*				*Model B5d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
expenditure																
Recognition of private universities	0.02584	0.2	1	0.6514	0.02963	0.27	1	0.604	0.03064	0.3	1	0.5837	0.03042	0.28	1	0.597
Pilot projects	0.0961	2.08	1	0.149	0.09253	1.89	1	0.1688	0.10088	2.32	1	0.1281	0.08488	1.56	1	0.2119
Risk sequence	0.04038	0.55	1	0.4592	0.03412	0.37	1	0.5428	0.0356	0.41	1	0.5207	0.03107	0.3	1	0.5863
Global test		21.72	13	0.0598		21.07	13	0.0716		21.26	13	0.068		20.66	13	0.08
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.																

8. Model C1

Table VI-8: Test of proportional-hazards assumption (Model C1)

Covariates	*Model C1*			
	rho	chi2	df	Prob> chi2
Competitive interdependencies				
Policies of competitors	-0.20299	13.9	1	0.0002
Competitiveness of higher education system	-0.03461	0.66	1	0.4152
Competitiveness of higher education policies	0.08921	1.21	1	0.2706
Cooperative interdependencies				
Brain drain effect	0.03095	0.19	1	0.6671
Veto players	0.22057	13.33	1	0.0003
Shared Responsibility	-0.23873	22.54	1	0
Tertiary enrolment	0.00337	0	1	0.9582
Public higher education expenditure	-0.13589	5.34	1	0.0208
Recognition of private universities	0.1385	6.71	1	0.0096
Pilot projects	0.14807	6.09	1	0.0136
Risk sequence	-0.02012	0.13	1	0.7225
Global test		43.31	11	0

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

9. Model C2a-C2c

Table VI-9: Test of proportional-hazards assumption (Model C2a/C2b/C2x)

Covariates	*Model C2a*				*Model C2b*				*Model C2b*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Competitive interdependencies												
Policies of competitors	-0.23025	17.18	1	0	-0.20954	15.78	1	0.0001	-0.2064	15.31	1	0.0001
Policies of competitors × unemployment	0.08307	1.61	1	0.2045								
Competitive-ness of higher education system	-0.01621	0.15	1	0.7024	-0.08871	3.06	1	0.0802	-0.03453	0.65	1	0.4194
Competitive-ness of higher education system × unemployment					0.14514	2.97	1	0.0847				
Competitive-ness of higher education policies	0.09519	1.57	1	0.2103	0.08527	1.18	1	0.2775	0.04531	0.37	1	0.5408
Competitive-ness of higher education policies × unemployment									0.02676	0.13	1	0.7186
Country-specific problem pressure												
Unemployment	-0.0229	0.11	1	0.7459	0.01869	0.07	1	0.7927	0.04922	0.44	1	0.5082
Veto players	0.21163	13.21	1	0.0003	0.20241	11.43	1	0.0007	0.19775	10.97	1	0.0009
Shared Responsibility	-0.25543	17.91	1	0	-0.26012	21.33	1	0	-0.25152	20.39	1	0
Tertiary enrolment	-0.03489	0.27	1	0.6014	-0.01544	0.05	1	0.8211	-0.02089	0.09	1	0.7595
Public higher education expenditure	-0.13377	5.19	1	0.0227	-0.13516	5.22	1	0.0223	-0.13047	4.84	1	0.0278

Covariates	*Model C2a*				*Model C2b*				*Model C2b*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Recognition of private universities	0.13171	5.69	1	0.0171	0.1419	6.79	1	0.0092	0.13367	6.03	1	0.014
Pilot projects	0.1148	2.83	1	0.0923	0.14887	5.62	1	0.0177	0.14084	5.56	1	0.0184
Risk sequence	-0.02388	0.18	1	0.6716	-0.02605	0.22	1	0.6388	-0.03015	0.3	1	0.5854
Global test		41.7	12	0		43.06	12	0		42.6	12	0
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.												

10. Model C3a-C3d

Table VI-10: Test of proportional-hazards assumption (Model B5a/ B5b/ B5c/ B5d)

Covariates	*Model C3a*				*Model C3b*				*Model C3c*				*Model C3d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Competitive interdependencies																
Policies of competitors	-0.19054	11.19	1	0.0008	-0.19913	12.9	1	0.0003	-0.20638	14	1	0.0002	-0.1762	9.75	1	0.0018
Policies of competitors × international openness of higher education system	-0.04337	1.49	1	0.2215												
Competitiveness of higher education system	-0.00024	0	1	0.9959	-0.03909	0.81	1	0.3682	-0.02004	0.21	1	0.6506	-0.0024	0	1	0.9592
Competitiveness of higher education system × international openness of higher education system					0.06094	0.79	1	0.374								
Competitiveness of higher education policies	0.08784	1.1	1	0.2952	0.08259	1.03	1	0.3105	0.07701	0.82	1	0.364	0.08839	1.17	1	0.2802
Competitiveness of higher education policies × international openness of higher education system									-0.01013	0.04	1	0.8489				

Covariates	*Model C3a*				*Model C3b*				*Model C3c*				*Model C3d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Cooperative interdependencies																
Brain drain effect	0.04512	0.41	1	0.522	0.07088	0.97	1	0.3254	0.07074	0.96	1	0.3265	0.01369	0.11	1	0.742
Brain drain effect × international openness of higher education system													-0.01058	0.13	1	0.719
International openness of higher education system	0.04489	1.95	1	0.1626	0.10549	3.16	1	0.0754	0.10698	2.89	1	0.0889	0.00911	0.11	1	0.74
Veto players	0.19664	9.62	1	0.0019	0.1785	7.77	1	0.0053	0.19637	9.32	1	0.0023	0.18749	8.34	1	0.0039
Shared Responsibility	-0.21544	14.71	1	0.0001	-0.21746	14.5	1	0.0001	-0.22446	16.6	1	0	-0.21039	13.38	1	0.0003
Tertiary enrolment	0.01979	0.1	1	0.7503	0.01659	0.07	1	0.7867	0.01208	0.04	1	0.8452	0.03311	0.29	1	0.5907
Public higher education expenditure	-0.0692	1.41	1	0.2342	-0.09419	2.59	1	0.1074	-0.09252	2.48	1	0.1157	-0.05226	0.87	1	0.3503
Recognition of private universities	0.14986	7.97	1	0.0048	0.14751	6.41	1	0.0114	0.14779	6.65	1	0.0099	0.11013	6.06	1	0.0138
Pilot projects	0.11231	3.19	1	0.074	0.12129	3.57	1	0.0587	0.12463	3.95	1	0.047	0.1094	3.08	1	0.0791
Risk sequence	-0.03418	0.33	1	0.5644	-0.02289	0.16	1	0.6862	-0.03407	0.36	1	0.5459	-0.02998	0.26	1	0.6092
Global test		35.92	13	0.0006		39.79	13	0.0001		39.87	13	0.0001		30.62	13	0.0038

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

11. Model D1

Table VI-11: Test of proportional-hazards assumption (Model D1)

Covariates	*Model D1*			
	rho	chi2	df	Prob>chi2
Country performance on				
Public spending	0.11654	5.38	1	0.0204
Completion ratios	0.03326	0.37	1	0.5409
Country experience on				
Budget cuts	-0.12526	4.65	1	0.031
Student growth	0.09008	1.92	1	0.166
Historical legacy	0.11598	4.56	1	0.0328
Veto players	0.12636	3.21	1	0.073
Shared Responsibility	-0.13991	8.59	1	0.0034
Tertiary enrolment	0.06554	1.71	1	0.1906
Public higher education expenditure	0.17388	12.68	1	0.0004
Recognition of private universities	0.12683	4.58	1	0.0323
Pilot projects	0.00864	0.03	1	0.8716
Risk sequence	-0.0098	0.03	1	0.8682
International norm	-0.21381	12.86	1	0.0003
International interlinkages	0.11598	4.56	1	0.0328
Global test		41.83	13	0.0001

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

12. Model D2a-D2d

Table VI-12: Test of proportional-hazards assumption (Model D2a/D2b/D2c/D2d)

Covariates	*Model D2a*				*Model D2b*				*Model D2c*				*Model D2d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Country performance on																
Public spending	0.17874	18.79	1	0	0.05426	0.96	1	0.327	0.1049	4.34	1	0.0372	0.093	3.85	1	0.0498
Public spending × fiscal constraints	-0.17302	15.31	1	0.0001												
Completion ratios	0.08221	2.56	1	0.1094	-0.06444	1.29	1	0.2568	0.02173	0.15	1	0.6945	0.01501	0.08	1	0.773
Completion ratios × unemployment					0.09275	3.4	1	0.0652								
Country experience on																
Budget cuts	-0.09404	2.77	1	0.0958	-0.04151	0.43	1	0.5134	-0.17611	6.04	1	0.014	-0.11756	4.39	1	0.0361
Budget cuts × fiscal constraints									0.12176	3.2	1	0.0735				
Student growth	0.12089	3.07	1	0.0798	0.09985	2.34	1	0.1257	0.11843	2.97	1	0.0849	0.04929	1.69	1	0.1933
Student growth × unemployment													-0.0216	0.34	1	0.5593
Historical legacy	0.16405	10.2	1	0.0014	0.04274	0.66	1	0.418	0.1129	3.64	1	0.0564	0.08368	2.54	1	0.1107
Country-specific problem pressure																
Fiscal constraints	0.17322	15.23	1	0.0001					0.05935	1.44	1	0.2307				
Unemployment					-0.08942	2.96	1	0.0854					0.01639	0.2	1	0.6551
Veto players	0.08029	1.21	1	0.272	0.04825	0.49	1	0.4835	0.11613	2.79	1	0.0948	0.08803	1.81	1	0.1788

Covariates	*Model D2a*				*Model D2b*				*Model D2c*				*Model D2d*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Shared Responsibility	-0.14221	8.63	1	0.0033	-0.09404	1.91	1	0.1669	-0.12677	6.35	1	0.0117	-0.10644	3.64	1	0.0565
Tertiary education	0.0748	2.21	1	0.1373	0.01327	0.06	1	0.8045	0.08286	2.79	1	0.095	0.0464	0.78	1	0.376
Public higher education expenditure	0.19705	16.59	1	0	0.11153	5.25	1	0.0219	0.18246	12.52	1	0.0004	0.13088	8.12	1	0.0044
Recognition of private universities	0.12653	4.62	1	0.0316	0.05947	0.72	1	0.3976	0.12261	4.34	1	0.0371	0.10751	2.83	1	0.0924
Pilot projects	0.01283	0.06	1	0.8006	0.0345	0.43	1	0.5099	0.01866	0.14	1	0.7124	0.00941	0.03	1	0.8588
Risk sequence	-0.01841	0.1	1	0.7534	-0.0253	0.19	1	0.664	-0.00141	0	1	0.9805	-0.01718	0.08	1	0.777
International norm	-0.21501	12.6	1	0.0004	-0.13585	4.91	1	0.0267	-0.22358	13.83	1	0.0002	-0.21042	11.44	1	0.0007
International interlinkages	0.08029	1.21	1	0.272	0.04825	0.49	1	0.4835	0.11613	2.79	1	0.0948	0.08803	1.81	1	0.1788
Global test		54.26	15	0		27.05	15	0.0283		44.97	15	0.0001		41.34	15	0.0003

Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.

