

MARTEN STIENSTRA

Strategic Renewal in Regulatory Environments

How Inter- and Intra-organisational Institutional
Forces Influence European Incumbent Energy Firms



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Strategische vernieuwing in gereguleerde omgevingen: De invloed van inter- en intra-organisatiele institutionele krachten op grote gevestigde Europese energiebedrijven

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Preface

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Part I

Introduction and main concepts

1 Introduction

1.1 Research problem

In the increasingly turbulent business environment of today, managers find themselves confronted with rapid and profound changes in macro social, economic, political and technological conditions. Although deregulation programmes have been introduced in many industries to keep pace with shifting macro environmental developments, regulation will continue to be an important tool to safeguard public policy goals (OECD 1997). This especially affects industries with a high ‘public-good’ character, like healthcare, public transportation and energy. The recent crisis in the global financial services industry provides evidence that the potential downsides of deregulation are more severe than one could possibly have imagined.

Market regulation policy is based on the assumption that humans (or managers) are incapable or unwilling to understand the long-term consequences of their actions and that collective decision making will reduce that error to some extent. This thesis has its focus on strategic renewal actions in the context of regulatory policy. Most studies emphasise that regulatory environments constrain strategic renewal choices (Peteraf and Reed 2008) or limit managerial latitude of action (Hambrick and Finkelstein 1987). Organisations incorporate institutional rules, which provide stability and legitimacy (Meyer and Rowan 1977). From this perspective, the regulatory environment acts as an external selection mechanism that imposes constraints upon a firm’s strategic renewal actions (e.g. Beardsley, Bugrov and Enriquez 2005; Flier et al. 2001; Kim and Prescott 2005). Complementary to this deterministic view, Peteraf and Reed (2008: 100) argue that “managers may be able to respond adaptively to the constrained conditions” and propose a more voluntaristic view of strategic renewal as an adaptive mechanism in regulatory environments. Assuming that strategic renewal in regulatory environments is both constrained and enabled, this thesis addresses the research problem of how and to what extent incumbent firms undertake strategic renewal actions in pursuit of a competitive advantage.

Research scope

We will study strategic renewal actions of incumbent firms in the European energy industry. We specifically focus on incumbent firms that are active in electricity or gas. European energy incumbents were used to supply energy to customers in a monopolistic market for decades or even centuries. Since the implementation of European Union (EU) directives 96/92/EC and 98/30/EC, which heralded the start of a single European market for electricity and gas, respectively, the European energy industry has been confronted by major regulatory punctuations (e.g. Helm and Jenkinson 1998; Newbery 2004). In this context, incumbent firms – as opposed to new entrants – may suffer from the liability of oldness (Hensmans, Van den Bosch and Volberda 2001), meaning difficulties to adapt to changing regulatory circumstances.

In the context of changing regulatory circumstances, many attributes can be distinguished to investigate a firm's strategic responses. We exemplify three classifications that are widely debated in literature: external oriented versus autonomous strategic renewal actions, international versus domestic strategic renewal actions and exploitative versus explorative strategic renewal actions. First, it is of strategic importance of incumbent firms to decide on changing autonomously (e.g. Burgelman 1996) or in cooperation with outside partners (e.g. Dyer and Singh 1998). Second, should incumbent firms choose to expand internationally (e.g. Bartlett and Ghoshal 1995) or concentrate on the national market (e.g. Porter 1990)? Third, should firms strengthen their current resource configuration or core competencies (e.g. Penrose 1959; Wernerfelt 1984) or develop dynamic capabilities (e.g. Teece, Pisano and Shuen 1997) that may lead to new ways of wealth generation? This relates to March's (1991) notion of exploitation and exploration. As March (1991: 71) pointed out: "Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution". Expansion into new markets, new product introductions and the creation of new businesses are typical examples of explorative strategic renewal actions, whereas optimisation, efficiency programs, and actions that increase the scale of existing businesses exemplify exploitative strategic renewal actions.

In this thesis, we focus on the concepts of exploitation and exploration to investigate incumbent firms' strategic responses for two main considerations. First, although exploitation and exploration were originally presented in the context of organisational learning (March 1991), strategic management researchers have taken up the concepts to describe the content dimension of strategic renewal (e.g. Volberda, Baden-Fuller and Van den Bosch 2001; Volberda et al. 2001b; Flier 2003). The other two classifications relate to the context dimension of strategic renewal (Flier 2003). In line with the research problem, the focus of this thesis is on the content dimension of strategic renewal, i.e. strategic renewal actions. Second, exploitation and exploration address performance issues. In the short run, exploitation optimises current performance, whereas exploration involves costs of experimentation and uncertainty about performance (March 1991). In the long run, exploitation may be sub-optimal, whereas the gains of exploration may become beneficial (March 1991). This is also known as the exploration/exploitation trade-off (March 1991).

1.2 Research questions

To overcome the exploration/exploitation trade-off (March 1991), recent studies in strategic renewal stress that firms have to address exploration and exploitation simultaneously (e.g. Beckman 2006; Benner and Tushman 2003; Gupta, Smith and Shalley 2006; Jansen et al. 2008; Lubatkin et al. 2006; O'Reilly and Tushman 2004). The twin concepts of exploitation and exploration involve a number of complex variables and contingencies (Gupta et al. 2006). This thesis aims to address a number of variables and contingencies that constitute a firm's strategic development path (Siggelkow 2002) of exploitation and exploration. More specifically, we build on the works of Johnson, Melin and Whittington (2003), Mintzberg (1978), Siggelkow (2002), Van de Ven (1992) and Volberda et al. (2001a; 2001b) to analyse a firm's strategic development path of exploitative and explorative strategic renewal actions to align with or adapt to (changing) regulatory issues.

The research aim is explicated into the following main research question:

In the context of regulatory environments, what factors influence an incumbent firm's exploitative and explorative strategic renewal actions over time?

Three sets of sub-questions are specified to answer the main research question. First, we delve into contextual issues of regulatory environments and question how patterns of regulatory reform have diffused across European electricity and gas markets since the implementation of EU directives 96/92/EC (electricity) and 98/30/EC (gas). This gives rise to the first set of sub-questions:

Q1a. Which characteristics are associated with regulatory environments?

Q1b. At country level, how does regulatory reform diffuse across European energy markets?

Based on the assumption that strategic renewal in regulatory environments is both constrained and enabled, strategic renewal actions can be investigated from a variety of strategic renewal perspectives that maintain either a selection or an adaptation argument (e.g. Aldrich 1999; Lewin and Volberda 1999; Volberda et al. 2001a). *Selection perspectives* are deterministic and claim that firms are constrained or relatively inert to renew themselves (Haveman, Russo and Meyer 2001). Following Lewin and Volberda (1999) and Volberda et al (2001a), population ecology, evolutionary theory, industrial organisation and resource based view are classified as selection perspectives. From a population ecology perspective, structural inertia limits the leeway in a firm's strategic renewal actions (e.g. Hannan and Freeman 1984). Evolutionary theory stresses the proliferation of existing routines in a firm's strategic renewal actions (e.g. Nelson and Winter 1982). Industrial organisation centres on the 'structure-conduct-performance' approach (e.g. Bain 1956; Mason 1957). Originally, this perspective explained strategy and performance as a result of industry structure: "the firm was stuck with the structure of its industry and had no latitude to alter the state of affairs" (Porter 1981: 613). Resource based

view emphasises the exploitation of existing core competencies in a firm's strategic renewal activities (e.g. Penrose 1959; Wernerfelt 1984).

In general, selection perspectives provoke exploitative strategic renewal actions, i.e. actions that strengthen a firm's current resource deployments and maintain congruence with a firm's current path of institutionalised activities. In this respect, the concept of path dependency seems applicable. Garud and Karnoe (2001: 4) describe path dependency as: "a sequence of events constituting a self-reinforcing process that unfolds into one of several potential states". Further, path dependency "characterizes specifically those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties" (Mahoney 2000: 507). Selection perspectives differ in their unit of analysis. Most selection perspectives maintain an industry level of analysis in which firms are considered to be homogeneous entities (e.g. industrial organisation). However, some selection perspectives have a firm level of analysis and assume that resources are heterogeneously dispersed across firms (e.g. resource based view). This gives rise to the second set of sub-questions:

Q2a. At industry level, which environmental determinants are related to firms' exploitative strategic renewal actions?

Q2b. At firm level, which internal factors influence a firm's proclivity towards exploitative strategic renewal actions?

Complementary to selection perspectives, *adaptation perspectives* are voluntaristic and claim that firms are less inert and able to renew (Haveman et al. 2001). Dynamic capabilities theory, behavioural theory, organisational learning and strategic choice theory are classified as adaptation perspectives (Volberda et al. 2001a). Dynamic capabilities theory emphasises renewal in a firm's activity pattern over time. In addition to the resource based view, it is argued that firms need to adapt their core competencies over time in order to meet changing demands of the environment (e.g. Eisenhardt and Martin 2000; Teece et al. 1997). Behavioural theory views strategic renewal as the allocation of organisational slack to new skills and capabilities (e.g. Cyert and March 1963). From an organisational learning perspective (e.g. Argyris and Schön 1978; Fiol and Lyles 1985), the ability to

learn, unlearn, and relearn allows organisations to reflect on their strategic renewal actions, which might in turn affect future strategic renewal actions. Finally, strategic choice theorists (e.g. Child 1997) emphasise managerial leeway in a firm's strategic renewal choices.

In general, adaptation perspectives constitute opportunities for explorative strategic renewal actions in addition to exploitative strategic renewal actions. Explorative strategic renewal actions generate new ways of wealth generation for the firm and involve a firm's proclivity to deviate from its historical institutionalised pattern of activities. In this respect, the concepts of path independency or path creation (Garud and Karnoe 2001) seem applicable. As knowledgeable agents, managers meaningfully navigate the sequence of strategic renewal actions, rather than being passive observers within a stream of events (Garud and Karnoe 2001). Although adaptation perspectives generally maintain a firm level of analysis, adaptation may also result from weakening environmental selection pressures. Therefore, and similar to the second set of sub-questions, we will study antecedents of explorative strategic renewal actions at both an industry and a firm level of analysis. This gives rise to the third set of sub-questions:

Q3a. At industry level, which environmental determinants are related to firms' explorative strategic renewal actions?

Q3b. At firm level, which internal factors influence a firm's proclivity towards explorative strategic renewal actions?

The research questions will be addressed from both a theoretical and an empirical point of view. Table 1.1 provides an overview how various chapters of this thesis relate to the research questions. Our research questions might suggest that strategic renewal actions are either environmentally or organisationally derived. However, we agree with Hrebiniak and Joyce (1985: 336) that: "... classifying renewal as either organizationally or environmentally determined is misleading and diverts research inquiry away from the critical interactive nature of organization-environment relationships in the adaptation process". In addition to explaining strategic renewal actions either environmentally or organisationally, our theoretical framework is therefore also geared towards hypothesising

strategic renewal actions as a result of the interaction between internal and external organisational processes.

Table 1.1: Overview of the research questions

Research question	Theoretical in chapter	Empirical in chapter
Q1a. Which characteristics are associated with regulatory environments?	2	
Q1b. At country level, how does regulatory reform diffuse across European energy markets?		7
Q2a. At industry level, which environmental determinants are related to firms' exploitative strategic renewal actions?	5	8
Q2b. At firm level, which internal factors influence a firm's proclivity towards exploitative strategic renewal actions?	5	9
Q3a. At industry level, which environmental determinants are related to firms' explorative strategic renewal actions?	5	8
Q3b. At firm level, which internal factors influence a firm's proclivity towards explorative strategic renewal actions?	5	9

1.3 Multi-level institutional approach

To address the research questions, an institutional theory lens is adopted for two main considerations. First, institutional theory is helpful to study the behaviour of organisations and its members in the context of regulatory processes (e.g. Scott 2001). More specifically, as regulatory environments can both constrain and enable managerial action (Peteraf and Reed 2008), institutional theory may explain “purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions” (Lawrence and Suddaby 2006: 214).

Second, institutional theory is adopted for its applicability to various levels of analysis. At society or country level, institutional theory is helpful to study macro level developments. Sectors or industries are the focal unit of analysis in meso level institutional studies. Micro level institutional studies adopt a firm (and its organisational members) unit of analysis. For example, Scott's (2001) regulative pillar can be applied to study (1)

political processes in a society (e.g. Newbery 2004), (2) sector regulations (e.g. Beardsley et al. 2005) or (3) organisational rules, laws and sanctions (e.g. North 1990).

Theorists commonly distinguish between old, new and neo institutionalism (e.g. DiMaggio and Powell 1991a; Greenwood and Hinings 1996). In addition, institutional entrepreneurship has emerged as a concept that has attracted increased attention in recent years (Garud, Hardy and Maguire 2007). Table 1.2 summarises the four streams of institutional theory according to strategic renewal potential and level of analysis. Intra-organisational perspectives study institutional processes within firms (micro level), whereas inter-organisational perspectives study institutional processes that transcend individual firms (meso and macro level).

Table 1.2: Four institutional perspectives classified according to level of analysis and strategic renewal potential

Level of analysis	Strategic renewal potential		
	<i>Low (constrained)</i>	<i>Medium</i>	<i>High (enabled)</i>
<i>Mainly intra-organisational</i>	Old institutional theory (e.g. DiMaggio and Powell 1991a)		Institutional entrepreneurship (e.g. Garud et al. 2007)
<i>Both intra- and inter-organisational</i>		Neo institutional theory (e.g. Greenwood and Hinings 1996)	
<i>Mainly inter-organisational</i>	New institutional theory (e.g. Meyer and Rowan 1977; DiMaggio and Powell 1991b)		

Old institutional theory studies institutional constraints at firm level: the organisation and its members (DiMaggio and Powell 1991a). On the contrary, institutional entrepreneurship literature suggests more leeway for strategic renewal opportunities. Institutional entrepreneurship refers to: “activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to

transform existing ones” (Maguire, Hardy and Lawrence 2004: 657). Although the concept of institutional entrepreneurship has been applied at various levels of analysis, Lounsbury and Crumley (2007: 993) argue that institutional entrepreneurship has “too often celebrated the actions of a single or small number of actors. We focus at the organisational unit level and try to deepen the understanding of how embedding agency in the intra-organisational context provides a platform for unfolding entrepreneurial activities (Garud et al. 2007). New institutional theory focuses on the inter-organisational context (e.g. Meyer and Rowan 1977). Organisations are conceptualised as homogeneous entities (DiMaggio and Powell 1991b) that respond similarly to institutional prescriptions. Strategic renewal is limited to being perceived legitimate by the outside world. Neo institutional theory emerged in reaction to old and new institutionalism and bridges these together (Greenwood and Hinings 1996). Neo institutional theory, when elaborated, “provides a model of change that links organizational context and intra-organizational dynamics” (Greenwood and Hinings 1996: 1023). Consequently, from a neo institutional theory perspective, the strategic renewal potential is considered to be medium.

1.4 Research contributions

Our research problem and questions (see paragraph 1.2) are framed from both a selection and an adaptation point of view. Although it has long been suggested that strategic renewal needs to be studied from selection and adaptation perspectives simultaneously (e.g. Hrebiniak and Joyce 1985; Lewin and Volberda 1999), the number of empirical studies in which this indeed occurs is still limited. This may be explained by the fact that both views rely on different methodological assumptions (Burrell and Morgan 1979). In general, selection theories study strategic renewal at industry level, while adaptation theories study strategic renewal from a company level perspective. Within institutional theory, selection has recently become linked to adaptation in a number of instances. Examples are Peteraf and Reed (2008), Rodrigues and Child (2003) and Zietsma and Lawrence (2005) who study the possibility of strategic choice or active agency in institutionalised contexts. This study contributes to recent developments in institutional theory literature in which selection and adaptation arguments are combined. Building upon old institutionalism, new

institutionalism, neo institutionalism and institutional entrepreneurship literature, a multi-level framework has been developed to study how various elements of a firm's institutional context interact and influence the extent to which strategic renewal actions are either constrained or enabled. From this framework, we further distinguish three main contributions at different levels of analysis from both a theoretical and a methodological/empirical point of view (see table 1.3).

First, at inter-organisational level of analysis, a framework will be developed to substantiate how the institutional regime constitutes of regulative, normative and cognitive elements that impact upon incumbent firms' strategic renewal actions. Regimes are defined as: "sets of implicit or explicit principles, norms, rules, and decision making procedures around with actors' expectations converge in a given area of international relations" Krasner (1983: 2). Applying a document analysis procedure, we have created a database which contains 1127 strategic renewal actions of 13 European incumbent energy firms in the period 1999-2004. Contrary to a rational-actor approach – in which managers choose the best strategic action given the cost/benefit conditions at hand – our statistical findings clarify "what has meaning and what actions are possible" (Zucker 1983: 2). Further, while recent studies mainly focus on survey data to measure issues of exploitation and exploration (e.g. Gibson and Birkinshaw 2004; Jansen, Van den Bosch and Volberda 2006), our document analysis procedure allows for a complementary way of measuring exploitation and exploration. A major strength of this method is the use of contemporaneous reporting on the actual realisation of exploitation and exploration at strategic action level.

Table 1.3: Main theoretical and methodological/empirical contributions of the research at different levels of analysis

Level of analysis	Theoretical contribution based on developed framework and hypotheses	Methodological/empirical contribution based on document analysis and survey research
Inter-organisational	<p><i>To new institutional theory:</i> Inter-organisational institutional forces impact firms' choices of exploitative and explorative strategic renewal actions through regulative, normative and cognitive forces.</p>	<p><i>Based on document analysis:</i> A strategic action pattern approach will be applied to measure the actual realisation of exploitation and exploration at strategic action level.</p>
Intra-organisational	<p><i>To old institutional theory:</i> The extent of intra-organisational regulative forces is positively related to exploitative strategic renewal actions.</p> <p><i>To institutional entrepreneurship:</i> Institutional entrepreneurship is a catalyst of both exploitative and explorative strategic renewal actions.</p>	<p><i>Based on survey research:</i> A new survey scale will be developed and validated to measure the extent of intra-organisational regulative forces.</p> <p><i>Based on survey research:</i> An existing survey scale will be adapted to measure the extent of institutional entrepreneurship at organisational unit level.</p>
Intra- and inter-organisational	<p><i>To neo institutional theory:</i> The extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal actions.</p>	<p><i>Based on survey research:</i> A new survey scale will be developed and validated to measure the extent of inter-organisational regulative forces.</p>

Second, at intra-organisational level of analysis, we argue that the extent of intra-organisational regulative forces is positively related to exploitative strategic renewal. This contributes to the old institutional theory notion that strategic renewal actions are "... crystallized through the preservation of custom and precedent" (Selznick 1949: 182). In

addition, from an institutional entrepreneurship perspective, we hypothesise a positive relationship between institutional entrepreneurship and both exploitative and explorative strategic renewal actions. Freshly developed empirical insights contribute to recent literature in which the influence of managerial roles on the integration of exploitation and exploration is addressed (e.g. Jansen et al. 2008; Lubatkin et al. 2006). From a methodological/empirical point of view, our institutional entrepreneurship measure is inclined towards parameters that facilitate the embeddedness of entrepreneurship within an organisational unit. This diverts the attention away from the individual level of analysis, which is common in institutional entrepreneurship literature (Lounsbury and Crumley 2007).

Third, we bridge new institutionalism and old institutionalism by applying a neo institutional theory perspective (e.g. Greenwood and Hinings 1996). More specifically we provide insights how environmental selection and firm level adaptation are interrelated in the context of regulation. As the inter-organisational regulatory context provides institutional pressures for adopting a clearly legitimated organisational template (Greenwood and Hinings 1996), we hypothesise that the higher the extent of inter-organisational regulative forces will be, the greater the impact of intra-organisational regulative forces on exploitative strategic renewal. As appropriate scales for intra- and inter-organisational regulative forces are not available, we will take several steps to develop valid measures for these constructs.

1.5 Thesis structure

This thesis is structured into four parts and ten chapters (see figure 1.1). In the first part, the research is introduced (this chapter) and the main research concepts are elaborated upon. In the next chapter, we will define characteristics of regulatory environments and start exploring how regulatory reform can affect firms' strategic choices of exploitation and exploration. In chapter 3, we will describe eight strategic renewal perspectives that are classified as either selection or adaptation. To conclude, we classify the four institutional theory perspectives according to their position in the selection-adaptation debate (e.g. Baum 1996).

Figure 1.1: Thesis structure indicating main contents of the chapters

1. Introduction		
Research problem, scope, questions and contributions		
2. Regulatory environments		3. Strategic renewal
Regulation, regulatory reform and firm implications		Selection and adaptation debate

4. Institutional theory		
Review of four institutional perspectives		
5. Theoretical framework		
Research model and hypotheses		

6. Research methodology		
Description of document analysis and survey design		
7. Country level findings	8. Industry level findings	9. Firm level findings
European electricity and gas market statistics	Exploitation / exploration at strategic action level	Exploitation / exploration at organisational unit level

10. Conclusion		
Discussion, limitations, contributions and conclusion		

The second part of the thesis is geared towards building a multi-level institutional theoretical framework. First, we will extensively review the four institutional theory perspectives in chapter 4. Then, in chapter 5, we further refine our choice for institutional theory. The main variables of this thesis and relationships between these variables are specified. Two sets of hypotheses will be developed. The first set of hypotheses, at industry level, is developed from a new institutional theory perspective. The second set of hypotheses, at organisational unit level, builds upon old institutional theory, neo institutional theory and institutional entrepreneurship literature.

In the third part, we describe our methodology and present the empirical findings. In chapter 6, the research design and data collection methods are described in detail. A document analysis will be conducted to address the first set of hypotheses and a survey has been designed to investigate the second set of hypotheses. Chapter 7 presents European electricity and gas market statistics. More specifically, we describe how patterns of regulatory reform diffuse across six Northwest European electricity and gas markets: Belgium, France, Germany, Netherlands, Sweden and United Kingdom (UK). In chapter 8, exploitative and explorative strategic renewal actions from 13 European incumbent energy firms are presented and analysed, whereas chapter 9 has been reserved for empirical analyses at organisational unit level of two Dutch leading energy firms.

In the final chapter, we will discuss our research findings at various levels of analysis. In addition, limitations of our study will be addressed and suggestions for future research are presented. Finally, implications for scholars and managers are presented and an overall conclusion will be drawn.

2 Characteristics of regulatory environments

2.1 Introduction

In this chapter, we address the first research question (1a) *which characteristics are associated with regulatory environments*. In paragraph 2.2, we define regulation, regulatory reform and deregulation and describe how these concepts relate to liberalisation and privatisation. Then, in paragraph 2.3 we list a number of variables that are of strategic importance to a firm and indicate how these differ across regulated and deregulated environments. In paragraph 2.4, we explore how incumbent firms strategically respond to regulatory reform. In the context of exploitative and explorative strategic actions, we review the findings of various empirical studies that focus on the relationship between regulatory reform and a firm's strategic choices. Paragraph 2.5 concludes by emphasising that regulatory environments provide an interesting research setting to study strategic renewal actions.

2.2 Regulation, regulatory reform and deregulation

Regulation

Regulation is a governmental tool to attain desirable public policy goals (OECD 1997). Mahon and Murray (1980: 124) define regulation as: "an administrative and legal process designed to insure that the public interest is represented and served by means other than market forces". Mahon and Murray (1980) further differentiate between social and economic regulation. The main purpose of social regulation is to regulate non-economic activities, like health and safety, whereas economic regulation targets economic activities in a specific industry. Primary reasons for regulation are to limit excessive competition (Vietor 1989) and to promote stability within an industry (Kim and Prescott 2005). To this end, researchers highlight the importance of regulatory agencies or regulatory programmes to control the market (e.g. Mahon and Murray 1980). Such control takes the form of

market entry/exit control and price control (Vietor 1989; 1991; 1994; Viscusi, Vernon and Harrington 1995).

Regulatory reform

Many industries had been regulated for decades or even centuries. Although regulation will continue to be an important tool safeguard public policy goals, it can become an obstacle to achieve the purposes it was originally intended for (OECD 1997). This is especially the case in times of rapid and profound changes in macro social, economic and technological conditions (OECD 1997). The objective of regulatory reform, according to the OECD (1997: 5) is "... to improve efficiency of national economies and their ability to adapt to change and to remain competitive. Reform that sharpens competitive pressures provides powerful incentives for firms to become more efficient, innovative and competitive". Issues of regulation and regulatory reform have been studied in various empirical settings, like railroads (e.g. Smith and Grimm 1987), financial services (e.g. Reger, Duhaime and Stimpert 1992), trucking (e.g. Silverman, Nickerson and Freeman 1997) and airlines (e.g. Peteraf and Reed 2008; Walker, Madsen and Carini 2002). Amongst different types of regulatory reform, deregulation seems to have received most attention in research. Researchers often cite the OECD (1997: 6) to define deregulation: "Deregulation is a subset of regulatory reform and refers to complete or partial elimination of regulation in a sector to improve economic performance".

Deregulation

Deregulation is easing or eliminating governmental control in three major areas: (1) a firm's freedom of entry into a market, (2) its freedom within a market and (3) its profitability within the market (Emmons 2000). Put simply, deregulation can be characterised as the movement from a regulated to a deregulated environment (Mahon and Murray 1980). Like regulation, a general distinction can be made between social deregulation and economic deregulation (Mahon and Murray 1980; OECD 1999). Table 2.1 provides an overview of regulation, regulatory reform and deregulation and illustrates how these concepts are interrelated.

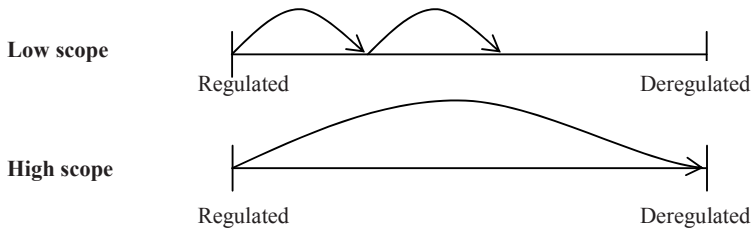
Table 2.1: Illustrative descriptions of regulation, regulatory reform and deregulation

Concept	Description
Regulation	“Regulation is an administrative and legal process designed to insure that the public interest is represented and served by means other than market forces” (Mahon and Murray 1980: 124).
Regulatory reform	“A fundamental objective of regulatory reform is to improve efficiency of national economies and their ability to adapt to change and to remain competitive. Reform that sharpens competitive pressures provides powerful incentives for firms to become more efficient, innovative and competitive” (OECD 1997: 5).
Deregulation	“Deregulation is a subset of regulatory reform and refers to complete or partial elimination of regulation in a sector to improve economic performance” (OECD 1997: 6).

Important motives for deregulation are efficiency (Gentle 1996), freedom of customer choice and internationalisation (Geelhoed 1993). Researchers have been interested in economic deregulation and its impact on firms for more than two decades by now. In the early eighties, Mahon and Murray (1980) are one of the first to notice a rising trend of deregulation in the United States. Mitnick (1978) identifies four methods of deregulation from the viewpoint of the regulatory program or agency. First, catastrophic ending in which the regulatory program or agency ceases to exist on a specific date. Second, wind-down concerns a gradual reduction in the level of activities by the agency. Third, stripping involves the termination of activities one by one. Fourth, disintegration is related to the split-up of the program or agency and the transfer of parts to new or other agencies.

Authors commonly distinguish between scope and pace of deregulation. Scope relates to intensity (Reger et al. 1992) or degree at which regulations are relaxed (Kim and Prescott 2005) from an industry. Figure 2.1 graphically illustrates the difference between high scope and low scope of deregulation.

Figure 2.1: The intensity or degree at which regulations are relaxed: low scope versus high scope of deregulation



Pace is associated with the speed at which regulations are removed from an industry (Kim and Prescott 2005; Reger et al. 1992; Spulber 1989). Kim and Prescott (2005) identify four forms of deregulation based on scope and pace. First, plodding deregulation in which both scope and pace are low. Second, piecemeal deregulation concerns low scope and high pace. Third, metamorphic deregulation is characterised as high scope and low pace. Fourth, frame-breaking deregulation is associated with high scope and high pace (see table 2.2).

Table 2.2: Four types of deregulation

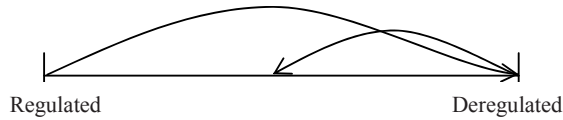
Scope of deregulation	Pace of deregulation	
	<i>Low</i>	<i>High</i>
<i>Low</i>	Plodding deregulation (High predictability)	Piecemeal deregulation (Medium predictability)
<i>High</i>	Metamorphic deregulation (Medium predictability)	Frame-breaking deregulation (Low predictability)

Source: Adapted from Kim and Prescott (2005)

As frame-breaking deregulation is a one-off event that occurs at a specific date, this type of deregulation is associated with very low levels of predictability from the viewpoint of firms. On the other hand, plodding is a process that takes place gradually over time. This ‘regulatory incrementalism’ (Reger et al. 1992) provides firms with a more favourable window to prepare themselves for deregulation. Metamorphic deregulation and piecemeal deregulation are positioned in between, resulting in medium levels of predictability. We

acknowledge that deregulation of industries often needs new regulation or re-regulation – instead of less regulation – in order to assure fair competition or to safeguard public policy goals. This is referred to as the paradox of deregulation (Hancher and Van Damme 2000), which is illustrated in figure 2.2.

Figure 2.2: The paradox of deregulation: new regulation or re-regulation



Liberalisation and privatisation

Deregulation is related to liberalisation and privatisation. Liberalisation implies opening up markets or economies for competition. Helm and Jenkinson (1998) provide a good overview of how competition has been introduced into telecom, gas, electricity, rail and water in the UK. Liberalisation has consequences for a firm's strategic decision-making and success. For example, Toulan (2002) found that liberalisation increases incentives for firms to outsource. Further, while liberalisation allows a firm to enter new markets, and thus to increase its market share, it may also have a negative impact on firm success due to the threat of new entrants and increased rivalry among existing players (Porter 1980). Stiwenius (1985) described the disastrous consequences of airline liberalisation, which called for an entirely new corporate philosophy at SAS. In response to national announcements of deregulation and/or liberalisation, some firms are wholly or partly privatised. Privatisation is related to the sale of shares in a company by local, regional or national governments. The primary purpose of privatisation is to promote economic development (Zahra et al. 2000). Researchers have studied privatisation consequences in terms of financial and operational performance (Boubakri and Cosset 1998; D'Souza and Megginson 1999), organisational change (Newman 2000), entrepreneurial mindset (Johnson, Smith and Codling 2000) and first-mover advantages (Doh 2000).

2.3 Characteristics of regulated and deregulated environments

From the preceding discussion, it should become clear that regulation and deregulation are of strategic importance to a firm. Table 2.3 lists a number of strategic characteristics and indicates how these differ across regulated and deregulated environments.

Table 2.3: Main characteristics of regulated and deregulated environments

Variable	Regulated environment	Deregulated environment
Number of actors	Few	Many
Governmental control	Tight	Reduced
Management skills	Political	Strategic
Competition	Limited	Increased
External dependency	Low	High
Main stakeholder	Regulatory agency	Customers and competitors
Profit stream	Steady	Volatile
Strategic opportunities	Limited	Increased

Source: Adapted from Mahon and Murray (1980)

Building upon Thompson's (1967) concepts of domain and task environment, regulated environments have a clearly defined domain and task environment, with few external actors that try to influence the organisation (Mahon and Murray 1980). Moreover, as firms in a regulated environment are involved in a relationship with the regulatory program or agency, they have clearly developed skills in political bargaining and protection from competitive and market forces (Mahon and Murray 1980). The extent of competition is limited due to price controls and entry controls (e.g. Vietor 1994). Given these benefits, deregulation is a dramatic environmental event (Mahon and Murray 1981) in which managers become increasingly dependent upon resources and actors external to the firm (e.g. Pfeffer and Salancik 1978). More specifically: "The regulated firm has role arrangements with its competitors, the regulatory agency, state and federal legislatures and other elements. Deregulation disrupts these agreements. ... The act of deregulation will involve the organization with new stakeholders, constituencies, and multiple bargaining situations as well. It will require the firm to deal more directly with its customers and

competitors than ever before” Mahon and Murray (1980: 131). Deregulation breaks down non-competitive practices of firms (McGahan and Kou 1995). Relaxing or abolishing entry controls and price controls may increase both rivalry among existing players and the threat of new entrants (Porter 1980). Consequently, competitors and customers become the most important stakeholders, not the regulatory agency (Mahon and Murray 1980). Profitability is also affected by deregulation. Although regulated environments guarantee a steady stream of profits, very high rates of return are difficult to achieve (Owen and Braeutigam 1978). Deregulation may increase profit volatility over time. Finally, as the locus of strategic decision-making is at the managers of the firm and no longer at the regulatory agency (Smith and Watts 1992), deregulation may increase a firm’s set of strategic opportunities (Gaver and Gaver 1995). In the next paragraph, we will elaborate upon how regulatory reform affects a firm’s strategic responses.