13. Model D3-D4b

Table VI-13: Test of proportional-hazards assumption (Model D3/D4a/D4b)

Covariates	*Model D3*				*Model D4a*				*Model D4b*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Partisan politics												
Government preferences	-0.12018	5.01	1	0.0253	-0.09789	2.17	1	0.1407	-0.03137	0.38	1	0.5361
Government preferences × political uncertainty					0.11497	2.34	1	0.1264				
Voter preferences	0.0614	1.38	1	0.2406	0.05879	1.56	1	0.2119	0.00268	0	1	0.963
Voter preferences × political uncertainty									0.0807	2.08	1	0.1496
Historical legacy	0.0806	2.08	1	0.1496	0.01034	0.04	1	0.8482	0.00322	0	1	0.9535
Political uncertainty												
Electoral accountability					-0.11564	2.53	1	0.1118	-0.09689	2.98	1	0.0845
Veto players	0.08916	1.99	1	0.1581	0.05135	0.89	1	0.3445	0.0651	1.34	1	0.2463
Shared Responsibility	-0.19595	11.51	1	0.0007	-0.12868	3.81	1	0.0509	-0.09819	2.34	1	0.1263
Tertiary enrolment	0.03268	0.47	1	0.4912	0.0505	0.9	1	0.3417	0.04606	0.76	1	0.3822
Public higher education expenditure	0.0666	1.21	1	0.2705	0.04023	0.47	1	0.493	0.04177	0.47	1	0.4951
Recognition of private universities	0.2302	17.78	1	0	0.16714	8.11	1	0.0044	0.15777	7.88	1	0.005
Pilot projects	0.10018	2.45	1	0.1174	0.0503	0.55	1	0.4584	0.01941	0.07	1	0.7854
Risk sequence	0.0423	0.59	1	0.4428	0.01959	0.13	1	0.7219	0.03325	0.34	1	0.5603
International norm	-0.0661	1.2	1	0.2735	-0.06251	1.15	1	0.2838	-0.06271	1.13	1	0.2868

Covariates	*Model D3*				*Model D4a*				*Model D4b*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
International interlinkages	-0.21975	15.08	1	0.0001	-0.20402	11.97	1	0.0005	-0.21064	13.55	1	0.0002
Global test		34.26	12	0.0006		20.1	14	0.127		21.14	14	0.0981
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.												

14. Model A5-E2

Table VI-14: Test of proportional-hazards assumption (Model A5/B6/C4/D5)

Covariates	*Model A5*				*Model B6*				*Model C4*				*Model D5*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Comparative Country performance																
On completion ratios	-0.01637	0.07	1	0.7965												
Policy experience																
On Student growth	0.00865	0.01	1	0.9048												
Policy experience of neighbours																
On budget cuts	0.22829	14.97	1	0.0001												
Historical peers' comparative performance on																
Public expenditure	0.21716	16.88	1	0												
Common networks																
Policies of international partners					-0.07916	1.97	1	0.1603								
Ideology-weighted EU candidate effect																

Covariates	*Model A5*				*Model B6*				*Model C4*				*Model D5*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Policies of EU members					-0.03214	0.36	1	0.5462								
Competitive interdependencies																
Policies of competitors									-0.17161	9.07	1	0.0026				
Cooperative interdependencies																
Brain drain effect									0.0048	0.01	1	0.912				
Brain drain effect × international openness of higher education system									0.01343	0.2	1	0.6569				
International openness of higher education system									-0.01842	0.43	1	0.5115				
Country experience on																
Student growth													0.12967	5.6	1	0.018
Partisan politics																
Government preferences													-0.03324	0.4	1	0.5267

Covariates	*Model A5*				*Model B6*				*Model C4*				*Model D5*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
Voter preferences													0.00269	0	1	0.9637
Voter preferences × political uncertainty													0.06804	1.42	1	0.2337
Political uncertainty																
Electoral accountability													-0.07943	1.95	1	0.1628
Historical legacy													-0.01553	0.08	1	0.7814
Veto players	0.14316	5.36	1	0.0206	0.15205	6.89	1	0.0087	0.18594	8.51	1	0.0035	0.09537	2.71	1	0.1
Shared Responsibility	-0.2404	29.72	1	0	-0.21263	18.49	1	0	-0.20469	13.38	1	0.0003	-0.06626	1.12	1	0.2897
Tertiary enrolment	-0.17337	8.55	1	0.0034	-0.025	0.14	1	0.7091	0.01792	0.09	1	0.7647	0.0138	0.07	1	0.7895
Public higher education expenditure	0.03829	0.54	1	0.4624	-0.11825	5.76	1	0.0164	-0.06358	1.25	1	0.2643	0.06893	1.32	1	0.251
Recognition of private universities	0.15712	11.18	1	0.0008	0.05724	1.11	1	0.2918	0.09458	4.21	1	0.0401	0.12025	4.32	1	0.0376
Pilot projects	0.14194	5.92	1	0.0149	0.13957	5.83	1	0.0158	0.11689	3.58	1	0.0586	0.04075	0.32	1	0.5705
Risk sequence	0.00302	0	1	0.9562	-0.0056	0.01	1	0.9173	-0.03016	0.26	1	0.6094	0.00978	0.03	1	0.8616
International norm	-	-	-	-	-	-	-	-	-	-	-	-	-0.05332	0.82	1	0.3657

Covariates	*Model A5*				*Model B6*				*Model C4*				*Model D5*			
	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2	rho	chi2	df	Prob> chi2
International interlinkages	-	-	-	-	-	-	-	-	-	-	-	-	-0.17083	8.67	1	0.0032
Global test		59.2	11	0		31.24	9	0.0003		28.75	11	0.0025		26.58	15	0.0324
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.																

Table VI-15: Test of proportional-hazards assumption (Model E1/E2)

Covariates	*Model E1*				*Model E2*			
	rho	chi2	df	Prob>chi2	rho	chi2	df	Prob>chi2
Comparative Country performance								
On completion ratios	-0.00478	0.01	1	0.9418	0.00522	0.01	1	0.9376
Policy experience								
On Student growth	-0.04959	0.49	1	0.4853	-0.02215	0.09	1	0.7584
Policy experience of neighbours								
On budget cuts	0.11021	5.03	1	0.0249	0.11414	5.47	1	0.0193
Historical peers' comparative performance on								
Public expenditure	0.14073	4.86	1	0.0275	0.12484	3.81	1	0.0511
Common networks								
Policies of international partners	-0.17096	8.85	1	0.0029	-	-	-	-
Ideology-weighted EU candidate effect								
Policies of EU members	-0.00431	0.01	1	0.9334	-0.01052	0.04	1	0.8433
Competitive interdependencies								
Policies of competitors	-	-	-	-	-0.15758	8.68	1	0.0032
Cooperative interdependencies								
Brain drain effect	0.06381	1.12	1	0.2901	0.05015	0.68	1	0.4089
Brain drain effect ×	-0.04237	0.62	1	0.4303	-0.06212	1.35	1	0.2459

Covariates	*Model E1*				*Model E2*			
	rho	chi2	df	Prob>chi2	rho	chi2	df	Prob>chi2
international openness of higher education system								
International openness of higher education system	0.01588	0.11	1	0.7445	0.01314	0.07	1	0.7886
Country experience on								
Student growth	0.11815	4.43	1	0.0354	0.08579	2.24	1	0.1343
Partisan politics								
Government preferences	0.01255	0.06	1	0.8115	0.01403	0.07	1	0.793
Voter preferences	-0.03018	0.33	1	0.565	-0.04215	0.65	1	0.4212
Voter preferences × political uncertainty	0.05873	1.32	1	0.2514	0.06971	1.91	1	0.1675
Political uncertainty								
Electoral accountability	-0.07124	1.83	1	0.1757	-0.07897	2.34	1	0.1261
Historical legacy	0.04397	0.62	1	0.4295	0.03062	0.3	1	0.584
Veto players	0.08028	1.86	1	0.1729	0.10092	3.17	1	0.0752
Shared Responsibility	-0.08555	2.01	1	0.1565	-0.0889	2.16	1	0.1416
Tertiary enrolment	-0.09121	2.56	1	0.1093	-0.06604	1.35	1	0.2461
Public higher education expenditure	0.04736	0.82	1	0.3647	0.03506	0.47	1	0.4944
Recognition of private universities	0.08149	1.87	1	0.1714	0.09695	2.66	1	0.1027

Covariates	*Model E1*				*Model E2*			
	rho	chi2	df	Prob>chi2	rho	chi2	df	Prob>chi2
Pilot projects	-0.00178	0	1	0.9796	0.0013	0	1	0.9853
Risk sequence	-0.03667	0.4	1	0.5254	-0.03858	0.48	1	0.489
Global test		29.55	22	0.1298		29.34	22	0.1355
Note: Test of proportional-hazards assumption according to Therneau and Grambsch as implemented in Stata 12. Robust variance-covariance matrix used.								