2.4 Regulatory reform and its impact on strategic choices

It has long been recognised in strategic management literature that firms should maintain congruence with changing environmental conditions in order to remain competitive (Burton and Obel 2004; Thompson 1967; Volberda 1998). Bourgeois (1980) states that a change in domain definition should lead to corresponding changes in organisational actions. The impact of regulatory reform on a firm’s strategic responses has been studied in several empirical settings. More specifically, these studies question if firms changed strategy after key regulatory issues, and, in case they did, in what direction? In line with the research questions, the findings of these studies are interpreted in the context of exploitative and explorative choices (see table 2.4).

Table 2.4: Overview of representative studies that investigate if firms changed strategy after regulatory reform

Authors	Industry	Interpreted finding in the context of exploitative and exploratory choices
Smith and Grimm (1987)	Railroad	Increased focus on exploration
Reger et al. (1992)	Banking	Decreased focus on exploration
Silverman et al. (1997)	Trucking	Increased focus on exploitation
Fox-Wolgramm et al. (1998)	Banking	Increased focus on exploitation
Haveman et al. (2001)	Thriffs	Increased focus on exploration
Walker et al. (2002)	Airline	No increased focus on exploration
Peteraf and Reed (2008)	Airline	Increased focus on exploitation

Smith and Grimm (1987) expected a firm to have different strategies before and after deregulation. Results of 27 railroad firms indicate that 15 railroads indeed changed strategy. Although not central to the study of Smith and Grimm (1987), a thorough analysis of their results indicates that 14 of the 15 changes involve an increase in organisational innovativeness (i.e. exploration), while only one change in strategy is associated with a decrease in organisational innovativeness. Reger et al. (1992) questioned if firms pursue riskier strategies under regulation or deregulation. Their findings from the U.S. banking industry suggest that deregulation is negatively associated with risk (i.e. exploration). Furthermore, Reger et al. (1992) found that product/market diversification is unaffected by deregulation. Analysing firm mortality in the U.S. trucking industry, Silverman et al. (1997) advise a multidisciplinary approach to ensure a firm’s survival after deregulation. At the beginning of deregulation, it appears that firms focus on optimising organisational characteristics along profit measures, efficient relationships with resource providers, and legitimacy (i.e. exploitation).

Fox-Wolgramm, Boal and Hunt (1998) questioned if organisations respond differently to pressing institutional issues. In the context of a key regulatory issue, they compare a ‘defender bank’ and a ‘prospector bank’ adaptation. The defender bank shows a pattern of activity that resembles Greenwood and Hinings’ (1988) notion of aborted excursion, while the prospector bank fits with Greenwood and Hinings’ (1988) notion of reorientation. However, Fox-Wolgramm et al. (1998) argue that this reorientation

remained within its current strategic orientation. Both change modes are therefore characterised as first-order change (i.e. exploitation). Haveman et al. (2001) study the impact of regulatory punctuations on activity/investments into new lines of business (i.e. exploration) in the savings and loan associations industry (thrifts). Findings show a significant positive effect: “Immediately after the regulatory punctuation, many thrifts decreased their reliance on residential mortgages, their traditional product, and simultaneously increased their investments in new lines of business” (Haveman et al. 2001: 264). Walker et al. (2002) suggest that incumbents are forced to adapt their traditional practices, initiate new programmes and increase experimentation in order to attract and retain customers (i.e. exploration). However, findings from the deregulating airlines industry show that incumbents do not become more diverse as their markets become more competitive (Walker et al. 2002). Finally, Peteraf and Reed (2008) question – in the context of regulatory reform – how managerial choice can facilitate organisational adaptation and improve efficiency. Findings from the airline industry, using cost function estimation in both regulated and deregulated periods, point at costs reductions and increased efficiency (i.e. exploitation) under regulatory change. More specifically: “At a more microlevel, we found further evidence to suggest that managers employ choice within different choice domains in an adaptive and cost saving manner. Our findings suggest that they choose technologies that are specific to a particular set of operational variables and make efficiency enhancing adjustments” (Peteraf and Reed 2008: 110).

2.5 Conclusion

In this chapter, we have addressed research question (1a) *which characteristics are associated with regulatory environments*. We described regulatory environments along the concepts regulation, regulatory reform and deregulation, and illustrated how these relate to each other. In addition, the paradox of deregulation (Hancher and Van Damme 2000) was introduced to emphasise that industries often need new regulation or re-regulation – instead of less regulation – to assure fair competition. As will be shown in chapter 7, the paradox of deregulation is very applicable to the European energy industry. Regulatory environments entail many characteristics that are of strategic importance to a firm. The

issue of how regulatory reform affects a firm's strategic choices was the focal point of interest in paragraph 2.4. Although Walker et al. (2002) found that regulatory reform does not affect a firm's strategic responses, the majority of studies found empirical support that regulatory reform impacts firms' choices of exploitative and explorative strategic renewal actions. Despite the fact that some types of strategic change are favoured over others, it is argued that firms that do take action will out-perform firms that do not take action in times of regulatory reform (Smith and Grimm 1987). In conclusion, regulatory environments provide an interesting research setting to study strategic renewal of incumbent firms. Strategic renewal will be described more extensively in the next chapter. In the remainder of this thesis, we will more precisely investigate how and to what extent various regulatory variables and contingencies relate to exploitative and explorative strategic renewal actions.

3 Strategic renewal

3.1 Introduction

This chapter addresses the main dependent variables of the study: strategy and strategic renewal. Over the last forty years, strategy has developed into a multi-dimensional construct in contemporary business literature. With the growing emergence of business firms, the concept of strategy gained momentum in a sociological and economic direction (e.g. Dobbin and Baum 2000). Sociological and economic approaches to strategy will be briefly reviewed in paragraph 3.2. In addition to strategy, we introduce strategic renewal as a more dynamic concept to better understand organisation-environment contingencies in paragraph 3.3. Further, we present four idealised strategic renewal journeys developed by Volberda et al. (2001a) to illustrate how our strategic renewal conceptualisation applies to incumbent firms. In paragraph 3.4, we depart from the classification of Volberda et al. (2001a) to describe eight single-lens perspectives. Four perspectives maintain a selection argument (i.e. population ecology, evolutionary theory, new institutional theory and resource based view), while the other four are classified as adaptation (i.e. dynamic capabilities theory, behavioural theory, organisational learning and strategic choice). Finally, institutional theory is brought forward to address the research problem and research questions. Institutional theory entails both selection and adaptation arguments.

3.2 Sociological and economic approaches to strategy

In this section, we build upon Dobbin and Baum (2000) in order to briefly describe sociological and economic contributions to strategy. Sociological approaches delve into issues of power, network structure and socially constructed reality, while economic approaches are geared towards theorising efficiency and profitability.

Sociological approaches to strategy have their roots in the works of Marx (1894), Durkheim (1933) and Weber (1978). First, structural power theory has its breeding ground in the work of Marx (Dobbin and Baum 2000). Structural power theory suggests that the

structure, composition and influence of board members have an impact upon business strategy (e.g. Mintz and Schwartz 1985; Useem, 1984). Second, network theory emerged from Durkheim's (1933) work of how networks produce social identity (Dobbin and Baum 2000). It is further argued that network structure and position determine business success (e.g. Burt 1992; Palmer et al. 1995). Third, the sociological branch of institutional theory (e.g. Berger and Luckmann 1966; DiMaggio and Powell 1991b; Meyer and Rowan 1977) builds on Weber's (1978) notion of 'verstehen', the subjective meaning of action (Dobbin and Baum 2000). In this respect, "strategic decisions occur within an institutional context that defines what is 'strategic' and what is not" (Dobbin and Baum 2000: 11).

Mainstream economics has initially ignored the role of strategy. From a microeconomic point of view, the firm "observes market prices and then makes efficient choices of output quantities. All firms are alike, having access to the same information and technology, and the decisions they make are rational and predictable, driven by cost and demand conditions" (Dobbin and Baum 2000: 6). However, subsequent economic approaches denote a more active role of strategy. First, industrial organisation emphasises the 'structure-conduct-performance' approach (e.g. Bain 1956; Mason 1957), which explains strategy and performance as a result of industry characteristics. Second, behavioural theory questions how firms make economic decisions (Cyert and March 1963; March and Simon 1958). Behavioural theory provides an explanation for strategy as the allocation of organisational slack to new skills and capabilities (e.g. Cyert and March 1963). Third, transaction cost theory (e.g. Coase 1937; Williamson 1975) views organisations as an alternative to markets for the execution of transactions. As transactions will usually be executed at the lowest costs, they shift between markets and organisations (Coase 1937). This argument was adopted later by Williamson (1975) in his transaction cost theory approach. In this approach, there are three relevant dimensions of transactions that determine a make or buy decision: asset specificity, uncertainty/complexity and frequency. In addition, Williamson (1975) identifies relationship atmosphere as the fourth dimension, which refers to the sociological preference for governance structures that cannot be explained by efficiency (e.g. Douma and Schreuder 1992). This latter dimension links transaction cost theory with the sociological branch of institutional theory.

3.3 Strategy and strategic renewal

Although we would like to provide an all-encompassing definition of strategy for analytical convenience, this seems very difficult. We refer to Elfring and Volberda (2001a: 1) who argue that: “The choice of a definition and the application of specific strategic management techniques are greatly dependent on which paradigmatic schools of thought in strategic management one prefers”. Yet, if a broad definition of strategy is required, we refer to Johnson and Scholes’ (1997: 10) definition: “Strategy is the direction and scope of an organisation over the long term which achieves advantage for the organisation through its configuration of resources within a changing environment to meet the needs of markets and to fulfil stakeholder expectations”. Rather than coming up with (too) narrow definitions of strategy and strategic renewal, we prefer types or conceptualisations of strategy and strategic renewal.

Strategy

Mintzberg (1987) identifies five ways how the term strategy can be conceptualised: plan, ploy, pattern, position, and perspective. These strategy conceptualisations can be related to Mintzberg’s (1990) schools of thought (see table 3.1).

Table 3.1: Strategy conceptualisations and associated schools of thought

Conceptualisation	Description	Associated school of thought
Plan	Intended course of action	Planning
Ploy	Plan to outwit competition	Political
Pattern	Consistency in behaviour	Learning
Position	Location in the environment	Positioning
Perspective	Way of perceiving the world	Cognitive

Source: Adapted from Mintzberg (1987; 1990)

First, plan recognises strategy as an intended course of action, which is developed consciously and purposefully. Second, ploy specifies strategy as a specific plan or manoeuvre to outwit competitor(s). Third, strategy can be conceptualised as a pattern in a stream of decisions (Mintzberg and Waters 1985). In this respect, strategy results from

consistency in behaviour, which has strong ties with the learning school. Mintzberg and Waters (1985) further distinguish between deliberate and emergent strategies. Deliberate strategies, like plans, are realised as intended. Emergent strategies are realised without any intention. Purely emergent strategies have potential for on-time adjustments to changing environmental circumstances, whereas deliberate strategies do not. Fourth, position views strategy as a means of locating the firm in the environment. Fifth, perspective describes strategy as a unique way of perceiving the world. Strategy is a cognition that exists in the minds of people.

Mintzberg's (1987) strategy conceptualisations are rather static, i.e. there is little room for adaptation to environmental changes. The very nature of planning is static as it provides a 'roadmap' of how to go from A to B. In times of environmental change, the formulated strategy can no longer be realised as intended. Positioning calls for an effective fit between organisation and environment. However, as firms exploit and defend a niche location in the environment, this results in a rather static fit. In times of environmental change, fit should be analysed as a dynamic concept (e.g. Volberda 1998). Recognising strategy as a perspective, organisational responsiveness may be limited due to taken for granted assumptions and cognitive limitations of policy makers. Patterns are perhaps the least static conceptualisation of strategy. Miles and Snow (1978) identify three ideal strategy types that show a consistent pattern of organisational responses to environmental conditions: defenders, prospector and analyzers. Defenders exploit existing products and markets, which requires control and efficiency. Prospectors search for new products and new markets, which call for innovation and flexibility. Analyzers combine elements of both defenders and prospectors, which requires a balance of efficiency and flexibility. The appropriateness of each strategy is contingent upon the environment. The defender strategy is most appropriate in stable environments, whereas the prospector strategy is most appropriate in dynamic environments (Miles and Snow 1978).

Strategic renewal

In times of environmental change, one needs more dynamic conceptualisations of strategy that take changing environmental conditions into account. Strategic renewal has emerged as a concept to address more dynamic applications of the term strategy. Strategic renewal

might be viewed as organisational change in reaction to environmental change (Snow and Hambrick 1980). More specifically, Van de Ven and Poole (1995) refer to strategic renewal as a difference in form, quality or state over time in an organisation's alignment with the environment. However, March (1981) notes that most changes in organisations are done in a relatively familiar way, which promotes organisational stability rather than organisational change. Strategic renewal really occurs when new solutions are applied (Snow and Hambrick 1980).

Building on the works of Johnson et al. (2003), Mintzberg (1978), Siggelkow (2002), Van de Ven (1992) and Volberda et al. (2001a; 2001b), we conceptualise strategic renewal as a firm's strategic development path of exploitative and explorative strategic renewal actions to align with or adapt to (changing) regulatory issues. Based on March's (1991) notion of exploitation and exploration, exploitation involves familiar change, whereas exploration is associated with unfamiliar change. Related issues of exploitation and exploration in previous research (see table 3.2) are described in terms of, for example, inertia and stress (Huff, Huff and Thomas 1992), evolutionary and revolutionary change (Tushman and O'Reilly 1996), incremental learning and step-function learning (Helfat and Raubitschek 2000), institutionalised learning versus intuiting, interpreting and integrating (Crossan and Berdrow 2003), and alignment and adaptation (Gibson and Birkinshaw 2004).

Table 3.2: Issues of exploitation and exploration in previous research

Author(s)	Describing familiar change versus unfamiliar change as:
Ghemawat (1991)	Commitment versus flexibility
Huff et al. (1992)	Inertia versus stress
Mezias and Glynn (1993)	Incremental convergence versus radical orientation
Tushman and O'Reilly (1996)	Evolutionary change versus revolutionary change
Volberda (1998)	Preservation versus change
Helfat and Raubitschek (2000)	Incremental learning versus step-function learning
Crossan and Berdrow (2003)	Institutionalised learning versus intuiting, interpreting, integrating
Gibson and Birkinshaw (2004)	Alignment versus adaptation

The framework developed by Volberda et al. (2001a) is useful to illustrate how our conceptualisation of strategic renewal applies to incumbent firms. Volberda et al. (2001a) identify four idealised strategic renewal journeys of multi-unit firms, each characterised by a different balance between exploitation and exploration (see figure 3.1).

Figure 3.1: Four idealised strategic renewal journeys

	Top management PASSIVE with respect to environment	Top management ACTIVE with respect to environment
Frontline and middle management PASSIVE	<p>Emergent renewal <i>“Following industry rules”</i></p>	<p>Directed renewal <i>“Adapting to industry rules”</i></p>
Frontline and middle management ACTIVE	<p>Facilitated renewal <i>“Influencing industry rules”</i></p>	<p>Transformational renewal <i>“Changing industry rules”</i></p>

Source: Volberda et al. (2001a)

The upper-left box illustrates the situation in which both top management and frontline- and middle management are passive regarding the environment, i.e. emergent renewal. In such a context, strategic renewal is limited to follow the rules of the industry. Emergent renewal has a strong bias towards exploitation (Volberda et al. 2001a). Top managers have a more active attitude to the environment and the balance between exploitation and exploration in the upper-right box. According to Volberda et al. (2001a: 165): “As a result of top-down strategy making, multi-unit firms make their strategy changes deliberately, adapting to changes in their competitive environment, with top management explicitly managing the balance of exploration and exploitation by bringing in new competencies to some units while using well-developed competencies in others”.

The lower-left box illustrates the situation in which frontline- and middle management are active and top management passive regarding the environment, i.e. facilitated renewal. Top management’s role is defined as creating an internal selection

environment (Burgelman 1994) for promising strategic renewal initiatives that originate from lower levels of the organisation. Exploitative and explorative units are balanced in the facilitated renewal journey. Finally, the lower-right box exhibits the situation in which both top management and frontline- and middle management actively change industry rules, i.e. transformational renewal. This renewal journey is associated with significant unlearning and new ways of thinking (Volberda et al. 2001a). The transformational renewal journey is further characterised by an imbalance between exploitation and exploration as firms can move from extreme exploitation to extreme exploration and vice versa (Volberda et al. 2001a). Similar to the Miles and Snow (1978) typology, the appropriateness of each renewal type is contingent upon the environment. Emergent and directed renewal journeys are most appropriate in stable environments, whereas facilitated renewal and transformational renewal journeys are more appropriate in hypercompetitive environments (Volberda et al. 2001a).

3.4 Selection and adaptation perspectives in strategic renewal

Strategic renewal can be contemplated from a variety of theoretical perspectives. Lewin and Volberda (1999) summarise twelve paradigms that are derived from Sociology, Economics, and Strategy & Organisation Design. Sociology contains (1) population ecology and (2) institutional theory. From Economics, six dominant views can be added: (3) industrial organisation, (4) transaction cost economics, (5) behavioural theory, (6) evolutionary theory, (7) resource based view and (8) dynamic capabilities theory. Finally, theories in Strategy & Organisational Design complement the overview: (9) contingency theory, (10) strategic choice, (11) learning theory and (12) life cycle and punctuated equilibrium. Aldrich (1999) distinguishes six perspectives that indicate the extent to which organisations can and do renew. From an ecological perspective, firms are slow to renew due to structural inertia. On the other hand, firms are less inert from an interpretive, organisational learning, resource dependence, and transaction cost economics perspective. Finally, from an institutional perspective, firms only renew when they are forced to do so (Aldrich 1999).

In the remainder of this paragraph, we build upon the classification by Volberda et al. (2001a) to describe eight single-lens perspectives more in depth. These eight perspectives are classified by Volberda et al. (2001a) according to their view on strategic renewal, either selection or adaptation (see table 3.3).

Table 3.3: Selection and adaptation perspectives in strategic renewal

Mainly selection	Mainly adaptation
Population ecology	Dynamic capabilities theory
Evolutionary theory	Behavioural theory
[New] institutional theory (<i>italics added</i>)	Learning theory
Resource based view	Strategic choice theory

Source: Volberda et al. (2001a)

Selection perspectives

Selection theories are deterministic (Volberda et al. 2001a) and claim that firms are relatively inert in times of environmental change (e.g. Haveman et al. 2001). Yet, firms can renew from selection perspectives, but only in relatively familiar ways (i.e. exploitative strategic renewal). Volberda et al. (2001a) classify theories that view strategic renewal as mainly selection by the environment into four groups, namely population ecology, evolutionary theory, (*new*) institutional theory (*italics added*) and resource-based view.

Population ecology views strategic renewal as a process of selection, variation and retention at population level (Hannan and Freeman 1977). Organisations have little or no impact on its adaptation with the environment. Organisations that attempt to renew themselves may even decrease their survival chances (Hannan and Freeman 1984). Population ecology rests on the assumption of structural inertia, which results from sunk costs in past investments, dominant logics, behavioural dispositions and decision heuristics (Aldrich and Pfeffer 1976; Hannan and Freeman 1977; 1984). The environment favours organisational forms that are reliable, accountable and reproducible (Hannan and Freeman 1984). Organisations that survive the selection process will in turn increase their level of structural inertia.

Nelson and Winter (1982) are the pioneers of evolutionary theory with their book *An Evolutionary theory of Economic Change*. Following Douma and Schreuder (1992), evolutionary theory shares a number of characteristics with population ecology: (1) a population level of analysis, (2) the importance of environmental selection, and (3) limited emphasis on organisational adaptability. Evolutionary theory differs from population ecology as it focuses on organisational routines, whereas organisational form is the main concept in population ecology. Nelson and Winter (1982) describe routines as the equivalent of biological genes. Routines are regular and predictable behaviour patterns of firms (Douma and Schreuder 1992). As organisational behaviour results from automatic behaviour programmes, routines explain why organisations are resistant to strategically renew themselves. Organisations can only change in a direction that is consistent with prior learning. However, the potential for strategic renewal increases when routines modify over time. Douma and Schreuder (1992) distinguish two explanations that account for a process of routine modification. First, the Lamarckian view emphasises that routines which are not used for some time may disappear, while routines that are frequently used can modify over time. Second, the Darwinian view describes small mutations in routines as cumulative selection, step by step, over a long period of time.

[New] *institutional theory* questions why there is so much homogeneity of organisational forms and practices (e.g. DiMaggio and Powell 1991a; 1991b; Greenwood and Hinings 1996; Meyer and Rowan 1977). Within new institutional theory, isomorphism is referred to a constraining process that forces firms to resemble other firms that face the same environmental conditions (Hawley 1968). DiMaggio and Powell (1991b: 67) differentiate between: “(1) coercive isomorphism that stems from political influence and the problem of legitimacy; (2) mimetic isomorphism resulting from standard responses to uncertainty; and (3) normative isomorphism, associated with professionalisation”. From a new institutional theory perspective, strategic renewal is directed towards maintaining congruence with industry rules, norms and shared logics (DiMaggio and Powell 1991b; Greenwood and Hinings 1996).

At firm level, *resource based view* stresses the importance of resource heterogeneity, which bestows a firm’s competitive advantage. From this perspective, “the firm is seen as a bundle of tangible and intangible resources and tacit know-how that must

be identified, selected, developed and deployed to generate superior performance” (Elfring and Volberda 2001b: 263). We follow Sanchez (2001) to describe the development of the resource based view over time. In his view, the origins of the resource based view trace back to Penrose (1959). Her theory of growth of the firm predicts that the availability of slack resources forces managers to search for opportunities to expand the firm’s activities. Firms initially grow within the current product market domain, but later also into new product market domains. Wernerfelt (1984) introduced the notion of resource position barrier, which explains above average performance. A firm may exploit its resource position barrier through diversification. Resource heterogeneity and immobility underlie Barney’s (1991) explanation for sustainable competitive advantage. For a competitive advantage to be sustainable, resources must be imperfectly imitable, not substitutable, valuable and rare (Barney 1991). Of these four characteristics, imperfect imitation is analysed more in depth by Dierckx and Cool (1989). Time compression diseconomies, asset mass efficiencies, asset stock interconnectedness, and causal ambiguity prevent perfect imitation of a firm’s resource endowments by other firms (Dierckx and Cool 1989). Researchers have criticised the resource based view as, from this perspective, firms may lack the capacity to develop new resources quickly (Dierckx and Cool 1989). Resource endowments are sticky (Teece et al. 1997) and core competencies can turn into core rigidities (Leonard-Barton 1992) or competence traps (Levinthal and March 1993) in times of environmental change. According to Teece et al. (1997: 514): “at least in the short run, firms are to some degree stuck with what they have and may have to live with what they lack”.

Adaptation perspectives

Complementary to selection perspectives in strategic renewal, adaptation perspectives are more voluntaristic and view strategic renewal as the intentional outcome of an organisation’s actions (Volberda et al. 2001a). Further, adaptation theories claim that firms can change in relatively unfamiliar ways (i.e. explorative strategic renewal) in addition to familiar change (i.e. exploitative strategic renewal). Adaptation perspectives are also classified into four groups by Volberda et al. (2001a), namely dynamic capabilities theory, behavioural theory, learning theory and strategic choice theory.

Dynamic capabilities theory is an extension of the resource based view and emphasises the dynamics of resource deployments within firms over time (Sanchez 2001). This perspective deepens the insights how firms reconsider their fit in times of environmental change (Eisenhardt and Martin 2000). Dynamic capabilities are referred to as a firm's ability to renew and adapt its strategic assets over time (Teece et al. 1997). Strategic assets allow an organisation to earn economic rents and are defined as: "the set of difficult to trade and imitate scarce, appropriable, and specialized resources that bestow a firm's competitive advantage" (Amit and Schoemaker 1993: 36). Managers have to predict ex ante what strategic assets a firm needs in the future. A firm's organisational and managerial processes, in combination with its current resource position, result in natural trajectories along with strategic assets develop to create a competitive advantage in the nearby future (Teece et al. 1997). Eisenhardt and Martin (2000) stress the role of organisational learning in the dynamic capabilities approach. Following Volberda et al. (2001a), we discuss organisational learning as distinct strategic renewal perspective.

Behavioural theory questions how firms make economic decisions (Cyert and March 1963; March and Simon 1958). In their book *A Behavioural Theory of the Firm*, Cyert and March (1963) criticise the microeconomic maximisation assumption and suggest a more behavioural approach in (strategic) decision-making (Argote and Greve 2007). Behavioural theory views the firm as a coalition of participants, each with their own objectives that need to be satisfied (Douma and Schreuder 1992). Organisational slack results from the difference between total resources and total payments necessary to satisfy the objectives of participants. Organisational slack provokes search and change: "Problemistic search implies that organizational aspiration levels adapt to past experience of the focal organization and those of comparable organizations. Once organizational performance falls below the aspiration level, search for solutions will occur and organizational changes become more likely" (Argote and Greve 2007: 343).

Learning theory argues that organisational learning is the driver of strategic renewal. Fiol and Lyles (1985) stress the importance of reflection, resulting from the relationship between past actions, the effectiveness of those actions, and future actions. In this respect, firms have the ability to learn, unlearn, or relearn on the basis of past behaviour (Volberda 1998). In the context of learning, Hedberg (1981) considers

organisational-environmental fit as an adaptive-manipulative relationship. Many attributes can be distinguished to conceptualise a firm's learning. We exemplify three attributes that relate exploitative and explorative strategic renewal. First, Argyris and Schön (1978) differentiate between single-loop and double-loop learning. Single loop learning is beneficial for continuity, consistency and stability (i.e. exploitation), while double loop learning facilitates monitoring and reflection of both the changing external environment and activities within the organisation (i.e. exploration). These two types of learning are complementary and 'deutero' learning entails balancing both forms (Argyris and Schön 1978). Second, Helfat and Raubitschek (2000) identify incremental learning and step-function learning. Incremental learning builds on a firm's current knowledge base (i.e. exploitation), whereas step-function learning involves fundamental departures from a firm's existing knowledge base (i.e. exploration). Third, Crossan, Lane and White (1999) differentiate between institutionalised learning, which relates to the occurrence of routinised actions, and integrating, interpreting and intuiting. Institutionalised learning is associated with issues of exploitation, whereas the latter three types of organisational learning can be characterised as exploration.

Strategic choice theory views strategic renewal as a dynamic interaction between firms and their environments (Child 1997; Hrebiniak and Joyce 1985; Miles and Snow 1978). As opposed to most selection theories, Baden-Fuller and Stopford (1994) argue that managerial intentionality is the most important driving force of strategic renewal, not the industry. Furthermore, decision makers of firms may have diverging ambition levels and views on the future, which impacts strategic choices (Volberda et al. 2001a). Applying their framework of four idealised strategic renewal journeys to two Dutch financial incumbents, Volberda et al. (2001a) empirically illustrate the notion of strategic choice. Although embedded in the same institutional context, Rabobank tried to alter its renewal journey from directed to transformational, while ING changed its renewal journey from emergent to facilitated. Strategic choice theory emphasises managerial leeway in the choice of strategic renewal actions. Although companies are ill-advised to go for all attractive opportunities (Mahon and Murray 1980), the question for what strategic opportunities a firm should go remains mainly unanswered by strategic choice theorists.

3.5 Conclusion

Throughout this chapter, we have classified strategic renewal as being driven by either environmental selection or processes of organisational adaptation. Lewin and Volberda (1999) argue that although the strategy field has benefited extensively from single-lens perspectives, they do not resolve the selection-adaptation debate (Baum 1996). Researchers, according to Lewin and Volberda (1999: 523), “should consider the joint outcomes of managerial adaptation and environmental selection instead of naïve selection or naïve adaptation”. Flier, Van den Bosch and Volberda (2003) combine various single-lens perspectives to study the concurrent operating of selection and adaptation on strategic renewal. In addition, it can also be argued that most theories, in the most up to date iterations, illustrate elements of both selection and adaptation.

In the remainder of this thesis, we combine selection and adaptation arguments to study strategic renewal in the context of regulatory environments. As has been argued in chapter 1, we adopt an institutional theory lens to address the research problem and research questions. Within institutional theory, various perspectives can be distinguished that illustrate elements of selection and adaptation (see table 3.4). Although institutional theory was classified under selection theories in table 3.3, it should be noted that Volberda et al. (2001a) primarily refer to new institutional theory.

Table 3.4: Selection and adaptation perspectives in institutional theory

Mainly selection	Selection and adaptation	Mainly adaptation
Old institutional theory (e.g. Clark 1972; Selznick 1957)	Neo institutional theory (e.g. Greenwood and Hinings 1996)	Institutional entrepreneurship (e.g. Garud et al. 2007)
New institutional theory (e.g. DiMaggio and Powell 1991b; Meyer and Rowan 1977)		

Both old and new institutionalisms are classified as selection, which indicates that strategic renewal is relatively constrained over time. Old institutional theory (e.g. Clark 1972; Selznick 1957) views constraints resulting from political tradeoffs and loyalties of

personnel tied to local communities (DiMaggio and Powell 1991a). From a new institutional theory perspective (e.g. DiMaggio and Powell 1991b), organisations incorporate institutional rules, which provoke stability and legitimacy (Meyer and Rowan 1977). These views will be complemented with a neo institutional perspective, which bridges old and new institutional theory (Greenwood and Hinings 1996). According to Greenwood and Hinings (1996: 1023): “Neo institutional theory contains insights and suggestions that, when elaborated, provide a model of change that links organizational context and intraorganizational dynamics”. Consequently, we argue that neo institutional theory comprises both selection and adaptation arguments. Finally, institutional entrepreneurship literature (e.g. Garud et al. 2007) is characterised as the most adaptive perspective within institutional theory. From this perspective, actors can actively change the established institutional order. In the next chapter, we will more extensively review the four institutional perspectives according to their position in the selection-adaptation spectrum.

Part II

Theoretical framework

4 Literature review of institutional theory

4.1 Introduction

In this chapter, we will review institutional theory literature and emphasise its value in addressing the research problem and research questions. First, we address issues of fragmentation and integration when studying strategic renewal behaviour of firms in paragraph 4.2. Institutional theory is brought forward as a dominant research programme that partly overcomes the limitations when studying strategic renewal either too fragmented or too integrated. In paragraph 4.3, we build upon old and a new institutional theory to describe how the institutional context can act as a selection mechanism upon firms' strategic renewal actions. Applying Scott's (2001) three pillars of institutionalism (i.e. regulative, normative and cultural-cognitive) at both intra-organisational (micro) and inter-organisational (meso and macro) levels of analysis, this results in nine institutional forces through which "certain social relationships and actions come to be taken for granted" (Zucker 1983: 2). Complementary to institutional selection mechanisms, we introduce the concept of deinstitutionalisation in paragraph 4.4. Deinstitutionalisation suggests that institutional arrangements are less taken for granted than most institutional theorists would suggest (Oliver 1992). In this context, neo institutional theory and institutional entrepreneurship literature are considered helpful to describe institutional adaptation mechanisms. To conclude, we address the applicability of each institutional perspective in analysing a firm's strategic development path of exploitative and explorative strategic renewal actions.

4.2 The development of institutional theory over time

Volberda and Elfring (2001) review the degree of fragmentation and plurality in strategic management. Perhaps, there is less disagreement among strategic management theories than there appears to be. For example, both evolutionary theory (e.g. Nelson and Winter 1982) and dynamic capabilities theory (e.g. Teece et al. 1997) view strategic renewal as a

natural trajectory of skill development over time. Nevertheless, Camerer (1985: 5) pointed out: “Theories are ambiguous, untested and tend to replace other theories with little apparent progress”. Camerer (1985) is unhappy with fragmentation and pleads for a disciplined methodological hypo-deductive approach in strategic management. Such methodological monism is central in positivistic research. On the contrary, postmodernists celebrate fragmentation and competition between schools of thought, despite their differences in methodological criteria (Mahoney 1993).

Neither positivism nor postmodernism can be as versatile as dominant research programmes (Kuhn 1970; Lakatos 1970; Teece 1990). On the one hand, positivistic methodological monism is sub-optimal as the field of strategic management is built upon many base-disciplines, such as Sociology, Economics, Anthropology, Psychology and Biology (e.g. Mintzberg 1990). On the other hand, postmodernism causes fragmentation and relativism. Such methodological pluralism is also sub-optimal as the accumulation of knowledge is hampered over time. In this respect, Teece (1990: 3) argues: “Until there is a framework and some accepted core of theoretical ideas, the field cannot be cumulatively. One cannot have meaningful exchanges in any field until there is some agreement on terminology, assumptions, causal structure and recognition of where different approaches may be applicable”. Analogous to the development of a dominant research programme, the development of institutional theory over time is clearly evident in the field (see table 4.1). Nevertheless, the institutional approach, according to Tolbert and Zucker (1999: 179) “has yet to become institutionalized”.