C. Multicollinearity: Variance Inflation Factor (VIF) and Tolerance

To account for the multicollinearity between the independent variables, the Variance Inflation Factor (VIF) and Tolerance are computed for each explanatory model. Both factors measure the degree the variance of the standard errors has been inflated due to collinearity. For example, a VIF of 4 for a specific covariate means that the standard error for the estimated coefficient is doubled compared to the theoretical case that no correlation with the other covariates would exist $(= |\sqrt{4}|)$.

In case all covariates are fully uncorrelated and orthogonal to each other, both the VIF as well as tolerance are 1. In case of high correlation with other variables, tolerance approaches 0 and the VIF increased substantially. Most authors assume that a VIF greater than 10 indicates multicollinearity problems, but others already warn in case of a VIF being higher than 5 (cf. Vaus 2002: 345). Tolerance is simply VIF^{-1} a similar measure. The value for tolerance should not be below 0.2. (ebd.). VIF and Tolerance for all models are well below the critical values; hence multicollinearity does not seem to be an issue.

1. Model A1-A4

Table VI-16: Variance Inflation Factor (VIF) and Tolerance (Model A1/A2)

Model / *Covariates*	*A1*		*A2*	
	VIF	*Tol.*	*VIF*	*Tol.*
Comparative country performance on				
Public expenditure	2.17	0.4601		
Completion ratios	1.14	0.875		
Policy experience on				
Budget cuts	1.35	0.7433		
Student growth	1.31	0.7635		
Long-term comparative country performance on				
Public expenditure			1.85	0.5398
Completion ratios			1.15	0.8724
Long-term policy experience on				
Budget cuts			1.67	0.597
Student growth			1.63	0.6143
Veto players	1.09	0.9142	1.09	0.9163
Shared Responsibility	1.23	0.8102	1.24	0.8057
Tertiary enrolment	2.34	0.4275	2.2	0.454
Public higher education expenditure	3.85	0.2597	3.25	0.3072
Recognition of private universities	1.31	0.7605	1.32	0.7604
Pilot projects	1.11	0.8997	1.11	0.9008
Risk sequence	1.2	0.8345	1.2	0.8342
Note: VIF and tolerance obtained using Stata 12.				

2. Model A3a-A3d

Table VI-17: Variance Inflation Factor (VIF) and Tolerance (Model A3a/A3b/A3c/A3d)

Model / *Covariates*	*A3a*		*A3b*		*A3c*		*A3d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Comparative country performance on								
Public expenditure	2.25	0.4445	2.19	0.4568	2.25	0.4445	2.19	0.4568
Completion ratios	1.41	0.71	1.15	0.8727	1.41	0.71	1.15	0.8727
Policy experience on								
Budget cuts	1.35	0.743	1.35	0.7414	1.35	0.743	1.35	0.7414
Student growth	1.32	0.7567	1.31	0.7623	1.32	0.7567	1.31	0.7623
Country-specific problem pressure								
Fiscal constraints	1.67	0.5975			1.67	0.5975		
Unemployment			1.41	0.7076			1.41	0.7076
Veto players	1.12	0.8915	1.13	0.8863	1.12	0.8915	1.13	0.8863
Shared Responsibility	1.34	0.7462	1.45	0.69	1.34	0.7462	1.45	0.69
Tertiary enrolment	2.57	0.389	2.43	0.4119	2.57	0.389	2.43	0.4119
Public higher education expenditure	3.94	0.2539	3.86	0.259	3.94	0.2539	3.86	0.259
Recognition of private universities	1.54	0.6493	1.36	0.7361	1.54	0.6493	1.36	0.7361
Pilot projects	1.11	0.8997	1.11	0.8997	1.11	0.8997	1.11	0.8997
Risk sequence	1.2	0.8342	1.2	0.8301	1.2	0.8342	1.2	0.8301

Model / *Covariates*	*A3a*		*A3b*		*A3c*		*A3d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Note: VIF and tolerance obtained using Stata 12.								

3. Model A4a-A4c

Table VI-18: Variance Inflation Factor (VIF) and Tolerance (Model A4b/A4b/A4c)

Model / *Covariates*	*A4a*		*A4b*		*A4c*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Neighbours' comparative performance on						
Public expenditure	1.21	0.8279				
Completion ratios	1.08	0.9292				
Policy experience of neighbours on						
Budget cuts	1.21	0.8283				
Student growth	1.22	0.8206				
Historical peers' comparative performance on						
Public expenditure			1.41	0.7086		
Completion ratios			1.07	0.9366		
Historically-weighted policy experience on						
Budget cuts			1.22	0.8166		
Student growth			1.24	0.8088		
Ideology-weighted comparative country performance on						
Public expenditure					2.17	0.4619
Completion ratios					1.12	0.889
Ideology-weighted policy					1.39	0.7186

Model / *Covariates*	*A4a*		*A4b*		*A4c*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
experience on						
Budget cuts						
Student growth					1.37	0.7284
Veto players	1.06	1.06	1.11	0.9002	1.09	0.916
Shared Responsibility	1.27	1.27	1.27	0.7872	1.24	0.8084
Tertiary enrolment	2.05	2.05	2.14	0.4671	2.32	0.4302
Public higher education expenditure	2.05	2.05	2.44	0.4098	3.8	0.2634
Recognition of private universities	1.23	1.23	1.36	0.7378	1.28	0.7839
Pilot projects	1.11	1.11	1.11	0.8996	1.11	0.8994
Risk sequence	1.2	1.2	1.19	0.8378	1.2	0.8338
Note: VIF and tolerance obtained using Stata 12.						

4. Model B1/B2

Table VI-19: Variance Inflation Factor (VIF) and Tolerance (ModelB1/B2)

Covariates	*Model B1*		*Model B2*	
	VIF	*Tol.*	*VIF*	*Tol.*
Common networks				
Policies of international partners	3.14	0.3186		
Policies of EU partners	3.39	0.2953		
EU candidate effect				
Policies of EU members	1.75	0.5713		
Ideology-weighted policies of				
International partners			3.34	0.2997
EU partners			3.53	0.2835
EU members			1.78	0.5609
Veto players	1.1	0.9083	1.09	0.917
Shared Responsibility	1.22	0.8225	1.22	0.8228
Tertiary enrolment	2.43	0.4111	2.44	0.4102
Public higher education expenditure	1.96	0.5095	1.97	0.5082
Recognition of private universities	1.37	0.7304	1.37	0.7284
Pilot projects	1.11	0.9031	1.11	0.903
Risk sequence	1.21	0.8234	1.21	0.8238
Note: VIF and tolerance obtained using Stata 12.				

5. Model B3

Table VI-20: Variance Inflation Factor (VIF) and Tolerance (Model B3)

Covariates	*Model B3*	
	VIF	*Tol.*
Policies of		
Regional peers	1.96	0.5102
Ideological peers	4.07	0.2456
Cultural peers	2.39	0.4184
International norms		
Policies of other countries (30%)	2.94	0.3403
Veto players	1.08	0.9261
Shared Responsibility	1.21	0.8275
Tertiary enrolment	2.46	0.4065
Public higher education expenditure	2.13	0.4704
Recognition of private universities	1.23	0.8155
Pilot projects	1.11	0.8998
Risk sequence	1.23	0.8145
Note: VIF and tolerance obtained using Stata 12.		

6. Model B4a-B4d

Table VI-21: Variance Inflation Factor (VIF) and Tolerance (Model B4a/B4b/B4c/B4d)

Model / *Covariates*	*B4a*		*B4b*		*B4c*		*B4d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Policies of								
Regional peers	1.97	0.5071	1.97	0.5071	1.97	0.5071	1.97	0.5071
Ideological peers	4.09	0.2443	4.09	0.2443	4.09	0.2443	4.09	0.2443
Cultural peers	2.45	0.4084	2.45	0.4084	2.45	0.4084	2.45	0.4084
International norms								
Policies of other countries (30%)	2.94	0.3396	2.94	0.3396	2.94	0.3396	2.94	0.3396
Domestic problem pressure								
Unemployment	1.51	0.6639	1.51	0.6639	1.51	0.6639	1.51	0.6639
Veto players	1.12	0.8916	1.12	0.8916	1.12	0.8916	1.12	0.8916
Shared Responsibility	1.4	0.7137	1.4	0.7137	1.4	0.7137	1.4	0.7137
Tertiary enrolment	2.56	0.3903	2.56	0.3903	2.56	0.3903	2.56	0.3903
Public higher education expenditure	2.13	0.4691	2.13	0.4691	2.13	0.4691	2.13	0.4691
Recognition of private universities	1.28	0.7826	1.28	0.7826	1.28	0.7826	1.28	0.7826
Pilot projects	1.11	0.8997	1.11	0.8997	1.11	0.8997	1.11	0.8997
Risk sequence	1.24	0.8078	1.24	0.8078	1.24	0.8078	1.24	0.8078
Note: VIF and tolerance obtained using Stata 12.								

7. Model B5a-B5d

Table VI-22: Variance Inflation Factor (VIF) and Tolerance (Model B5a/B5b/B5c/B5d)

Model / *Covariates*	*B5a*		*B5b*		*B5c*		*B5d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Policies of								
Regional peers	1.97	0.508	1.97	0.508	1.97	0.508	1.97	0.508
Ideological peers	4.1	0.2437	4.1	0.2437	4.1	0.2437	4.1	0.2437
Cultural peers	2.41	0.4142	2.41	0.4142	2.41	0.4142	2.41	0.4142
International norms								
Policies of other countries (30%)	2.94	0.34	2.94	0.34	2.94	0.34	2.94	0.34
Political uncertainty								
Electoral accountability	1.07	0.9365	1.07	0.9365	1.07	0.9365	1.07	0.9365
Veto players	1.08	0.9258	1.08	0.9258	1.08	0.9258	1.08	0.9258
Shared Responsibility	1.21	0.8235	1.21	0.8235	1.21	0.8235	1.21	0.8235
Tertiary enrolment	2.47	0.4052	2.47	0.4052	2.47	0.4052	2.47	0.4052
Public higher education expenditure	2.15	0.4651	2.15	0.4651	2.15	0.4651	2.15	0.4651
Recognition of private universities	1.25	0.8015	1.25	0.8015	1.25	0.8015	1.25	0.8015
Pilot projects	1.12	0.8967	1.12	0.8967	1.12	0.8967	1.12	0.8967
Risk sequence	1.24	0.8036	1.24	0.8036	1.24	0.8036	1.24	0.8036

Note: VIF and tolerance obtained using Stata 12.