Table 4.1: The development of institutional theory over time

Institutional perspective	Period	Key author(s)
Old institutional theory	1950s	Selznick (1949; 1957)
New institutional theory	1970s	Meyer and Rowan (1977)
Neo institutional theory	1990s	Greenwood and Hinings (1996)
Institutional entrepreneurship	2000-	Maguire et al. (2004)

Institutional theory has its roots in classical or old institutional theory (e.g. Clark 1972; Selznick 1949; 1957), which studies bureaucracy at firm level. In the 1970s, the attention shifted away from the firm to the broader institutional context at industry level (e.g. Meyer

and Rowan 1977). These views were complemented with a neo institutional perspective, which bridges elements of both old and new institutional theory. As Greenwood and Hinings (1996: 1023) point out: “It is the convergence around multiple themes, the coming together of the old and the new institutionalism that we label neo institutionalism”. Nowadays, institutional entrepreneurship literature increasingly attracts the attention of institutional theorists. Institutional entrepreneurship literature (e.g. Garud et al. 2007; Maguire et al. 2004) has its focus on actors that break through or even change the established institutional order.

4.3 Institutional selection mechanisms

This section centres on the question of why a firm’s embeddedness in its institutional context is a basic reason for a firm’s resistance to change (Greenwood and Hinings 1996). Selznick (1992: 232) points out that institutionalism imposes constraints on firms by “making it hostage of its own history”. Or as Rodrigues and Child (2003: 2142) describe: “The embeddedness of companies in a highly institutionalized tradition will augment the extent to which their development is historically dependent”. We draw upon old and new institutional theory perspectives to describe institutional constraints at three levels of analysis. First, we address institutionalisation processes at firm level (micro level). Then, the impact of industry context (meso level) on firm behaviour is discussed. Finally, we focus on a firm’s embeddedness in its broader society at country level (macro level).

At each level, we apply Scott’s (2001) three pillars of institutionalism. The first pillar concerns regulative forces like rules, laws and sanctions that exert coercive power upon strategic renewal. The second pillar regards normative forces and includes values and norms that influence strategic renewal. The third pillar comprises cultural-cognitive forces that highlight shared conceptions and a common frame of reference for strategic renewal. Applying Scott’s (2001) three pillars of institutionalism, at three levels, results in nine forces that constrain strategic renewal of firms (see table 4.2).

Table 4.2: Key examples of how institutional forces can constrain strategic renewal of incumbent firms at micro, meso and macro level

Institutional pillar	Intra-organisational		Inter-organisational	
	level of analysis		level of analysis	
	<i>Micro level</i>	<i>Meso level</i>	<i>Macro level</i>	
	<i>constraints</i>	<i>constraints</i>	<i>constraints</i>	
<i>Regulative forces: rules, laws and sanctions</i>	Organisational rules and procedures (e.g. Wicks 2001)	Sector regulations (e.g. Beardsley et al. 2005)	Political processes in a society (e.g. Newbery 2004)	
<i>Normative forces: values and norms</i>	Social obligations (e.g. March and Olsen 1989)	Professionalisation (e.g. DiMaggio and Powell 1991b)	Professionalisation (e.g. DiMaggio and Powell 1991b)	
<i>Cultural-cognitive forces: shared conceptions</i>	Cognitive frames (e.g. Kaplan and Henderson 2005)	Bandwagon pressures (e.g. Abrahamson and Rosenkopf 1993)	National culture (e.g. Hofstede 1985)	

Source: Adapted from Scott (2001)

Micro level constraints

Old institutional theory studies bureaucracy at firm level: the organisation and its members. It is predominantly political in its analysis of organisational behaviour, focusing on the question of how institutions exert a powerful influence over the ways in which people can formulate their desires and work to attain them (DiMaggio and Powell 1991a). Issues of influence, coalitions, competing values, power, and informal structures play a pivotal role in organisational analysis (Clark 1972; Selznick 1957). Old institutionalism emphasises stability of organisational arrangements rather than change (Tolbert 1985; Tolbert and Zucker 1983). Old institutionalism comprises an internal selection argument and claims that firms will undertake those strategic renewal actions that are legitimate within the prevailing organisational archetype (Greenwood and Hinings 1993).

Scott's (2001) three pillars of institutionalism are applied at firm level to discuss how intra-organisational institutional forces influence an individual firm's strategic renewal actions. First, the regulative pillar can exert coercive power on strategic renewal

actions through organisational rules and procedures (e.g. Wicks 2001). Second, the normative pillar influences strategic renewal actions through the social obligations of organisational members (e.g. March and Olsen 1989). Third, the cognitive pillar highlights the impact of shared sense making (e.g. Berger and Luckman 1966) and the embeddedness of cognitive frames (e.g. Kaplan and Henderson 2005) on strategic renewal actions.

In the context of micro regulative forces, organisational members may feel constrained by organisational structures and procedures (Scott 1987). The hallmark of micro regulative forces is in the presence of rules, laws and sanctions (Wicks 2001) that regulate and control the behaviour of organisational members. Elsbach (2002) argues that managers are often charged with protocols to improve the accuracy and efficiency of organisational members. Meyer and Rowan (1977) note that organisations often function according to their formal blueprints. Following Greenwood and Hinings (1993), organisations will undertake those strategic renewal actions that are legitimate within the organisational archetype.

Regarding micro normative forces, institutionalised values and norms (Scott 2001) may constrain strategic renewal. Whereas micro regulative forces mainly deal with written rules, micro normative forces are associated with unwritten rules. Unwritten rules are shaped by occupational culture and discipline dominance (Volberda 1998). Regarding occupational culture, organisational members are expected to fulfill particular social obligations (March and Olsen 1989). Such expectations are shaped at school or university and further reinforced by meetings, courses and events of occupational associations (Volberda 1998). Vermeulen, Van den Bosch and Volberda (2007) argue that these expectations are often perceived as pressures to which one must conform. Discipline dominance relates to the extent to which unwritten rules are dominated by the values and norms of a certain discipline or profession (Volberda 1998). Discipline dominance bestows a firm's core capabilities or core competencies (Leonard-Barton 1992). For example, it is very common that organisations are predominantly made up of engineers, marketeers or lawyers. However, the downside of discipline dominance is a lack of non-dominant disciplines (Leonard-Barton 1992), which can have inhibiting effects on strategic renewal actions.

Micro cognitive forces include shared sense making, which results from the interaction between organisational members (Scott 2001). Micro cognitive forces are often referred to as a set of beliefs and assumptions that are taken for granted throughout the organisation (e.g. Schein 1985). As environmental stimuli are interpreted collectively, this results in a socially constructed reality (Berger and Luckmann 1966). When organisational members work together for a long period of time, they tend to support the existing strategy (Katz 1982). At the level of organisational managers, cognitive forces can be understood as common industry recipe (Spender 1989) or dominant logic (Pralhad and Bettis 1986). The longer the dominant logic is in place, the more difficult it is to unlearn (Bettis and Prahalad 1995). Cognitive theorists further stress the role of cognitive frames (e.g. Kaplan and Henderson 2005). In this respect, routines are followed as these are the taken for granted way of how things are done (Scott 2001). The deeper cognitive frames are embedded, the less likely firms will change (Kaplan and Henderson 2005).

Combined, the micro institutional forces cause firms to undertake those strategic renewal actions that fit with regulatory (i.e. organisational rules and procedures), normative, (i.e. social expectations) and cognitive (i.e. cognitive frames) pressures, which collectively constitute its micro institutional context.

Meso level constraints

New institutional theory has an organisational field level of analysis. An organisational field is defined as: "... a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products" DiMaggio and Powell (1991b: 64). Organisational fields are often coterminous with the boundaries of industries (Scott and Meyer 1991). New institutionalism has a predominantly sociological flavour in organisational analysis (DiMaggio and Powell 1991a) and centres on the question of why there is so much homogeneity of organisational forms and practices (DiMaggio and Powell 1991b). In this respect, isomorphism is referred to as a process that forces firms to resemble other firms that face the same environmental conditions (Hawley 1968). Quite similar to Scott's (2001) pillars of institutionalism, DiMaggio and Powell (1991b: 67) differentiate between: "(1) coercive isomorphism that stems from political influence and the problem of

legitimacy; (2) mimetic isomorphism resulting from standard responses to uncertainty; and (3) normative isomorphism, associated with professionalisation". New institutionalism comprises an external selection argument and claims that firms undertake those strategic actions that are legitimate with the prevailing institutional template (Greenwood and Hinings 1993) at industry level.

We now apply Scott's (2001) three pillars of institutionalism at organisational field level to illustrate how inter-organisational institutional forces impact upon industry firms' strategic actions collectively. The first pillar concerns regulative forces like rules, laws and sanctions that can exert coercive power on strategic renewal actions through sector regulations (e.g. Beardsley et al. 2005). The second pillar regards normative forces that influence strategic renewal actions through values and expectations at industry level (e.g. Vermeulen et al. 2007). The third pillar comprises cognitive forces highlighting the impact of bandwagon pressures on strategic renewal actions (e.g. Abrahamson and Rosenkopf 1993).

Meso regulative forces are associated with specific industry regulations. The impact of regulation and regulators is evident in many industries: "regulatory policy increasingly shapes the structure and conduct of industries and sets in motion major shifts in economic value" Beardsley et al. (2005: 93). Various authors illustrate how sector regulations constrain strategic decision-making. DiMaggio and Powell (1991b) argue that many aspects of firm behaviour and structure are affected by the existence of a common legal environment. Flier et al. (2001) make note of the numerous institutional and regulatory limitations on domestic, cross-border and cross-sector activities of European financial service firms until the mid-1990s. Kim and Prescott (2005: 415) phrase the constraining effect of regulation as: "subsidized monitoring and disciplining through the implementation of laws and the policies of government agencies". Mahon and Murray (1980) emphasise the important role that regulatory agencies assume. Walsh and Steward (1990) maintain that control of regulatory agencies substitutes internal governance mechanisms that would otherwise discipline managers.

In the context of meso normative forces, the ruling values and beliefs in an organisational field influence the manner in which firms operate. Meso normative forces relate to professionalisation in an organisational field through normative isomorphism

(DiMaggio and Powell 1991: 71): “One important mechanism for encouraging normative isomorphism is the filtering of personnel. Within many organizational fields, filtering occurs through the hiring of individuals from firms within the same industry; through the recruitment of fast-track staff from a narrow range of training institutions; through common promotion practices, such as always hiring top executives from financial or legal departments; and from skill level requirements for particular jobs”.

Meso cognitive forces imply that firms model their organisation after similar organisations in the same field that they perceive to be successful or legitimate (DiMaggio and Powell 1991b). This process of homogenisation is also referred to as mimetic isomorphism (DiMaggio and Powell 1991b). Innovation diffusion literature (e.g. O’Neill Pounder and Buchholz 1998) and – more specifically – the bandwagon phenomenon (Abrahamson and Rosenkopf 1993) are helpful to explain mimetic behaviour. Bandwagons come into existence because of the sheer number of firms that already adopted a certain strategy, not the strategy’s efficiency or return (Abrahamson and Rosenkopf 1993).

Combined, the meso institutional forces cause firms to undertake strategic renewal actions that are legitimate within the prevailing organisational field. As all firms in a particular field are exposed to the same developments, it is argued that this triggers a process of homogenisation (DiMaggio and Powell 1991b). Furthermore, in line with Greenwood and Hinings (1996), it can be argued that strategic renewal actions may vary across organisational fields because of differences in meso institutional templates.

Macro level constraints

Although researchers have applied new institutional theory predominantly at organisational field level of analysis, we consider it helpful to describe institutionalisation processes at country or society level as well. Similar to the descriptions at micro and meso level, we apply Scott’s (2001) three pillars of institutionalism at country level to deepen our insights how macro institutional forces influence country firms’ strategic actions collectively. The first pillar concerns macro regulative forces like rules, laws and sanctions that exert coercive power on strategic renewal actions through political processes in a society (e.g. Newbery 2004). The second pillar regards macro normative forces that have an impact on strategic renewal actions through professionalisation (e.g. DiMaggio and

Powell 1991b). The third pillar comprises macro cognitive forces highlighting the impact of national culture on strategic renewal actions (e.g. Hofstede 1985).

Macro regulative forces describe political processes in a society. A firm's legal environment induces a firm's strategic renewal activities with country-specific elements. For instance, the Single European Act, proposed by the European Commission to create a single market for financial services, telecommunications, transport, electricity and gas, resulted in major differences across EU countries. Britain, Spain and the Scandinavian countries embraced the programme with enthusiasm, but others were more cautious (Newbery 2004). Especially French companies could benefit from a largely protected home market and access to relatively cheap state-guaranteed finance (Newbery 2004).

Macro normative forces are associated with professionalisation of managers and workers (DiMaggio and Powell 1991b). DiMaggio and Powell (1991b) describe professionalisation in the context of organisational fields. However, we argue that issues of professionalisation can be applied at country level as well. At country level, formal education systems (e.g. universities and business schools) and professional networks (e.g. trade associations) that span organisational fields can be important drivers of macro level professionalisation, which shape organisational norms and values among (future) managers and their staff (DiMaggio and Powell 1991b). In addition, hiring expertise from a narrow range of strategy consulting firms tends to make managers view business problems in a highly similar way. This especially goes for consulting firms that fulfil a competence leveraging role and act as a 'knowledge broker' among their client base (Van den Bosch, Baaij and Volberda 2005).

Macro cognitive forces have an impact on strategic renewal actions through formal and informal pressures that are exerted upon firms by cultural expectations of a society (DiMaggio and Powell 1991b). This fits with Hofstede's (1985) notion that organisational value systems are influenced by national value systems. The founders of an organisation or its board members are also "children of a national culture" (Hofstede 1980: 349). Strategic renewal actions may therefore be influenced by Hofstede's (1980) five dimensions of national culture: power distance, uncertainty avoidance, masculinity versus femininity, individualism versus collectivism, and long-term orientation versus short-term orientation.

Combined, the macro institutional forces cause firms to undertake strategic renewal actions that are legitimate within the prevailing country or society. As all firms in a particular country are exposed to the same developments at macro level, it is argued that this triggers a process of homogenisation (DiMaggio and Powell 1991b). Furthermore, following Greenwood and Hinings (1996), it is likely that strategic renewal actions will vary across national environments because of differences in macro institutional templates.

4.4 Institutional adaptation mechanisms

In our review of institutional theory thus far, organisations have little impact on its adaptation with the environment. Only those strategic actions are undertaken that are legitimate within the prevailing institutional context at firm, industry and country level. Or as Aldrich (1979: 160) puts it: “Environmental selection processes set the limits within which rational selection among alternatives takes place. Prior limits and constraints on available options leave little room for manoeuvring by most organization”. Once organisational activities are institutionalised, they are sustainable, repetitive and stable over time (Zucker 1987). Oliver (1992), however, argues that these taken for granted organisational activities are less inevitable than institutional theorists suggest due to forces of deinstitutionalisation. Oliver (1992) identifies political, functional and social pressures for deinstitutionalisation, either internal or external to the firm. Deinstitutionalisation can positively impact firm level adaptations of strategic renewal. Analogous to table 4.2, we provide key examples of how forces of deinstitutionalisation can enable strategic renewal (see table 4.3).

Table 4.3: Key examples of how forces of deinstitutionalisation can enable strategic renewal of incumbent firms at micro, meso and macro level

Institutional pillar	Intra-organisational		Inter-organisational	
	level of analysis		level of analysis	
	<i>Micro level</i>	<i>Meso level</i>	<i>Macro level</i>	
	<i>predictors</i>	<i>predictors</i>	<i>predictors</i>	
<i>Regulative forces: rules, laws and sanctions</i>	Executive migration (e.g. Kraatz and Moore 2002)	Changing sector regulations (e.g. Greenwood, Suddaby and Hinings 2002)	Changing government regulations (e.g. Hafsi and Tian 2005)	
<i>Normative forces: values and norms</i>	Increasing workforce diversity (e.g. Zilber 2002)	Changing industry logics (e.g. Lounsbury 2002)	Changing societal values (e.g. Casile and Davis-Blake 2002)	
<i>Cultural-cognitive forces: shared conceptions</i>	Culturally disparate mergers and alliances (e.g. Walter 1985)	Increasing performance pressures (e.g. Barreto and Baden-Fuller 2006)	Globalisation (e.g. Mueller 1994)	

Source: Adapted from Oliver (1992)

It should be noted that most forces identified in table 4.3 do not suggest that firms adapt through any intentional strategic renewal process. Rather, in a state meso or macro level flux, firms may simply adhere to whichever institutional logics are most powerful to it. We further build upon neo institutional theory and institutional entrepreneurship literature to explore how institutional adaptation mechanisms at firm level may affect intentional strategic renewal processes. Neo institutional theory emerged in reaction to old and new institutionalism. Neo institutional theory addresses the interplay between organisational context and organisational action. More specifically, it questions how organisations respond to institutional prescriptions (Greenwood and Hinings 1996). Contrary to new institutional theory – in which firms are conceptualised as homogeneous entities – firms

are conceptualised as heterogeneous entities in order to better understand differences in organisational responses (Greenwood and Hinings 1996). Neo institutional theory, when elaborated, “provides a model of change that links organizational context and intra-organizational dynamics” (Greenwood and Hinings 1996: 1023). Consequently, neo institutional theory contains both selection and adaptation arguments. Unfortunately, neo institutional theory is weak in analysing the internal dynamics of organisational change (Greenwood and Hinings 1996). We delve into this issue by adopting an institutional entrepreneurship lens.