8. Model C1

Table VI-23: Variance Inflation Factor (VIF) and Tolerance (Model C1)

Covariates	*Model C1*	
	VIF	*Tol.*
Competitive interdependencies		
Policies of competitors	2.31	0.4325
Competitiveness of higher education system	1.09	0.9193
Competitiveness of higher education policies	1.01	0.9859
Cooperative interdependencies		
Brain drain effect	2.16	0.4628
Veto players	1.07	0.937
Shared Responsibility	1.23	0.8128
Tertiary enrolment	2.47	0.4042
Public higher education expenditure	2	0.5002
Recognition of private universities	1.26	0.7928
Pilot projects	1.11	0.8998
Risk sequence	1.22	0.8213
Note: VIF and tolerance obtained using Stata 12.		

9. Model C2a-C2c

Table VI-24: Variance Inflation Factor (VIF) and Tolerance (Model C2a/C2b/C2c)

Model / *Covariates*	*C2a*		*C2a*		*C2a*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Competitive interdependencies						
Policies of competitors	1.43	0.7005	1.43	0.7005	1.43	0.7005
Competitiveness of higher education system	1.1	0.9114	1.1	0.9114	1.1	0.9114
Competitiveness of higher education policies	1.02	0.9827	1.02	0.9827	1.02	0.9827
Domestic problem pressure						
Unemployment	1.42	0.7042	1.42	0.7042	1.42	0.7042
Veto players	1.1	0.9088	1.1	0.9088	1.1	0.9088
Shared Responsibility	1.42	0.7045	1.42	0.7045	1.42	0.7045
Tertiary enrolment	2.49	0.4008	2.49	0.4008	2.49	0.4008
Public higher education expenditure	2	0.5009	2	0.5009	2	0.5009
Recognition of private universities	1.31	0.7605	1.31	0.7605	1.31	0.7605
Pilot projects	1.11	0.8999	1.11	0.8999	1.11	0.8999
Risk sequence	1.22	0.8185	1.22	0.8185	1.22	0.8185
Note: VIF and tolerance obtained using Stata 12.						

10. Model C3a-C3d

Table VI-25: Variance Inflation Factor (VIF) and Tolerance (C3a/C3b/C3c/C3d)

Model / *Covariates*	*C3a*		*C3b*		*C3c*		*C3d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Competitive interdependencies								
Policies of competitors	2.32	0.432	2.32	0.432	2.32	0.432	2.32	0.432
Competitiveness of higher education system	1.09	0.9192	1.09	0.9192	1.09	0.9192	1.09	0.9192
Competitiveness of higher education policies	1.01	0.9858	1.01	0.9858	1.01	0.9858	1.01	0.9858
Cooperative interdependencies								
Brain drain effect	2.18	0.4592	2.18	0.4592	2.18	0.4592	2.18	0.4592
International openness of higher education system	1.38	0.7259	1.38	0.7259	1.38	0.7259	1.38	0.7259
Veto players	1.08	0.93	1.08	0.93	1.08	0.93	1.08	0.93
Shared Responsibility	1.3	0.7711	1.3	0.7711	1.3	0.7711	1.3	0.7711
Tertiary enrolment	2.48	0.4032	2.48	0.4032	2.48	0.4032	2.48	0.4032
Public higher education expenditure	2.24	0.4472	2.24	0.4472	2.24	0.4472	2.24	0.4472
Recognition of private universities	1.51	0.6643	1.51	0.6643	1.51	0.6643	1.51	0.6643
Pilot projects	1.12	0.8963	1.12	0.8963	1.12	0.8963	1.12	0.8963
Risk sequence	1.22	0.8206	1.22	0.8206	1.22	0.8206	1.22	0.8206

Note: VIF and tolerance obtained using Stata 12.

11. Model D1

Table VI-26: Variance Inflation Factor (VIF) and Tolerance (Model C1)

Covariates	*Model D1*	
	VIF	*Tol.*
Country performance on		
Public spending	1.45	0.6883
Completion ratios	1.39	0.7209
Country experience on		
Budget cuts	1.19	0.8394
Student growth	1.33	0.7525
Historical legacy	1.43	0.7017
Veto players	1.29	0.7765
Shared Responsibility	1.36	0.7372
Tertiary enrolment	2.77	0.3611
Public higher education expenditure	2.37	0.4225
Recognition of private universities	1.12	0.8889
Pilot projects	1.21	0.8231
Risk sequence	1.27	0.7855
International norm	2.82	0.3546
International interlinkages	1.43	0.7017
Note: VIF and tolerance obtained using Stata 12.		

12. Model D2a-D2d

Table VI-27: Variance Inflation Factor (VIF) and Tolerance (D2a/D2b/D2c/D2d)

Model / *Covariates*	*D2a*		*D2b*		*D2c*		*D2d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Country performance on								
Public spending	1.51	0.6625	1.46	0.6844	1.51	0.6625	1.46	0.6844
Public spending × fiscal constraints	1.85	0.5419	1.4	0.7162	1.85	0.5419	1.4	0.7162
Completion ratios								
Completion ratios × unemployment	1.26	0.7961	1.2	0.8359	1.26	0.7961	1.2	0.8359
Country experience on	1.34	0.7448	1.34	0.7446	1.34	0.7448	1.34	0.7446
Budget cuts	1.66	0.6014	1.43	0.7015	1.66	0.6014	1.43	0.7015
Budget cuts × fiscal constraints								
Student growth	2.14	0.4678			2.14	0.4678		
Student growth × unemployment			1.45	0.6875			1.45	0.6875
Veto players	1.38	0.7228	1.31	0.7616	1.38	0.7228	1.31	0.7616
Shared Responsibility	1.47	0.6807	1.6	0.625	1.47	0.6807	1.6	0.625
Tertiary enrolment	2.83	0.3533	2.83	0.3535	2.83	0.3533	2.83	0.3535
Public higher education expenditure	3.05	0.3282	2.41	0.4154	3.05	0.3282	2.41	0.4154
Recognition of private universities	1.13	0.888	1.12	0.8889	1.13	0.888	1.12	0.8889
Pilot projects	1.22	0.8228	1.22	0.8206	1.22	0.8228	1.22	0.8206

Model / *Covariates*	*D2a*		*D2b*		*D2c*		*D2d*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Risk sequence	1.29	0.7777	1.28	0.7812	1.29	0.7777	1.28	0.7812
International norm	2.83	0.3533	2.82	0.3542	2.83	0.3533	2.82	0.3542
International interlinkages	1.38	0.7228	1.31	0.7616	1.38	0.7228	1.31	0.7616
Note: VIF and tolerance obtained using Stata 12.								

13. Model D3-D4b

Table VI-28: Variance Inflation Factor (VIF) and Tolerance (Model D3/D4a/D4b)

Model / *Covariates*	*D3*		*D4a*		*D4b*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Partisan politics						
Government preferences	1.25	0.7989	1.27	0.7877	1.27	0.7877
Voter preferences	1.46	0.6871	1.46	0.6842	1.46	0.6842
Historical legacy	1.33	0.753	1.37	0.7287	1.37	0.7287
Political uncertainty						
Electoral accountability			1.12	0.8941	1.12	0.8941
Veto players	1.33	0.7521	1.33	0.7514	1.33	0.7514
Shared Responsibility	1.33	0.7544	1.33	0.7524	1.33	0.7524
Tertiary enrolment	2.81	0.3556	2.82	0.3542	2.82	0.3542
Public higher education expenditure	2.35	0.4255	2.36	0.4237	2.36	0.4237
Recognition of private universities	2.84	0.3523	2.84	0.3515	2.84	0.3515
Pilot projects	1.11	0.8994	1.12	0.8951	1.12	0.8951
Risk sequence	1.22	0.8208	1.24	0.8091	1.24	0.8091
International norm	1.28	0.7802	1.28	0.7802	1.28	0.7802
International interlinkages	3.02	0.3313	3.02	0.3313	3.02	0.3313

Note: VIF and tolerance obtained using Stata 12.

14. Model A5-E2

Table VI-29: Variance Inflation Factor (VIF) and Tolerance (Model A5/B6/C4/D5/E1/E2)

Covariates	*Model A5*		*Model B6*		*Model C4*		*Model D5*		*Model E1*		*Model E2*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Comparative Country performance												
On completion ratios	1.15	0.8682							1.45	0.6887	1.43	0.6974
Policy experience												
On Student growth	1.03	0.9736							1.08	0.9245	1.08	0.9235
Policy experience of neighbours												
On budget cuts	1.01	0.9891							1.05	0.9507	1.05	0.9493
Historical peers' comparative performance on												
Public expenditure	1.41	0.708							1.68	0.5944	1.68	0.5939
Common networks												
Policies of international partners			1.46	0.6866					2.81	0.3562	-	-

Covariates	*Model A5*		*Model B6*		*Model C4*		*Model D5*		*Model E1*		*Model E2*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Ideology-weighted EU candidate effect												
Policies of EU members			1.11	0.901					1.38	0.7265	1.39	0.7186
Competitive interdependencies												
Policies of competitors					2.35	0.4256			-	-	2.67	0.374
Cooperative interdependencies												
Brain drain effect					2.2	0.4535			2.52	0.3971	2.37	0.4219
International openness of higher education system					1.38	0.7267			1.87	0.5348	1.86	0.5369
Country experience on												
Student growth							1.15	0.8719	1.2	0.832	1.2	0.8326
Partisan politics												
Government preferences							1.27	0.7875	1.39	0.7219	1.39	0.7211
Voter preferences							1.49	0.672	1.74	0.5744	1.74	0.5743

Covariates	*Model A5*		*Model B6*		*Model C4*		*Model D5*		*Model E1*		*Model E2*	
	VIF	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*	*VIF*	*Tol.*
Political uncertainty												
Electoral accountability							1.14	0.8771	1.2	0.8353	1.2	0.8352
Historical legacy							1.37	0.7307	1.44	0.6952	1.44	0.6955
Veto players	1.1	0.9064	1.09	0.9142	1.08	0.9295	1.41	0.7101	1.51	0.6621	1.5	0.6646
Shared Responsibility	1.26	0.7909	1.2	0.83	1.28	0.7825	1.34	0.7471	1.44	0.6955	1.44	0.6967
Tertiary enrolment	2.19	0.4575	2.43	0.4112	2.49	0.4016	2.83	0.3539	3.02	0.3316	3.04	0.3284
Public higher education expenditure	2.44	0.41	1.96	0.5095	2.2	0.4546	2.41	0.4157	3.1	0.3231	3.1	0.3227
Recognition of private universities	1.43	0.7004	1.23	0.8141	1.42	0.7061	3.01	0.3321	2.48	0.4029	2.5	0.4005
Pilot projects	1.11	0.8992	1.11	0.9032	1.11	0.9007	1.13	0.8881	1.13	0.8863	1.13	0.8867
Risk sequence	1.2	0.8318	1.21	0.8242	1.22	0.822	1.23	0.81	1.26	0.7934	1.26	0.7924
International norm	-	-	-	-	-	-	1.27	0.7856	-	-	-	-
International interlinkages	-	-	-	-	-	-	3.11	0.322	-	-	-	-

Note: VIF and tolerance obtained using Stata 12.

D. Model Fit Statistics: AIC and BIC

The Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are measures to compare the relative fit of different statistical models. Both measures account for the number of covariates used thereby allowing the evaluation of models based on different numbers of covariates. Models with lower values as AIC or BIC are usually preferred. Calculating *p*-values to evaluate the statistical significance of these difference is not possible (cf. Allison 2010a: 422). So how to determine when values indicate a significant statistical difference?

Based on simulation studies some authors' recommend specific thresholds to determine the statistical significance of the difference between two values, For example, a difference between two models regarding their AIC between 0 and 2.5 describes no significant difference between AIC levels, but a value higher than 2.5 speak in favour of the model with the lower AIC value (cf. Hilbe 2011: 70).

Table VI-30: Overview of "Goodness of Fit" statistics

Model	N	DF	BIC	AIC
A1	3654	15	1585.0	1491.9
A2	3654	15	1587.5	1494.4
A3a	3654	15	1600.5	1507.4
A3b	3654	15	1571.5	1478.4
A3c	3654	18	1601.1	1489.5
A3d	3654	17	1593.1	1487.7
A4a	3654	16	1579.9	1480.7
A4b	3654	16	1582.2	1482.9
A4c	3654	15	1586.9	1493.9
A5	3654	16	1574.3	1475.0
B1	3878	14	1592.0	1504.3
B2	3878	14	1585.7	1498.0
B3	3878	15	1608.0	1514.0
B4a	3878	17	1614.2	1507.7
B4b	3878	17	1616.9	1510.4
B4c	3878	17	1614.2	1507.7
B4d	3878	17	1616.9	1510.4
B5a	3878	16	1601.3	1501.1
B5b	3878	15	1598.7	1504.7
B5c	3878	15	1598.7	1504.8
B5d	3878	15	1596.8	1502.9
B6	3878	13	1586.8	1505.4
C1	3654	15	1590.3	1497.3
C2a	3654	17	1598.9	1493.5
C2b	3654	16	1595.1	1495.9
C2c	3654	17	1600.5	1495.0
C3a	3654	17	1597.4	1492.0
C3b	3654	18	1599.5	1487.8
C3c	3654	18	1602.1	1490.4
C3d	3654	17	1591.7	1486.2
C4	3878	15	1591.8	1497.9
D1	3654	18	1586.2	1474.6
D2a	3654	20	1602.2	1478.1
D2b	3654	18	1571.5	1459.9
D2c	3654	20	1601.3	1477.2
D2d	3654	20	1596.3	1472.2
D3	3878	16	1589.8	1489.6
D4a	3878	17	1571.2	1471.0

Model	N	DF	BIC	AIC
D4b	3878	17	1571.6	1465.2
D5	3654	17	1566.3	1460.8
E1	3654	26	1601.3	1440.0
E2	3654	26	1601.9	1440.6
Note: This table presents the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) provided by Stata 12 for the various Cox models estimated in chapter four.				

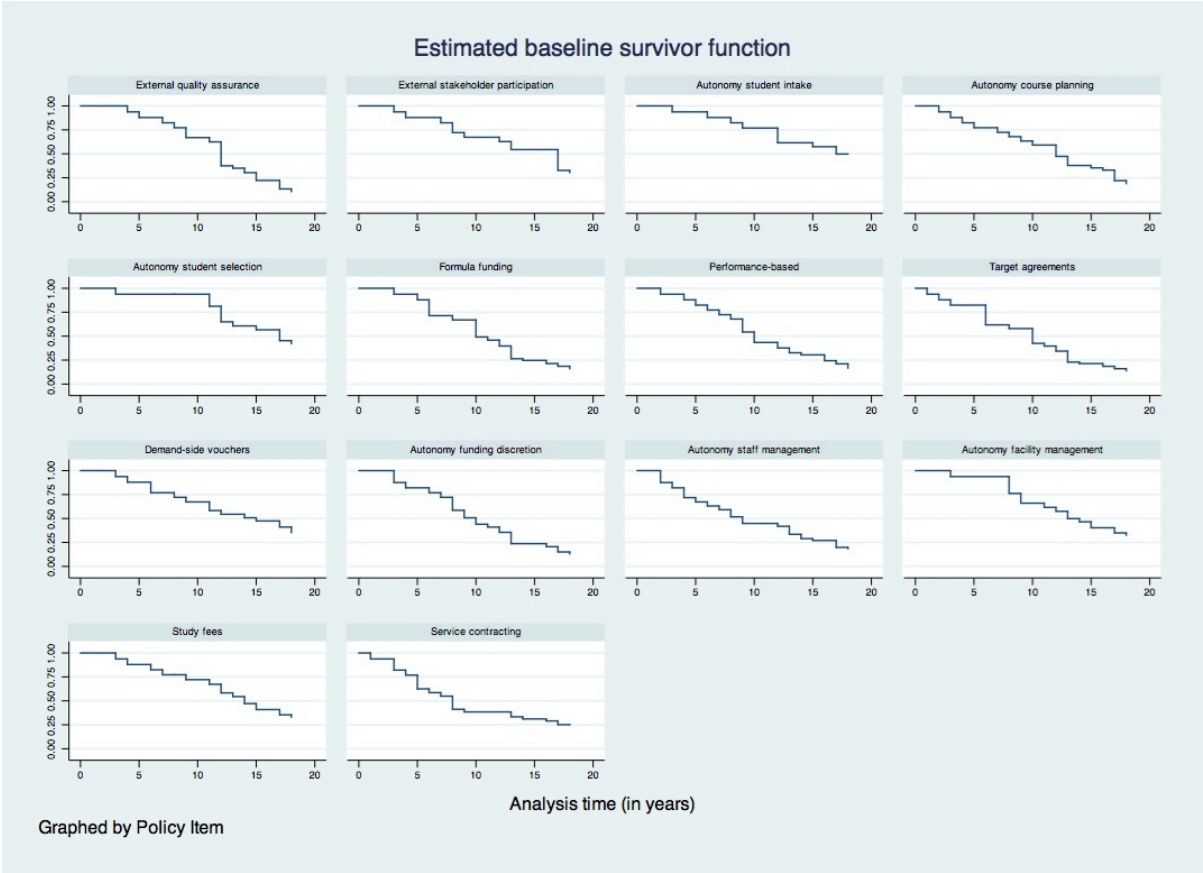
E. Cox Proportional Hazard Regression Estimates (Fitted Without Covariates)

The following figures present both the estimated baseline functions for the various policy items and across all policy items (fitted without the covariates).[30] These graphs illustrate the time dependency inherent in the data set (cf. Box-Steffensmeier and Sokhey 2010: 614). The baseline survivor function denotes the probability of surviving to a specific point in time. In other word, it describes the probability for the non-occurrence of policy adoption. The cumulative hazard function describes the risk for a country to experience policy adoption between the start of the analysis and some time in the following time intervals. The baseline hazard function then indicates the form of the underlying baseline hazard, that means the risk of experiencing policy adoption as the event under consideration as a function of time (and not the covariates).

[30] The item-specific graph of the baseline hazard function can be found in subsection 3.5.2.