Institutional entrepreneurship questions how taken for granted institutional arrangements may dissipate and become replaced by new ones. More specifically, institutional entrepreneurship refers to: “activities of actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones” Maguire et al. (2004: 657). Like old institutionalism, institutional entrepreneurship is commonly referred to as a political process (e.g. Garud, Jain and Kumaraswamy 2002). In addition, it is suggested that institutional entrepreneurs possess social skills (Fligstein 1997). In retrospect, institutional entrepreneurship seems to have its breeding ground in the work of DiMaggio (1988: 14), who argued that “new institutions arise when organised actors with sufficient resources see in them an opportunity to realize interests that they value highly”. Institutional entrepreneurship reintroduces the concept of agency into organisational analysis (e.g. Garud et al. 2007; Zietsma and Lawrence 2005). Institutional entrepreneurship comprises an adaptation argument as it deepens the understanding of how and why novel, innovative organisational solutions come into existence (Garud et al. 2007).

4.5 Conclusion

In this chapter, we have reviewed old institutional theory, new institutional theory, neo institutional theory and institutional entrepreneurship literature. Although the four institutional perspectives can be applied in many ways, our research problem and questions call for an organisational path (in)dependency approach to investigate exploitative and explorative strategic renewal actions in regulatory environments (e.g. Pierson 2000). From

an old institutional perspective, path dependency is emphasised, "... crystallized through the preservation of custom and precedent" (Selznick 1949: 182). From a new institutional theory perspective, firms converge to created templates (Greenwood and Hinings 1996) or paths of organising through coercive, normative and mimetic isomorphism (DiMaggio 1991b). New institutional theory does not necessarily predict that firms cannot strategically renew. Firms only renew when inter-organisational institutional contingencies 'force' them to do so (e.g. Aldrich 1999). Neo institutional theory questions how firms adapt to institutional prescriptions (Greenwood and Hinings 1996). From this perspective, a firm's strategic renewal path results from the interaction between environmental and organisational processes. Finally, institutional entrepreneurship literature suggests that actors can break with existing rules to champion new innovations (Garud et al. 2007), which may provoke path independency or path creation – the shaping of a path by an entrepreneur (Garud and Karnoe 2001). In chapter 5 we more specifically draw upon the four institutional theory perspectives to formulate relationships that predict how institutional contingencies and variables impact upon exploitative and explorative strategic renewal actions.

5 A multi-level institutional framework

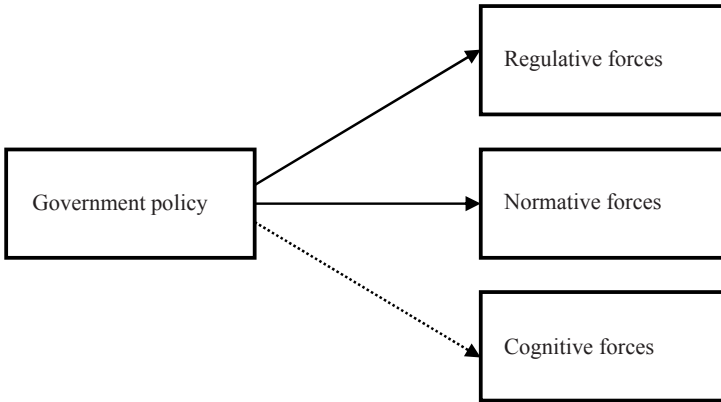
5.1 Introduction

In this chapter, we address the second and third sub-set of research questions from a theoretical point of view. In paragraph 5.2, we present our institutional framework in two models: one at organisational field level of analysis and one at organisational unit level of analysis. In both models, the main variables and relationships between these variables are specified. In paragraph 5.3, we adopt a new institutional theory lens to address the research questions (2a) *which environmental determinants are related to firms' exploitative strategic renewal actions* and (3a) *which environmental determinants are related to firms' explorative strategic renewal actions*? Three hypotheses are developed at industry level to predict the impact of regulative forces, normative forces and cognitive forces on firms' strategic renewal actions. In paragraph 5.4, we address the research questions (2b) *which internal factors influence a firm's proclivity towards exploitative strategic renewal actions* and (3b) *which internal factors influence a firm's proclivity towards explorative strategic renewal actions*? We draw upon old institutional theory, neo institutional theory and institutional entrepreneurship literature to develop three hypotheses that link intra-organisational institutional predictor variables and strategic renewal at organisational unit level. Finally, in paragraph 5.5, the hypotheses are summarised with reference to institutional theory perspective, the extent to which they maintain a selection or adaptation argument, level of analysis, and corresponding chapter of empirical verification.

5.2 Research models and underlying assumptions

As has been argued in previous chapters, regulation and regulatory environments are often associated with government policy to attain desirable public policy goals (OECD 1997: 5). D'Aunno, Succi and Alexander (2000) illustrate how government policy can influence organisational field issues in terms of Scott's (2001) regulative, normative and cognitive forces (see figure 5.1).

Figure 5.1: How government policy can influence an organisational field through regulative, normative and cognitive forces

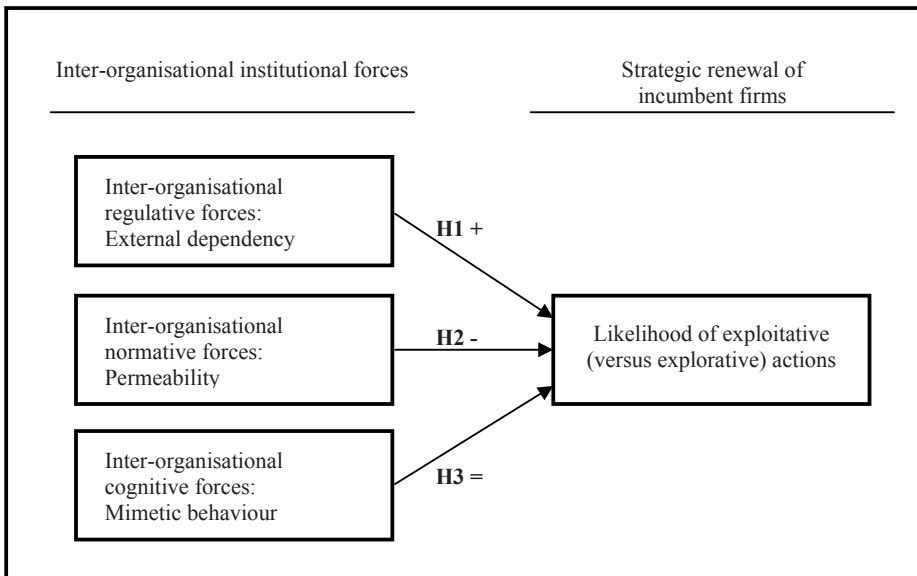


Source: Adapted from D'Aunno et al. (2000)

Most apparently, government policy impacts upon an organisational field through regulative forces. Following D'Aunno et al. (2000), regulatory forces are associated with resource flows (Wade, Swaminathan and Saxon 1998) and accountability in exchange for resources (Edelman and Suchman 1997). Government policy can also become apparent in the normative pillar through e.g. property rights (D'Aunno et al. 2000). Finally, D'Aunno et al. (2000) argue that government policy can exert cognitive pressures upon firms, but only indirectly. Mimetic behaviour is an issue here, which implies that firms model their organisation after similar organisations under conditions of uncertainty (DiMaggio and Powell 1991b).

Having illustrated that government policy comprises of normative and cognitive issues in addition to regulatory issues, figures 5.2 and 5.3 further explicate the research models that are applied in this thesis. In both models, strategic renewal is conceptualised as a firm's strategic development path of exploitative and explorative strategic renewal actions to align with or adapt to (changing) regulatory issues (Johnson et al. 2003; Mintzberg 1978; Siggelkow 2002; Van de Ven 1992; Volberda et al. 2001a; 2001b).

Figure 5.2: Research model at organisational field level of analysis

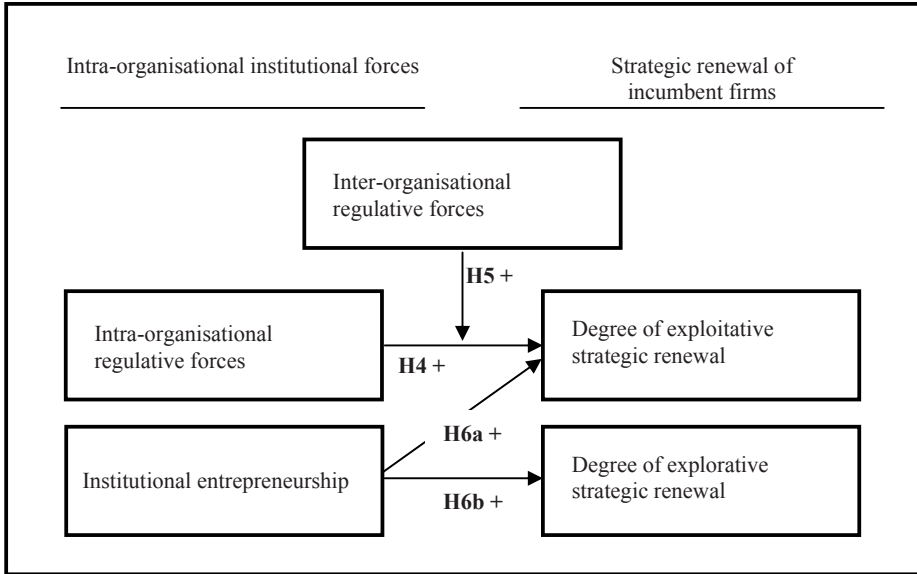


In figure 5.2, the main dependent variable, strategic renewal, is modeled as choices of exploitation and exploration at strategic action level, given a set of inter-organisational institutional predictor variables. Three main assumptions underlie the first research model. First, firms are considered to be holistic entities and strategic decision-making occurs at the corporate level (e.g. Hambrick 1989). Second, we consider firms in an organisational field as homogeneous entities (e.g. DiMaggio and Powell, 1991a). As this assumption suggests that firms react similarly to institutional prescriptions, it is indifferent which firm undertakes a particular strategic action. Third, choices of exploitation and exploration are independently of each other. This assumption considers each strategic renewal action as a distinct event, which is not related to other strategic renewal actions of the same firm.

In figure 5.3, strategic renewal is modeled as choices of exploitation and exploration at organisational unit level, given a set of intra-organisational institutional predictor variables. Three assumptions underlie the second research model. First, firms are seen as collections of organisational units and strategic decision-making can also occur at lower management levels in addition to the corporate level (e.g. Volberda et al. 2001). Second, organisational units are conceptualised as heterogeneous entities (e.g. Greenwood

and Hinings 1996). Third, similar to the model in figure 5.2, choices of exploitation and exploration are independently of each other.

Figure 5.3: Research model at organisational unit level of analysis



5.3 How inter-organisational institutional forces influence strategic renewal

In this paragraph, we apply a new institutional theory perspective to study strategic renewal behaviour of incumbent firms. More specifically, we build upon Scott's (2001) three pillars of institutionalism to formulate three hypotheses that specify how inter-organisational institutional regulative, normative and cognitive contingencies relate to exploitative and explorative strategic renewal actions. Although we would like to point out that the three institutional pillars may reinforce each other (Scott 2001; Vermeulen et al. 2007) and that firms can experience institutional pressures from the three pillars simultaneously (e.g. Wicks 2001), we will discuss them separately for analytical convenience.

Inter-organisational regulative forces

Scott's (2001) first pillar concerns regulative forces, like rules, laws and sanctions that exert coercive authority in strategic renewal actions. Following DiMaggio (1988) and Oliver (1991), coercive pressures that are externally validated may become taken for granted, unconscious and invisible to organisations. Coercive authority results from formal and informal pressures exerted upon a firm through exchange relationships (DiMaggio and Powell 1991b). We start with a brief discussion on a firm's exchange relationships with regulatory authorities, which will be complemented with a resource dependence perspective.

Regulatory structures, governmental agencies, laws, courts, and professions constitute a firm's regulatory institutional environment (Scott 1987). Institutions impose a variety of laws, regulations and expectations on the organisation (Oliver 1991), which are embodied in rule-setting, monitoring, and sanctioning activities (Scott 2001). Such regulatory pressures are usually clear and reinforced in governmental sectors (Kikulis, Slack and Hinings 1995). As inter-organisational regulative forces provoke regulatory legitimacy, or "consonance with relevant rules or laws" (Scott 2001: 45), a firm's strategic responses generally adhere to external laws and rules (DiMaggio and Powell 1991b; Meyer and Rowan 1977).

Resource dependence theory studies exchange relationships in a firm's task environment (Pfeffer and Slancik 1978). This theory has emerged to understand firm behaviour when it depends on other organisations for acquiring the resources it needs. More specifically: "Organizations are linked to environments by federations, associations, customer-supplier relationships, and a social -legal apparatus defining and controlling the nature and limits of these relationships" (Pfeffer and Salancik 1978: 2). In this respect, coercive pressures may be felt as force, persuasion or as invitations to join in collusion (DiMaggio and Powell 1991b). Although institutional theory and resource dependence theory differ, we point at Oliver (1991: 147) for convergent assumptions that underlie both theories. First, strategic choices are constrained by multiple external pressures. Second, environments are collective and interconnected. Third, firms are responsive to external demands and expectations. Fourth, firms seek legitimacy. Legitimacy is associated with

notions of credibility, stability, safety, trustworthy, predictability, socially acceptable, and ethical (Suchman 1995).

How does a position of resource dependence relate to a firm's strategic responses? Following DiMaggio and Powell (1991b), the higher the extent a firm depends on external institutional constituents in an organisational field for resources, the higher the degree of conformity to external pressures (DiMaggio and Powell 1991b), and the lower the likelihood that a firm's strategic actions are unique or rare. Oliver (1991) has developed a theory of strategic responses to institutional processes that varies from passive institutional conformation to active institutional resistance: acquiescence, compromise, avoidance, defiance and manipulation. The lower the degree of external dependence, the greater the likelihood of institutional resistance (Oliver 1991), which is beneficial for explorative strategic renewal actions. Applying similar reasoning, higher degrees of external dependence would promote institutional conformation, which is supportive for exploitative strategic renewal actions.

Hypothesis 1: The higher the degree of external dependency in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an exploitative nature.

Inter-organisational normative forces

Scott's (2001) second pillar regards normative forces and includes values and norms that influence strategic renewal actions. Following DiMaggio and Powell (1991b: 77), normative isomorphism results from the structuration of organisational fields: "Fields that have stable and broadly acknowledged centers, peripheries, and status orders will be more homogeneous both because the diffusion structure for new models and norms is more routine and because the level of interaction among organizations in the field is higher". In this respect, the degree of interconnectedness in an organisational field – or density of relational networks – promotes the diffusion of norms and values across organisational field members. But how does the density of relational networks affect firms' strategic renewal actions? The density of relational networks shapes a template or archetype that comes to prevail. An archetype is defined as: "a set of structures and systems consistently

reflexive of a single, underpinning interpretive scheme” (Greenwood and Hinings 1993: 1057). Fox-Wolfgramm et al. (1998: 87) notice that “organizations typically converge around a prevailing archetype: strategic orientation and inertia tend to bound the organizational change to that which is consistent with the archetype, representing first-order change”. Baum and Oliver (1991) show that firms increase their survival chances when conforming to institutional norms.

However, if there is not a clearly legitimated normative template to which firms must conform, this opens up the possibility for idiosyncratic interpretation of institutional cues (D’Aunno, Sutton and Price 1991). Barnett and Carroll (1987) illustrate how the ill-formed telephone industry – in its founding years – lacked institutional consensus over templates (Greenwood and Hinings 1996). In more established organisational fields, the concept of sector permeability (Greenwood and Hinings 1996) seems more applicable, which indicates the extent to which organisational fields are relatively open to values and norms of other sectors or firms. It can be argued that the degree of sector permeability prescribes the sources of value that can be created and exploited within an industry (Grant 2002). Fligstein (1991: 313) notes: “Where rules exist and a pecking order of organizations is well established, fundamental change is less likely”. For example, the more an industry is characterised as a government monopoly, the higher the contest or negotiation between political interest groups, rather than competition for customers in the marketplace (Davies 1994). On the other hand, change is more likely when new organisations enter established fields (Fligstein 1991). Following Greenwood and Hinings (1996), we hypothesise that high permeability is more likely to permit variation and change (i.e. explorative strategic renewal) as pressures for normative isomorphism to adopt a legitimate template are generally lower than in sectors that are relatively closed.