1. Survivor Function

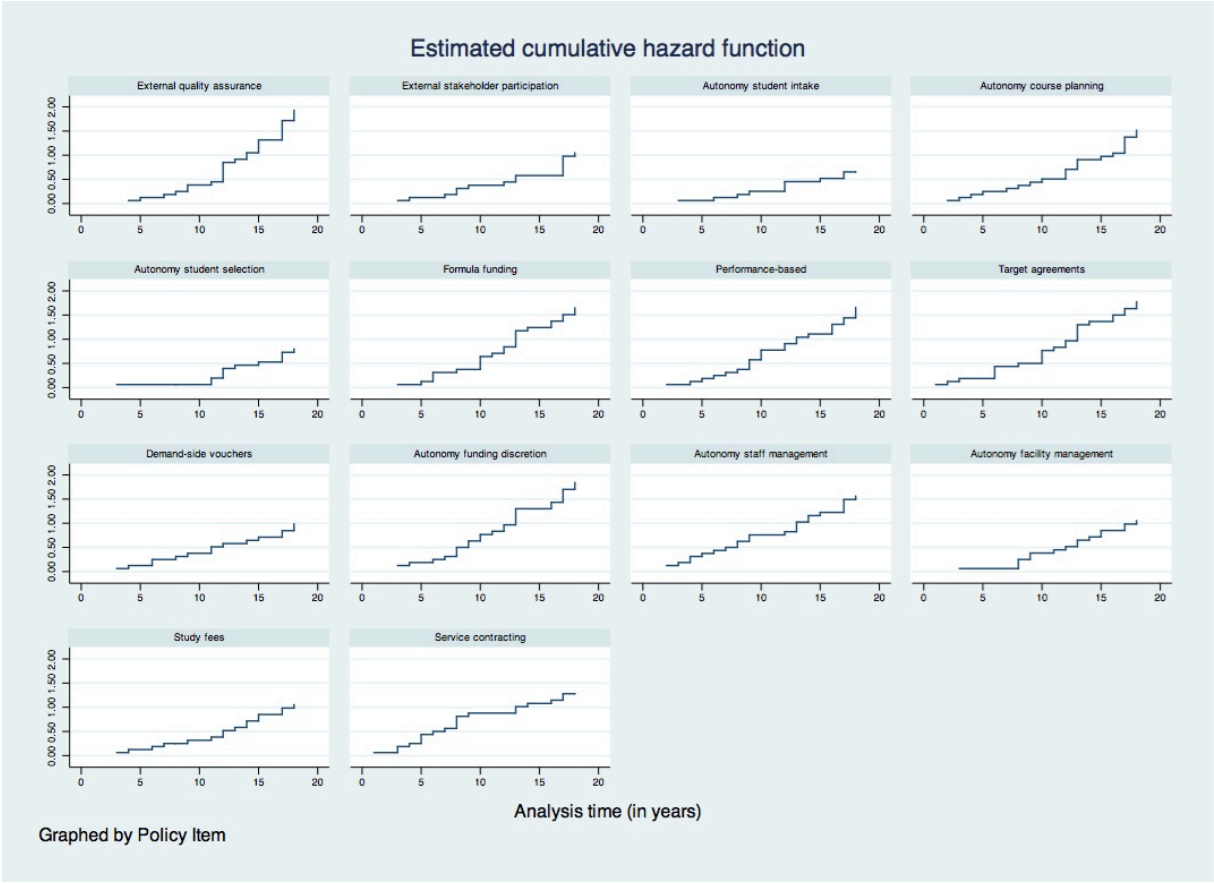
Figure VI-14: Survivor function for each policy item (fitted without covariates)



Note: Cox proportional hazard regression estimates (fitted without covariates). Source: Own illustration and data (cf. Annex VIII).

2. Cumulative Hazard Function

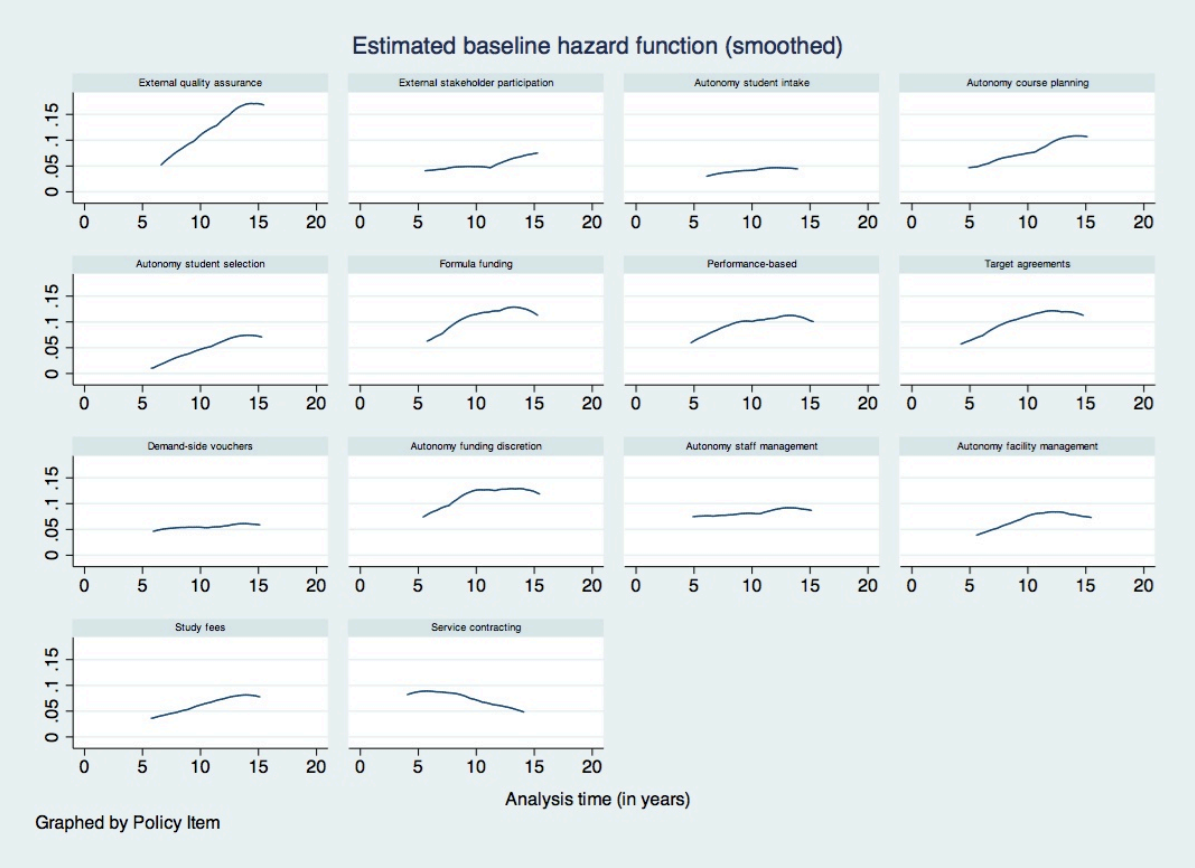
Figure VI-15: Cumulative hazard function for each policy item (fitted without covariates)



Note: Cox proportional hazard regression estimates (fitted without covariates). Source: Own illustration and data (cf. Annex VIII).

3. Baseline Hazard Function

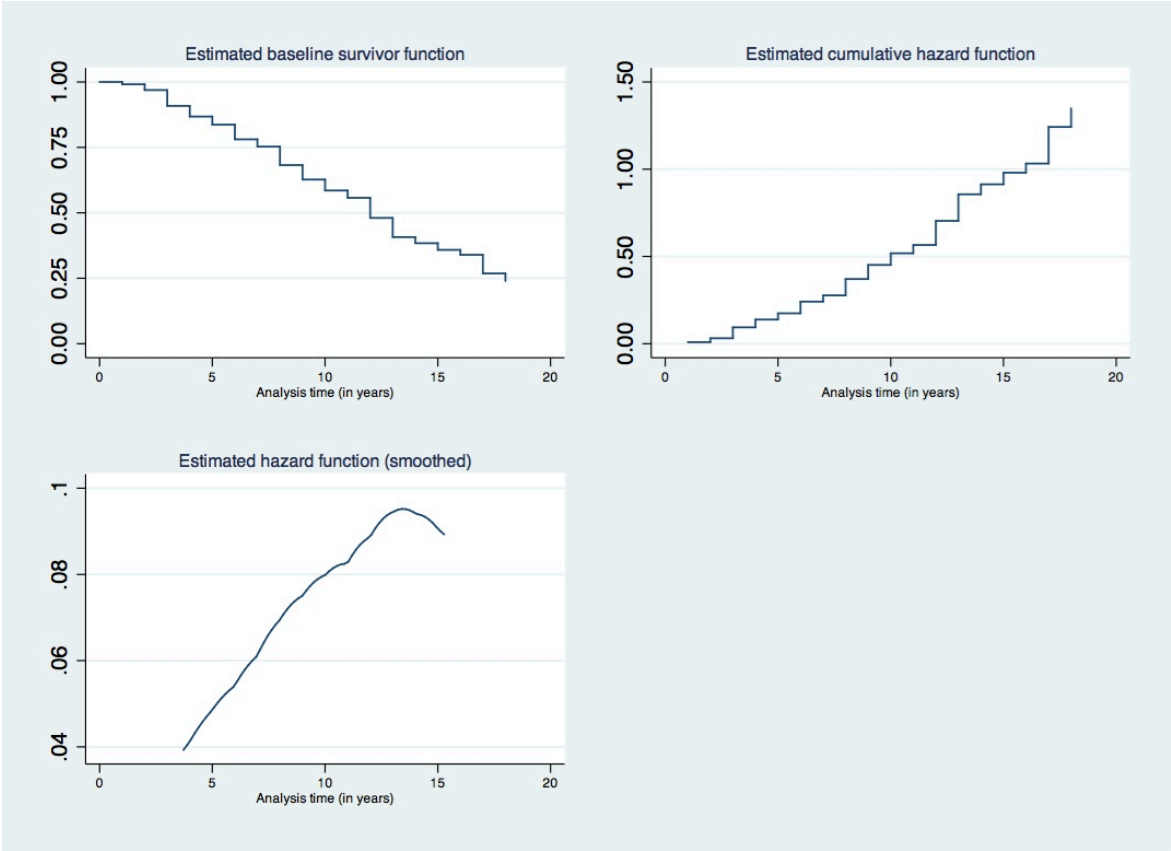
Figure VI-16: Baseline hazard function for each policy item (fitted without covariates)



Note: Cox proportional hazard regression estimates (fitted without covariates). Source: Own illustration and data (cf. Annex VIII).

4. Aggregated Survivor and Hazard Functions

Figure VI-17: Survivor and hazard functions (across all policy items)



Note: Cox proportional hazard regression estimates (fitted without covariates). Source: Own illustration and data (cf. Annex VIII).

VII. Literature Overview

The following list provides a mapping of recent mechanism-based and comparative empirical studies on policy diffusion. The table is not a comprehensive mapping of diffusion research. It is a selective overview of recent literature on policy diffusion. The main focus is on works in political science. Furthermore, the reader has to be aware that the mapping is largely following a process-orientated understanding of policy diffusion (cf. Elkins and Simmons 2005). Furthermore, instead of treating diffusion as a single causal mechanism, the term diffusion is understood as different causal mechanisms influencing the adoption of public policies. That means, only studies trying to test at least two causal mechanisms are listed.

One has to acknowledge the importance of earlier works conceptualizing diffusion as an outcome and focussing on the overall patterns in the diffusion of (whatsoever) innovation (for example, S-shaped spreading) (cf. Busch and Jörgens 2005; Jordana, Levi-Faur and Fernandez 2011; Rogers 2003) but this kind of work is not listed here. A similar criterion for selecting from the vast literature on policy diffusion is the research design in terms of comparing different diffusion mechanism, rather than examining only a single one like learning (for example, Baybeck, Berry and Siegel 2011 or Gilardi 2010). The listed empirical studies are all trying to claim (some) causal inference on policy diffusion. Purely theoretical and/or formal or descriptive work is not considered here.

Last not but least, though considered in the previous chapters studies merely reconsidering existing data for demonstrating the sake of methodological innovations are not listed neither (for example, Franzese and Hays 2008; Neumayer and Plümper 2010).

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Berry and Baybeck 2005	• Learning from experiences of nearby states • Search of competitive economic advantage over other states.	• Ordinary least square regression	• Lotteries diffuse due to competition –rather than to learning— but find no evidence of competition in state choices about welfare benefits.	• Social policy (level of welfare benefits) • Moral policy (adoption of a lottery)
Biedenkopf 2011	• Learning; emulation; adjustment • Jurisdiction-specific factors: politics, institutions, and policy problems.	• Case studies/ process tracing	• Empirical evidence points to the influence of all three external mechanisms with learning and adjustment having a much stronger effect than emulation. • Evidence also pinpoints the contingency of diffusion mechanisms regarding jurisdiction-specific factors. • Results also hint at the necessity of considering interaction effects between the three diffusion mechanisms.	• Environmental policy (recycling)
Boehmke and Witmer 2004	• Economic competition • Social learning • Control variables: measure the potential political influence and activity of tribes with respect to the state in which their lands are geographically located, political and economic characteristics of the state, and controls for time.	• Event count regression	• Social learning diffusion influences policy adoption but not its expansion whereas economic competition influences both policy adoption and policy expansion. • Variables measuring the characteristics of Indian nations within the state confirmed with findings for economic measures less strong than political variables.	• Moral policy (Indian gaming compacts)
Bouché and Volden 2011	• Learning • Imitation • Market competition • Conditional effects relating to the type of foster care system (public/private) • Country-level controls	• Event history analysis	• Policy innovations in public and private systems spread differently. Policy innovation is often initially caused by private market competition, but learning processes can unfold across public networks.	• Social policy (foster care)
Cao 2010	• Competition • Socialization in terms of policy learning and emulation	• Spatial lag models	• Policy interdependence induced by international network dynamics matter. Competition causes policy spread in corporate taxation. • Socialization in IGO networks also drive policy adaption, but evidence for policy learning is stronger than for emulation.	• Fiscal policy (capital taxation)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Daley and Garand 2005	• Policy spread as a function of both internal determinants and external diffusion. • Variables representing regional and top-down (national) diffusion: horizontal (regional) diffusion: nearby states; vertical diffusion: financial incentives by superordinate actors. • Internal determinants: problem severity and need-based policymaking; political influences on policymaking (public opinion/ partisan politics); interest group influence/pressure; socioeconomic and demographic resources.	• Pooled cross-sectional time-series using generalized estimation equation	• Results indicate the importance of both internal determinants and external diffusion. • Strong state hazardous waste programs are a function of state wealth and the severity of internal hazardous waste problems, as well as external determinants, with regional diffusion as a strongly influential factor. • Federal government also plays a role in state policymaking although the effect is modest.	• Environmental policy (hazardous waste programs)
della Porta and Tarrow 2012	• Policy promotion through teaching and social learning/socialization • Arguing through (self-) critique • Norm diffusion/ Theorization in transnational networks	• Case studies	• Empirical evidence highlighted the multi-causal nature of policy diffusion.	• Protest policies (counter-summits)
Elkins, Guzman and Simmons 2006	• Competition • Cultural emulation • Learning • Coercion • Country controls and alternative explanations (host/home country factors; country pair factors)	• Directed dyadic event history analysis • See Neumayer and Plümper 2010 for a updated methodological approach on this data	• BITs are driven by international competition among potential host countries—typically developing countries—for foreign direct investment, network measures of economic competition as well as competitive pressures on the host to sign BITs. • Also evidence for coercion and learning, but less support for cultural explanations based on emulation. • Main finding is that the diffusion of BITs is associated with competitive economic pressures among developing countries to capture a share of foreign investment. • Also strong support for traditional economic explanations and dyadic characteristics.	• Trade policies (bilateral investment treaties BITs)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Garrett, Dobbin and Simmons 2008	• Coercion • Competition • Learning • Emulation • Domestic controls (country characteristics and common exogenous shocks)	• Event history analyses (edited volume)	• Denies "common stimulus, mediated response" models • Neither coercion nor rational learning particularly important for explaining spread of economic and democratic liberalism • Strong support on competition and emulation • Countries consider decision made by capital competitors especially in investment-related policies • Epistemic communities play crucial role when cause and effect relations unclear (both in economic and political terms)	• Economic and trade policy • Constitutional policy (democracy and liberalism)
Grossback, Nicholson-Crotty and Peterson 2003	• Focus on emulation through learning (from neighbours and ideological similar earlier adopters) as well as federal incentives • Variables capturing costs and benefits of policy adoption	• Logit-based discrete time hazard framework	• Results confirm that states learn from each other, but the effect is contingent on the degree of ideological similarity between the states.	• Multiple polices (state lotteries, academic bankruptcy law, Sentencing Guidelines) •
Holzinger, Knill and Sommerer 2008	• Regulatory competition, international harmonization and transnational communication. • Domestic factors	• Multiple regression models	• Policy convergence is mainly driven by international harmonization, but the authors also find evidence for transnational communication. Regulatory competition falls back against these explanations. • Results for domestic controls remain mixed.	• Environmental policy
Jahn 2006	• Coercion; economic competition; emulation; learning • Author combines an economic competition model with the elements of learning theory and emulation • Only one diffusion variable (as a spatial weights matrix), but also includes competition variable	• Spatial ordinary least square regression • Time-series cross-sectional	• Analysis confirms the influence of external globalization factors on domestic policies	• Social policy (social expenditure)
Jensen and Lindstädt 2012	• Social learning and competition • Country-level controls	• Time-series cross-sectional logit models	• Social learning is contingent on government ideology with higher probabilities for left governments. • Tax competition still drives tax policies, but models have to be extended by a social learning component.	• Fiscal policy (corporate taxes)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Kemmerling 2007	• Learning • Social norms and emulation • Competition and externalities • (Coercion and international law)! • Intervening variables • Pre-existing similarities and international shocks	• Regression analysis	• Neighbourhood effects found, but rather effects of competition than learning • Internal factors: problem pressure and economic growth yield most robust finding	• Social policy (employment policy)
Lee and Strang 2006	• Emulation • Competition • Learning • Internal factors (fiscal stress, economic performance, party politics/interest groups, political culture)	• Time-series analysis using spatial correlations • General method of moments regression	• Internal factors: most substantial relationships involve economic development (wealthier countries are more likely to reduce the size of their public sectors); government size (countries with larger governments tend to downsize more); and political leanings (leftist party rule promotes public-sector growth, rightist rule leads toward contraction). • Members of the European Community tend to decrease public employment more than other OECD states do. • Positive effect of global diffusion discovered, but not linked to specific diffusion mechanism • Diffusion patterns found in federal states and among nations that are geographically proximate and/or strongly interact economically. In contrast, there is little evidence that diffusion is structured by trade competition • Also find little support for a simple form of learning, where countries adopt whatever policies appear to work for others. • Disaggregated analyses show that downsizing is contagious while upsizing is not: information asymmetries exist in learning and emulation that makes state act on evidence that downsizing is economically beneficial while ignoring evidence that it is harmful.	• Fiscal policy and public employment
Meseguer 2006	• Rational (or Bayesian) learning • Bounded learning	• Dynamic probit model/ panel analysis	• Countries are particularly influenced by the choices of neighbouring countries as well as successful policy experiences. • Cognitive heuristics exist on policy experience of countries that are geographically proximate (availability heuristic) and the experience of good performers (representativeness heuristic).	• Trade policy