Hypothesis 2: The higher the degree of permeability in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an explorative nature.

Inter-organisational cognitive forces

Scott's (2001) third pillar comprises cognitive forces that highlight how shared conceptions impact strategic renewal actions. At inter-organisational level, this is often referred to as mimetic behaviour, which implies that firms model their organisation after similar organisations in the same field that they perceive to be successful or legitimate (DiMaggio and Powell 1991b). Following Flier (2003), the bandwagon phenomenon (Abrahamson and Rosenkopf 1993) is helpful to describe how both efficient and inefficient strategies diffuse across an industry. The literature further distinguishes between competitive and institutional bandwagons, which provide clues on how shared conceptions or a common frame of reference impact strategic renewal actions.

The fear of losing competitive advantage underlies competitive bandwagons (e.g. Flier 2003). Such bandwagons arise as organisations adopt strategies of competitor firms to buffer against the risk of falling behind average industry performance (Abrahamson and Rosenkopf 1993). Irrespective of whether an adopted strategic renewal action becomes a success or not, it allows an organisation to approximate the average industry performance. In an empirical study of the European telecom industry, Stienstra et al. (2004) found much similarity in strategic renewal actions among five incumbent telecom operators in the period 1992-2001, which resulted in highly similar performance levels.

The fear of losing legitimacy underlies institutional bandwagons (DiMaggio and Powell 1991b). Early adopters will undertake innovative strategic renewal actions because of their desire to improve performance. As the innovation diffuses across firms in an industry, a threshold will be reached beyond which the innovation provides legitimacy, rather than improved performance (Meyer and Rowan 1977). However, not adopting the strategic action would appear abnormal or illegitimate to stakeholders. In a large-scale empirical study of the Portuguese banking industry, Barreto and Baden-Fuller (2006) even found a negative relationship between legitimacy driven imitation and profitability.

In general, mimetic behaviour results from conditions of uncertainty (DiMaggio and Powell 1991b). Following D'Aunno et al. (2000), in the context of regulatory issues, if firm A faces state policies that are similar to those of a focal firm, the behaviour of the focal firm would provide a relevant role model for the behaviour of firm A. This gives rise to the third hypothesis.

Hypothesis 3: Incumbent firms mimic competitor firms in the realisation of exploitative and explorative strategic renewal actions.

5.4 How intra-organisational institutional forces influence strategic renewal

In this paragraph, we build upon old institutional theory literature to theorise how intra-organisational regulatory forces influence strategic renewal actions. In addition, we argue that the relationship between intra-organisational regulative forces and strategic renewal does not exist in an organisational vacuum. Neo institutional theory is applied to formulate a more sophisticated hypothesis of how inter-organisational regulative forces impact upon the relationship between intra-organisational regulative forces and strategic renewal actions. Finally, we apply an institutional entrepreneurship lens and hypothesise that firms do not always conform to (regulatory) institutional prescriptions. From this perspective, actors can break through – and even transform – the established intra-organisational institutional order.

Intra-organisational regulative forces

Old institutional theory studies institutionalisation processes within the firm. As has been described in the previous chapter, institutions impose constraints upon organisational members through regulative, normative and cognitive forces. In the context of intra-organisational regulative forces, organisational members may feel constrained by structures and procedures (Scott 1987). Various authors studied how organisational structures and procedures regulate and control the behaviour of organisational members. According to Wicks (2001), the hallmark of regulative forces is in the presence of rules, laws and sanctions. Considering the Canadian mining case, Wicks (2001: 671) illustrates how employees can feel constrained by formal rules: “There were countless occasions when miners did things that they would probably not have done otherwise, because they felt constrained by formal rules and threatened by sanctions for non-compliance”. Elsbach (2002) argues that managers are often charged with protocols to improve the accuracy and efficiency of organisational members. Meyer and Rowan (1977: 342) note that organisations often function according their formal blueprints: “coordination is routine,

rules and procedures are followed, and actual activities conform to the prescription of formal structure”. Heugens, Van Riel and Van den Bosch (2004) relax the common view that rules are necessarily rigid or obstinate and even emphasise that rules can be at the core of various adaptive processes. Hence, we argue that intra-organisational regulative forces do not necessarily provoke strategic inaction, but firms will generally undertake those strategic renewal actions that adhere to organisational rules, i.e. exploitative strategic renewal.

Hypothesis 4: At organisational unit level, the extent of intra-organisational regulative forces is positively related to the degree of exploitative strategic renewal.

Moderating effect of inter-organisational regulative forces

From a neo institutional theory perspective, the impact of intra-organisational regulative forces on exploitative strategic renewal should be studied in relation to inter-organisational regulative forces. In this respect, the degree of coupling (Greenwood and Hinings 1996) plays an important role to investigate the interaction between the inter-organisational regulative context and intra-organisational regulative forces. The degree of coupling between two systems is conceptualised as the extent to which two systems have variables in common (Glassman 1973). Moreover, to the extent that two systems share fewer variables – or share weak variables – they are independent of each other (Glassman 1973). Greenwood and Hinings (1996) distinguish between tight coupling and loose coupling. Tight coupling refers to “the existence of mechanisms for dissemination and the monitoring of compliance combined with a focused and consistent set of expectations” (Greenwood and Hinings 1996: 1029). The higher the degree of coupling, the greater the institutional pressures for adopting a clearly legitimated organisational template (Greenwood and Hinings 1996). The institutional context provides ‘templates for organising’ (DiMaggio and Powell 1991a). In the context of regulation, mechanisms for transmitting those templates upon organisations are the state, regional (and local) governments and regulatory agencies. Consequently, in case of tight regulatory coupling, strong reciprocity results between inter-organisational regulatory forces at industry level and intra-organisational regulatory forces at firm level.

But what are consequences for strategic renewal? We follow Greenwood and Hinings (1996) to hypothesise that the degree of coupling between inter-organisational regulative forces and intra-organisational regulative forces influences strategic renewal. According to Fligstein (1991: 316), “to the degree that organizational fields are stable and the state regulates the environment, one would expect that organizations would be unlikely to alter their courses of action”. Kikulis et al. (1995) argue that regulatory pressures are usually clear and reinforced in governmental sectors. Therefore, when the degree of inter-organisational regulative forces is high, the relationship between intra-organisational regulative forces and exploitative strategic renewal is strong. However, when the degree of inter-organisational regulative forces is low, the relationship between intra-organisational regulative forces and exploitative strategic renewal is less strong. Consequently, the degree of inter-organisational regulative forces moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal.

Hypothesis 5: At organisational unit level, the extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal.

Institutional entrepreneurship

Work on inter- and intra-organisational institutional regulative forces has traditionally constrained entrepreneurial activity. In reaction to this deterministic view, institutional entrepreneurship literature has emerged, which suggests that powerful individuals can break with existing rules or practices and institutionalise alternative rules or practices (Battilana 2006). For example, Mutch (2007) shows how an individual transfers practices from elsewhere to develop his managerial systems in the UK public houses field (i.e. pubs). However, according to Lounsbury and Crumley (2007: 993), institutional entrepreneurship “has too often celebrated the actions of a single or small number of actors, and deflected attention away from the emergent, multilevel nature of how new kinds of activities emerge and provide a foundation for the creation of a new practice”. Various authors have illustrated how new practice creation surpasses the individual level. At organisational field level, Lounsbury and Crumley (2007) examine the creation of

active money management practice in the US mutual fund industry. At national level, Child, Lu and Tsai (2007) study the development of China's environmental protection system. Wijen and Ansari (2007) even apply the concept of institutional entrepreneurship at global level. They illustrate how the regulatory Kyoto Protocol emerges from multiple dispersed actors around the world, each with their own interests.

In this thesis, we focus at the organisational unit level to investigate how embedding agency in the organisational structure provides a platform for unfolding entrepreneurial activities (Garud et al. 2007). In this respect, the focus is not on entrepreneurial outcomes (like new products), but on entrepreneurial processes, that is "the methods, practices, and decision-making styles managers use to act entrepreneurially" (Lumpkin and Dess 1996: 136). Lumpkin and Dess (1996) use the term entrepreneurial orientation to describe how new entry is undertaken. Matsuno, Mentzer and Özsomer (2002: 19) use the term entrepreneurial proclivity and define it as "the organization's predisposition to accept entrepreneurial processes, practices, and decision making, characterized by its preference for innovativeness, risk-taking and proactiveness". Following Matsuno et al. (2002), innovativeness, risk-taking and proactiveness enhance a unit's ability to renew, to destroy the existing market order (e.g. Schumpeter 1934) and to offer customers alternative value propositions (e.g. Deshpandé, Farley and Webster 1993).

Institutional entrepreneurship is inherently paradoxical by nature. Institutions are stable designs for repeated strategic activity (i.e. exploitative actions) from which deviations get sanctioned or are costly (Jepperson 1991). Garud et al. (2007) question how institutional entrepreneurs that may feel constrained by institutional structures are able to envision new practices? Malerba and Brusoni (2007: 5) point out: "The key issue here is understanding the extent to which firms have their behaviour determined by the institutional environment in which they are embedded, as opposed to the extent to which they are free to navigate, and influence, the dynamics of such an environment". This is further addressed by Aoki (2007) who synthesises historical, path dependent institutional change (i.e. exploitative strategic renewal) with Schumpeterian innovation (i.e. explorative strategic renewal). More specifically: "... contrary to the conventional view, an equilibrium view of an institution is not necessarily inconsistent with the evolutionary approach in the tradition of Schumpeter" Aoki (2007: 247). Entrepreneurial activities drive

the accumulation of knowledge and bestow the development of dynamic capabilities (Griffith, Noble and Chen 2006). Consequently, we hypothesise that institutional entrepreneurship is positively associated with both exploitative and explorative strategic renewal.

Hypothesis 6: At organisational unit level, the extent of institutional entrepreneurship is positively related to (a) the degree of exploitative strategic renewal and (b) the degree of explorative strategic renewal.

5.5 Conclusion

In this chapter, two sets of hypotheses have been developed. Regarding the first set, at industry level of analysis, hypotheses 1-3 maintain a selection argument and allow investigating how and to what extent the rules, norms and beliefs explain what can be acted upon and what not (Hoffman 1999). Concerning the second set, at organisational unit level of analysis, hypotheses 4-6 deepen the insights how processes of exploitative strategic renewal and explorative strategic renewal are driven by the concurrent operating of selection and adaptation (e.g. Flier et al. 2003) which contributes to the viewpoint of firms as more complex adaptive organisations (Anderson 1999). Table 5.2 summarises the six hypotheses with reference to institutional perspective, selection or adaptation argument, unit of analysis, and the chapter of empirical verification.

Table 5.2: A multi-level institutional framework

Hypothesis	Institutional perspective	Selection/adaptation	Unit of analysis	Empirical verification
1: The higher the degree of external dependency in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an exploitative nature.	New institutionalism	Selection	Inter-organisational	Chapter 8
2: The higher the degree of permeability in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an explorative nature.	New institutionalism	Selection	Inter-organisational	Chapter 8
3: Incumbent firms mimic competitor firms in the realisation of exploitative and explorative strategic renewal actions.	New institutionalism	Selection	Inter-organisational	Chapter 8
4: The extent of intra-organisational regulative forces is positively related to the degree of exploitative strategic renewal.	Old institutionalism	Selection	Intra-organisational	Chapter 9
5: The extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal.	Neo institutionalism	Selection/adaptation	Both intra- and inter-organisational	Chapter 9
6: The extent of institutional entrepreneurship is positively related to (a) the degree of exploitative strategic renewal and (b) the degree of explorative strategic renewal.	Institutional entrepreneurship	Adaptation	Intra-organisational	Chapter 9

Part III

Empirical research

6 Research methodologies¹

6.1 Introduction

In this chapter, we take account for the differences in methodological standards and assumptions for doing research when testing the two sets of hypotheses. In paragraph 6.2, regarding hypotheses 1-3, we describe the document analysis procedure that has been applied to collect strategic renewal actions of incumbent firms in the European energy industry. In paragraph 6.3, concerning hypotheses 4-6, we provide a detailed description of in-depth survey research that was conducted at organisational unit level of two Dutch incumbent energy firms. Both paragraphs are structured in a similar way. First, we provide criteria for the constitution of a research sample. Second, we describe the data collection procedure. Third we present our measures. Fourth, we address issues of reliability and validity. Paragraph 6.4 concludes by comparing both methodological approaches along several main characteristics.

6.2 Document analysis procedure

Hypotheses 1-3 investigate strategic renewal actions at industry level. We conducted a document analysis to measure realised strategies (e.g. Mintzberg and Waters 1985) of incumbent firms' exploitative and explorative strategic renewal actions. Realised actions are good indicators of a company's strategy as it are the acts of managers, not their intentions, which make up a firm's strategising in practice. This research method has been applied in previous studies (Flier et al. 2003; Volberda et al. 2001b) and is geared towards content analysing publicly available archival data that reports strategic renewal moves of large firms. Mergers, alliances, new business units, and new products exemplify such moves. We applied this method to detect and content analyse strategic renewal actions of

¹ Parts of this chapter are published as Stienstra, M. (2008) Measuring knowledge: Exploitative and exploratory learning from strategic actions. *Working paper presented at the Strategic Management Society 28th International Conference*, October 13 – 15, Cologne, Germany.

European incumbent energy firms from 1999 to 2004. In this period, incumbent energy firms were confronted with a series of regulatory issues (e.g. Helm and Jenkinson 1998; Newbery 2004).

Sample

We applied five selection criteria to constitute our sample of firms and strategic renewal actions. First, firms must have incumbency status, i.e. belong to the largest firms in its home country in terms of turnover. Second, the firm should have its home base in a Northwest EU member state. Third, annual reports in English should be available for the entire research period. Fourth, the firm should be involved in the supply of electricity or gas to retail customers. As such, firms only active in generation (e.g. PowerGen from the UK) were not included in the sample. Fifth, strategic renewal actions should relate to generation, trade or sale of energy in the period under investigation. As high capacity transmission networks (e.g. electricity grids and gas pipelines) are often unbundled to some extent from the energy distribution companies (see paragraph 7.3), strategic renewal actions in the transmission segment are excluded from the document analysis. These five considerations have resulted in a sample of 1127 strategic renewal actions from thirteen incumbent energy firms: Centrica (UK), Distrigas (Belgium), Electricité de France (EdF; France), Electrabel (Belgium), EnBW (Germany), Eneco (Netherlands), E.On (Germany), Essent (Netherlands), Gaz de France (GdF; France), Nuon (Netherlands), RWE (Germany), Scottish & Southern Energy (SSE; UK), and Vattenfall (Sweden).

Data collection

A pair of researchers was used to detect strategic actions of the sample companies from two secondary sources: annual reports and The Financial Times. Both annual reports and The Financial Times cover reports of strategic actions of firms that have been implemented. The Financial Times was chosen above more (potentially) detailed national sources for three reasons. First, The Financial Times is one of the primary business newspapers in Europe and it extensively covers moves of European energy firms. Second, to avoid differences that stem from using different sources for each country. Third, its online database allows efficiently searching, selecting, and downloading relevant articles.

Regarding the actual coding of strategic actions into either exploitation or exploration, we mainly followed the coding procedure by Barr, Stimpert and Huff (1992). Similarly to detecting strategic actions, a pair of coders was used to code the strategic actions of the sample companies. Each coder was trained on analysing articles (Financial Times) and text units (annual reports) similar to the ones used in this study. Further, a coding protocol that had been used in previous research (Flier 2003; Flier et al. 2003; Volberda et al. 2001b) was applied in this research to create clarity and facilitate agreement between the coders. If the coders did not overlap in the coding of a strategic action, this was discussed until a mutually satisfactory solution was arrived. Sometimes, the arguments involved in the discussion were formalised as a new coding rule in the coding protocol. Appendix A shows the coding protocol, including the list of original coding rules and several new coding rules that were added during the coding process.

Measures

We analysed our main construct of strategic renewal by investigating the path of strategic actions a firm undertakes. An action is considered to be strategic insofar it is likely to have an impact on the overall behaviour of the firm and its performance. We distinguish the concepts exploitative strategic renewal and explorative strategic renewal to investigate how firms react by doing more of the same (i.e. maintain congruence with historical path of activities), or by developing new ways of wealth generation (i.e. deviate from historical path of activities). Because strategic renewal actions are dichotomously classified as either exploitation or exploration, one necessarily references the other. At strategic action level, optimisation, efficiency programs, and actions that increase the scale of existing businesses exemplify exploitative strategic renewal actions. On the other hand, expansion into new markets, new product introductions and the creation of new businesses ventures are typical examples of explorative strategic renewal actions. Table 6.1 presents illustrative examples of exploitative and explorative strategic renewal actions in the database of 1127 strategic renewal actions.