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Mooney 2001	• Social learning: competition based; geography based (cognitive shortcuts).	• Event history analysis • Computer simulation	• Different and complex regional diffusion effects can be distinguished: constant vs. non-constant ones, as well as positive and negative effects.	• Moral policy (state lottery) • Fiscal policy (income tax)
Nicholson-Crotty 2009	• Policy learning • Issue saliency • Policy complexity • Only additional control variables (for example, federal actions, existence of policy entrepreneurs)	• Multivariate probit model and case study (deals with causal mechanisms)	• Diffusion speed dependent on issue saliency and policy complexity • Find evidence that salience increases the likelihood of rapid diffusion, particularly in noncomplex policies • Rather than policy learning an alternative mechanism is at work. In these cases, the re-election goal compels lawmakers to discount long-term costs and benefits, along with the process of learning about them, in favour of short-term electoral gains.	• Variety of policies
Saikawa 2013	• Competitive pressure • Controls: international pressure and coercion, normative emulation and learning and additional domestic factors.	• Rare events logistic regression	• Diffusion of automobile emission standards driven by competitive pressures and learning. • International pressure does not play a role (except for EU membership), whereas normative emulation cannot be fully disregarded (only for developing countries). • Domestic controls show mixed results. Policy adoption does not seem to be problem-driven, but depends on the economic development and vulnerability (measured as the export orientation of the domestic car industry).	• Environmental policy (automobile emission standards)
Schmitt 2011	• Learning from neighbours • Cultural mimicry • Learning through communication • Problem-driven learning • Conditional factors (government ideology and openness of economy) • Political and economic control variables	• Spatial ordinary least square regression	• Policy adoption is driven by geographical and/or economic proximity between countries. • The empirical evidence does not support cultural mimicry and problem-driven learning. • Domestic factors like the openness of the economy highly influence the probability for policy adoption.	• Economic policy (privatization of telecommuni-cations sector)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Sharman 2008	• Rational learning • Coercion • Mimicry • Competition	• Case studies	• Three related mechanisms as main driver of change: direct coercion due to blacklisting; mimicry due to social acceptance in transnational regulators' networks; and competition effects resulting from subjective risk ratings. No evidence for learning. • Mechanisms have been related through "discursively mediated processes" rather than simple, rational responses to changing opportunity structures. • Effects of mechanisms are conditional: the effect of blacklisting depends on the reputation or authority of the external actor; the impact of transnational networks growth as interaction increases, and if there is a general consensus on goals; competition and mimicry mechanisms exert a stronger impact in case of a critical mass of adopters.	• Moral policy (anti-money laundry)
Shipan and Volden 2008	• Learning • Competition • Imitation • Coercion • Mechanism conditional on resources and capacities of city governments • City- and state-level control variables	• Event history analysis	• Diffusion mechanism are contingent on time with imitation being a more short-lived diffusion process than the others • Mechanisms are also conditional, with larger cities being better able to learn from others, less fearful of economic spill overs, and less likely to rely on imitation • Robust diffusion patterns due to learning from earlier adopters; economic competition among proximate cities; imitation of larger cities; negative and significant coercion by state governments • Effects of diffusion mechanisms also dependent on each other (impact of competition and imitation overstated, but still highly significant) • Suggesting that vertical diffusion in the form of state-to-local coercion is a process wholly separate from the horizontal spread of policies from city to city • Vertical diffusion appears to be less conditional than horizontal diffusion. • City-level controls behave as expected • State-level controls less clear	• Moral policy (anti-smoking policies)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Simmons and Elkins 2004	• Altered payoffs: Economic) competition; global norms • New information: learning from success, learning through communication, learning from cultural reference group • Controls: economic conditions, external political pressure, domestic political conditions, geography	• Event history analysis	• Domestic models of foreign economic policy making are insufficient • Policy transitions are influenced by international economic competition for capital as well as the policies of a country's peers (in terms of cultural ties and success)	• Trade policy
Sugiyama 2008	• Electoral interest (i.e. political competition) • Ideological beliefs of actors • Socialized norms (networks and linkages) • Federal (fiscal) incentives	• Event history analysis	• Electoral competition fails to explain why policy makers emulate • Both ideological and sociological motivations compel actors' decisions to emulate • Federal government intervention can propel local government to enact social policies, but effect depends on actors' motivations	• Social policy (education and health care)
Volden 2006	• Emulation (through competition and/or learning)	• Directed dyad-year event history analysis	• Emulation of states with successful policies • Especially in cases of a) policies aiming to lower costs rather than expanding public spending, and b) legislative but hardly in cases of changed induced by public agencies (rather than legislatives) • Political (partisan/ideological), demographic, and budgetary similarities are important rather than geographic proximity	• Social policy (health care)
Weyland 2007	• External pressure and imposition • Different forms of learning: comprehensive rational; bounded cognitive heuristics; symbolic and normative imitation	• Case studies/ process tracing	• Search for policies problem driven rather than normative and symbolic considerations • Cognitive shortcuts as main explanation for diffusion patterns (information availability, focus on short term success/failure, and sticking to initial beliefs) • Normative reasons only in connection with influence of international organisations • Diffusion not due to external imposition, but amplifies already on-going diffusion processes • External pressures are more effective in promoting general guidelines than concrete models. •	• Social policy (pension and health care)

Author(s)	Theoretical framework	Main Method	Main empirical findings	Policy field
Weyland 2009	• Pressure from external powers • Norm promotion by peer countries • Learning from successful countries • Bounded rational learning.	• Case studies	• Bounded rationality as crucial explanatory factor. • Other important factors for policy diffusion are norm cascades, but also domestic factors like the (brutality of) existing regimes.	• Constitutional policy (democracy and liberalism)

VIII. Zusammenfassung/ Abstract

Die Dissertation „A Tale of Many Stories - Policy Diffusion between European Higher Education Systems" untersucht systematisch, wie sich Diffusionsprozesse auf ein bisher in der politikwissenschaftlichen Forschung relativ wenig beachtetes Politikfeld auswirken – den Bereich der europäischen Hochschulpolitik. Die Arbeit reiht sich damit in die langsam wachsende Zahl vergleichender Studien über Politikdiffusion und die zu Grunde liegenden Kausalmechanismen ein. Außerdem ist diese Dissertation die erste Studie zur Diffusion politischer Innovationen zwischen europäischen Hochschulsystemen.

Im Rahmen der Dissertation geht es vorranging darum, Erklärungsmodelle vergleichend zu testen, die sich auf Annahmen über freiwillige Prozesses des Transfers und der Adaption von Politiken durch nationale Regierungen stützen. Ein Erklärungsansatz basiert auf Lernen als Diffusionsmechanismen, während die anderen beiden auf Politikübernahmen durch Sozialisationsprozesse und Externalitäten beruhen. Allen drei Ansätzen ist gemein, dass sie von Interdependenzen im Bereich der Politik zwischen internationalen und nationalen Akteuren als treibende Kraft für die Verbreitung ähnlicher Politiken ausgehen. Darüber hinaus beinhaltet der Analyserahmen einen weiteren Erklärungsansatz, der annimmt, dass Regierungen eben nicht durch externe Faktoren in ihren Entscheidungen beeinflusst werden, sondern unabhängig voneinander ähnliche Problemlösungsansätze verfolgen.

Die den Erklärungsmodellen zu Grunde liegenden Hypothesen werden mit Hilfe von Survival- und Ereignisanalysen getestet. Insgesamt werden 14 leistungsorientierte Hochschulpolitiken wie beispielsweise die Einführung von externen Qualitätssicherungssystemen oder Studiengebühren in 16 westeuropäischen Ländern in den Jahren zwischen 1980 und 1998 untersucht. Empirisch geht es primär um die Frage, *welche internationalen, nationalen und politikfeldspezifischen Faktoren die Verbreitung von hochschulpolitischen Innovationen verursachen und befördern?*

Anhand der empirischen Befunde lässt sich keiner der vier Erklärungsansätze komplett widerlegen. Im Vergleich sind die innenpolitischen Erklärungsfaktoren allerdings am stabilsten, während die Annahmen zu Lernen, Sozialisation und Externalitäten oftmals nicht robust sind. Das bedeutet allerdings nicht, dass auf Interdependenzen beruhende Diffusionsmechanismen keine Bedeutung bei der Verbreitung von Hochschulpolitiken spielen würden. Vielmehr zeigen die Ergebnisse, dass Interdependenz ein multi-dimensionales Konzept ist, und dass unterschiedliche Diffusionsmechanismen parallel ablaufen. Vor diesem Hintergrund bietet sich für die Untersuchung von Politikdiffusion an, mit einem auf Annahmen über innenpolitische Prozesse basierenden Erklärungsansatz zu beginnen, und diesen dann

entsprechend um solche auf Interdependenzen zwischen internationalen und nationalen Akteuren basierenden Variablen zu erweitern. Diffusionsvariablen sind wichtig, um Politikübernahme zu erklären, aber sie stellen nur einen Teilaspekt zum Verständnis von Politikdiffusion dar.

The thesis ”A Tale of Many Stories - Policy Diffusion between European Higher Education Systems” systematically examines diffusion processes and their effects with regard to a rather neglected policy area – the case of European higher education policy. The thesis contributes to the slowly growing number of comparative and mechanism-based studies on policy diffusion and represents the first study on the diffusion of policies between European Higher Education Systems.

The main aim is to contrast and compare testable and coherent explanatory models on the functioning of different diffusion mechanisms. Three sets of explanatory models on the relationship between variables triggering and conditioning diffusion mechanisms and their impact on policy adoption are drawn from mechanism-based thinking on policy diffusion: on learning, socialization, and externalities. These approaches conceptualize the policy process in terms of interdependencies between international and national actors. Explanatory models based on assumptions about domestic policies and the common responses of countries to similar policy problems extend this theoretical framework.

The thesis is based on event history modelling of policy change and adoption in higher education systems of 16 West European countries between the yeas 1980 and 1998. Overall 14 policy items describing performance-orientated reforms for public universities ranging from the adoption of external quality assurance systems to tuition fees are examined. Empirically, the main research question is w*hat international, national and policy-specific factors cause and condition diffusion processes and the adoption of public policies?*

Evidence can be found for and against all of the four theoretical approaches tested. In comparison, many of the assumptions related to interdependencies lack robustness, whereas the common response model is the most stable one. This does not mean that explanatory models based on interdependent decision-making are not suitable for analysing policy diffusion in higher education. Rather interdependency is a multi-dimensional concept that requires a comparative assessment of diffusion mechanisms. Some of explanatory factors based on interdependent decision-making are still supported by the empirical analysis though. From this point of view, the recommendation for analysing diffusion is to start with a model based on domestic politics, that is successively extended by explanatory factors dealing with interdependencies between international and national actors. Diffusion variables matter – but it is only one side of the tale on policy diffusion.

IX. Liste der Vorveröffentlichungen

Heinze, Torben (2011). „Mechanism-Based Thinking on Policy Diffusion. A Review of Current Approaches in Political Science", *KFG Working Paper Series*, Nr. 34, Dezember 2011, Kolleg-Forschergruppe (KFG) „The Transformative Power of Europe", Freie Universität Berlin.

X. Curriculum Vitae

Der Lebenslauf ist in der Online-Version aus Gründen des Datenschutzes nicht enthalten.

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