Table 6.1: Some illustrative examples of exploitative and explorative strategic renewal actions

Examples of exploitative strategic renewal actions:

- “As a result of modernization, Gaz de France has been able to optimize its storage facilities. The capacity of the Chémery unit, initially estimated at 5 billion m3 of natural gas, has been increased to 7 billion m3.” (GdF, Annual Report 2000: 37)
- “With this thought in mind, we initiated the Streamlining programme in 2004 designed to improve our internal operating processes. By jointly striving for operational excellence, we expect to further strengthen customer satisfaction as well as our financial performance.” (Essent, Annual Report 2004: 4)
- “The shareholding in the Polish distribution and sales company GZE was increased from 32 per cent to 53.7 per cent. The company was consolidated into the Group as of January 2003.” (Vattenfall, Annual Report 2003: 64)

Examples of explorative strategic renewal actions:

- “In September we established a presence in the gas and electricity markets of continental Europe by acquiring a 50% interest in the Belgian company Luminus NV.” (Centrica, Annual Report 2001: 2)
- “The market for green power was opened up to competition on 1 July 2001. The launch of the renewable energy product Ecostrroom® was a success. More than 160,000 customers signed up for Ecostrroom® in 2001.” (Eneco, Annual Report 2001: 16)
- “In 1999, Vattenfall opened a laboratory for the development of electrochemical processes. Work will focus primarily on the development of new electrochemical applications, mainly for industrial and municipal customers.” (Vattenfall, Annual Report 1999: 13)

We now describe the measurement of our independent variables. Regarding hypothesis 1, involvement of external parties is introduced to determine the extent of *external dependency*. At strategic action level, we analyse if a firm depends on external institutional constituents for resources in the realisation of a strategic action. Actions that arise within the boundaries of the firm, like Greenfield investments, efficiency operations, and launching new product lines, exemplify actions in which firms generally not depend on outside parties for resources. On the contrary, mergers, acquisitions, alliances and joint ventures exemplify actions in which resources of external parties are involved. This measure relates to e.g. Penrose’s (1959) distinction between internal growth versus

external growth through acquisition. Concerning hypothesis 2, percentage of market opening is used to assess the degree of *permeability*. Directives 96/92/EC (electricity) and 98/30/EC (gas) provide for a gradual opening of markets in three phases. In each phase, eligible customers exceeding a particular consumption threshold are permitted to purchase freely from other (foreign) energy incumbents or brand new entrants. These were minimal requirements. Member States were allowed to move faster and to open up their national electricity and gas markets completely (European Union 1998; 2000). We use European Commission benchmarking reports, which provide statistics on the opening up of European markets for electricity and gas on a regular base, to assess the percentage of market opening at the time of the strategic renewal action. Hypothesis 3 relates to the concept of *mimicry*, which calls for an assessment whether firms differ significantly from each other in their likelihood of exploitation and exploration in the period 1999-2004. Mimicry will be analysed by using a set of firm dummy variables. Qualitative variables with n values can be modeled with n-1 dummy variables. It is indifferent which dummy variable will be left out. In our analysis, the firm dummy GdF is left out.

In addition to the explanatory variables, we control for three factors that can also have an influence on a firm's likelihood of exploitation (or exploration). First, we control for *time* effects by including the year in which the strategic renewal action is undertaken. Year will be measured by using a set of dummy variables, with 1999 as reference. Second, we investigate the *geographic location* where the strategic renewal action is undertaken, either the domestic market or an international market. This variable is included to control for, amongst others, the possibility that strategic renewal actions are exercised to international "realms of decision-making that are relatively unconstrained by regulatory strictures" (Peteraf and Reed 2008: 100). Third, *resource position* reflects the degree to which a country is self-sufficient in the production of gas and electricity resources. Natural resources are an important factor which bestows comparative advantage for countries (and its national energy firms). As it can hardly be influenced, this fits with a rather passive or inherited view of economic opportunity (Porter 1990). This measure is calculated as yearly annual production divided by yearly annual consumption. The higher the score, the less a country depends on foreign firms (and countries) for importing electricity and gas. Annual

production and consumption data are obtained from EUROSTAT (2005; 2006). The measurement of the dependent and independent variables is summarised in table 6.2.

Table 6.2: Measurement of dependent and independent variables

Variable	Scale	Measurement
<i>Dependent:</i>		
Exploitation (1) versus exploration (0)	Nominal	Nature of the strategic renewal action: maintain congruence with historical path of activities (1) or deviates from historical path of activities (0)
<i>Explanatory:</i>		
External dependency	Nominal	Involvement of external parties: yes (1) or no (0)
Permeability	Ratio	Percentage of market opening at the time of the strategic renewal action
Mimicry	Dummy	Firm that undertakes the strategic renewal action: Centrica, Distrigas, EdF, Electrabel, EnBW, Eneco, E.On, Essent, GdF, Nuon, RWE, SSE, Vattenfall
<i>Control:</i>		
Time	Dummy	Year in which the strategic renewal action is undertaken: 1999, 2000, 2001, 2002, 2003, 2004
Geographic location	Nominal	Country in which the strategic renewal action is undertaken: international market (1) versus domestic market (0)
Resource position	Ratio	Yearly annual production divided by yearly annual consumption

Reliability and validity

Coding strategic actions into exploitation and exploration should be reliable in terms of reproducibility and consistency (Weber 1990). Reproducibility concerns are low as all the information retrieved from the two data sources is of an explicit nature. Regarding consistency, a database was built to systematically order the data in strategic action nodes, which minimises the chance of mistakes and increases the coding quality. Inter-coder

reliability was satisfactory at 89% level of agreement. Flier (2003) reports a 91% level of intercoder reliability in a comparable study.

Construct validity is established by a triangulation of data sources. Combining data from annual reports and The Financial Times is beneficial in at least two ways. First, the combined use of these two data sources allows for both an insider perspective (annual report) and an outsider perspective (Financial Times). Second, it overcomes the biases when using only one source. For example, The Financial Times paid more attention to firms listed on the stock market than to those not listed. Further, The Financial Times gives a higher priority to reporting key strategic actions. Including annual reports compensates these effects at least partially. Construct validity also rests on the establishment of semantic validity through the use of multiple coders that have to agree that the text or newspaper clippings have similar meanings or connotations (Krippendorff 1980). Regarding our data on institutional predictor variables, we consulted leading industry experts for validation.

6.3 Survey research

Hypotheses 4-6 investigate strategic renewal at organisational unit level. We conducted a survey research to collect data on several intra-organisational institutional predictor variables and exploitative and explorative strategic renewal. Complementary to the document analysis, in which exploitation and exploration are classified dichotomously, our survey measures allow for a more precise measurement of exploitative and explorative strategic renewal on a ratio scale. Organisational units were selected from two large leading Dutch multi-divisional energy firms, which will be referred to as company A and company B.

Sample

We applied four selection criteria to constitute our sample of organisational units. First, the energy firms from which organisational units are selected must have incumbency status in the Netherlands, i.e. belong to the largest energy firms in terms of turnover. Second, organisational units should be empirically distinct from other organisational units. We received personnel files from the HRM departments of both companies. The files allowed

for a classification of organisational members into distinct organisational units. Further, interviews with managers from both companies provided convincing argument that an organisational unit level of analysis reflects organisational reality. Third, organisational units must have at least four employees. Fourth, organisational units should be involved in the core business of energy services. As such, units that are mainly responsible for support services (e.g. catering, building maintenance) were excluded from the research. These considerations have resulted in a potential sample of 173 organisational units: 108 organisational units from company A and 65 organisational units from company B.

Data collection

We developed a questionnaire to collect data at the organisational unit level. The questionnaire was sent to employees of each organisational unit, not unit leaders or managers. This is because some measurement scales (i.e. entrepreneurial proclivity, hierarchy in decision-making) ask respondents to judge the unit leader or manager. Further, we explicitly asked respondents to fill out the questionnaire with a focus on their organisational unit (or in some cases their unit leader or manager) Employees were randomly selected from the 173 organisational units.

Following Li, Bingham and Umphress (2007) and Westphal (1998), we adopted several measures to enhance a sufficient response rate. First, we included an endorsement letter in the survey package in which top management emphasised the importance of the study for its company and asked its employees for cooperation. Second, we described the purpose of our study and provided the telephone number and e-mail address of one researcher in case of any questions. Third, we assured confidentiality. In this respect, we sent the survey to the respondents' private home addresses. Further, we included a return envelope in the survey package which was directly addressed to the research team. Fourth, after four weeks, non-respondents were reminded to fill out and return the questionnaire.

All in all, we received questionnaires from 112 organisational units. One questionnaire was excluded from the analyses because of excessive missing data. This has resulted in a final sample size of 111 questionnaires, corresponding with a 64.2% response rate. Table 6.3 provides more detailed information regarding the survey's response rate.

Table 6.3: Survey response rate statistics

Company	# Targeted units	# Responding units	Response rate
A	108	80	74.1%
B	65	31	47.7%
A + B	173	111	64.2%

We tested for several potential biases in our data. First, because of relatively high response rates of organisational units across the two companies (see table 6.3), the possibility for sampling bias is low. Second, to test for non-respondent bias, we compared organisational unit size between respondents and non-respondents. Results of the T-test indicate that there are no statistically significant differences between the two groups ($t = -1.14$; $p = 0.26$). Third, to be sure that not only successful organisational units responded, we refer to an item in the questionnaire that asked respondents to indicate to what extent competitors could be jealous of their performance (Volberda, Verwaal and Van der Weerd 2006: 279). Measured on a seven-point scale (1 = strongly disagree and 7 = strongly agree), results indicate that our sample is unlikely to be biased towards successful organisational units alone (mean = 4.74; s.d. = 1.37; 39.6% of respondents mark 4 or below). Fourth, we used the ANOVA statistic to examine potential differences in the main study variables among educational and functional background. Regarding educational background among the respondents, 6.4% hold a Master degree, 28.2% hold a Bachelor degree and 65.4% have had an education below Bachelor level. Further, regarding functional background among respondents, 84.4% have a background in Technology, 11.0% were educated in Economics and 4.6% otherwise. First, regarding educational background, we did not find any significant differences in the study variables among groups of respondents (Master, Bachelor, below Bachelor) when applying a 5% level of significance. F-values for intra-organisational regulative forces, inter-organisational regulative forces, entrepreneurial proclivity, exploitative strategic renewal and explorative strategic renewal are 1.893, 0.045, 0.958, 2.651 and 0.176, respectively. Similarly, regarding functional background, we did not find any significant differences in the main study variables among groups of respondents (Technology, Economics, otherwise). F-values for intra-organisational regulative forces, inter-organisational regulative forces, entrepreneurial proclivity,

exploitative strategic renewal and explorative strategic renewal are 2.882, 1.432, 1.491, 0.943 and 0.676, respectively.

Measures

All of our scales were measured on a seven-point Likert scale (1 = strongly disagree and 7 = strongly agree). Appendix B presents an overview of the survey scales of our main study variables. Hypotheses 4-6 address two dependent variables: exploitative strategic renewal and explorative strategic renewal. We use scales that have been developed and validated in previous research to measure these variables. *Exploitative strategic renewal* ($\alpha = 0.88$), which reflects the level of efficiency in the organisational unit, was measured by using the six-item scale exploitative innovation (Jansen et al. 2006). *Explorative strategic renewal* ($\alpha = 0.93$), which considers a unit's level of innovativeness, was measured by using the six-item scale exploratory innovation (Jansen et al. 2006).

Three explanatory study variables are distinguished: intra-organisational regulative forces, inter-organisational regulative forces and entrepreneurial proclivity. First, the extent of *intra-organisational regulative forces* ($\alpha = 0.80$) is measured by five items that tap into the extent to which organisational members adhere to explicit internal regulatory processes: (1) Employees in our unit conform to formal rules (adapted from Wicks 2001: 671); (2) Managers are charged with protocols to improve the efficiency of organisational members (adapted from Elsbach 2002: 42); (3) In our unit, rules and procedures are followed (adapted from Meyer and Rowan 1977: 342); (4) Rules, laws and sanctions occupy a central place in our unit (adapted from Wicks 2001: 676); (5) In our unit, punishment is administered in case of rule violations (adapted from North 1990: 4). Exploratory factor analysis (principal component) was conducted to identify the structure of the scale items. All items load on a single factor. Bartlett's test of sphericity (Chi-Square = 213.136; $df = 10$; $p = 0.00$) indicates the presence of correlations between items. The measure sampling adequacy (0.791) is almost meritorious (e.g. Hair et al 1998). Second, *inter-organisational regulative forces* ($\alpha = 0.78$) represents the extent of regulatory processes in the industry. A five item scale was developed: (1) The impact of regulation and regulators is evident in our industry (adapted from Beardsley et al. 2005: 95); (2) The regulatory agencies assume a very important role (adapted from Mahon and Murray 1980:

127); (3) The legal environment affects many aspects of our business (adapted from DiMaggio and Powell 1991b: 67); (4) Our industry is characterised by numerous regulatory limitations (adapted from Flier et al. 2001: 182); (5) In our industry, written records are kept of every organisations' performance (adapted from Deshpandé and Zaltman 1982: 27). Again, all items load on a single factor. Bartlett's test of sphericity (Chi-Square = 299.384; df = 10; p = 0.00) indicates the presence of correlations between items. The measure sampling adequacy (0.788) is almost meritorious (e.g. Hair et al 1998). Third, we use the six item scale *entrepreneurial proclivity* ($\alpha = 0.73$) developed by Griffith et al. (2006) to measure the extent of institutional entrepreneurship. The entrepreneurial proclivity measure mainly contains the dimensions of entrepreneurial orientation that have been identified by Lumpkin and Dess (1996). Following Lumpkin and Dess (1996): (1) innovativeness refers to the development of e.g. new ideas, products, and services; (2) risk-taking is associated with a firm's willingness to accept greater levels of risk; (3) proactiveness reflects opportunistic seizing of market opportunities in the expectation of future changes; (4) competitive aggressiveness implies the willingness to adopt unconventional methods of competition; and (5) autonomy relates to independence in bringing forth and executing an idea. Although Griffith et al. (2006) focused on entrepreneurial proclivity at the level of top managers, we rephrased the items and asked respondents to focus on organisational unit managers.

Finally, we included a number of other variables in the questionnaire to control for alternative factors in our analyses that might influence exploitative or explorative strategic renewal. First, to control for a unit's embeddedness in its parent *company* (either A or B), a dummy variable was created with firm A as the base group. Second, we control for *size*, measured by the number of employees in the organisational unit. From previous research (e.g. Birnbaum 1984; Grimm, Corsi and Smith 1993), we learn that organisational size can have both positive and negative effects on a firm's strategic responses to regulatory reform. Third, in the context of intra-organisational normative forces, *discipline dominance* relates to the extent to which unwritten rules are dominated by the values and norms of a certain discipline or profession (Volberda 1998). The stronger a firm's discipline dominance, the lower a firm's flexibility potential (Volberda 1998), which might positively affect exploitative strategic renewal and can have negative consequences for the

degree of explorative strategic renewal. In the survey, respondents were asked to indicate the extent to which their unit is characterised by a high percentage of employees with the same education. Fourth, in the context of intra-organisational cognitive forces, *connectedness* ($\alpha = 0.71$) measures the degree of interaction between organisational unit members (Jansen et al. 2006; Jaworski and Kohli 1993). We used the five-item scale developed by Jansen et al. (2006), which was in turn adapted from Jaworski and Kohli (1993), to measure connectedness. Interaction of organisational members results in a socially constructed reality (e.g. Berger and Luckmann 1966) through shared sense making. In this respect, cultural-cognitive theorists stress the role of compliance: routines are followed as these are the taken for granted way how things are done (Scott 2001). Connectedness might therefore positively affect exploitative strategic renewal and negatively impact upon explorative strategic renewal. Fifth, *centralisation of decision-making* ($\alpha = 0.84$) considers the extent to which decision-making is concentrated in an organisational unit (Aiken and Hage 1968). Following Jansen et al. (2006), we adopted the five-item scale hierarchy of authority (Dewar, Whetten and Boje 1980; Hage and Aiken 1967) to measure centralisation of decision-making. Following Jansen et al. (2006), high centralisation of decision-making may lower an organisational unit's level of explorative strategic renewal, but increase an organisational unit's level of exploitative strategic renewal (Jansen et al. 2006).

Reliability and validity

We mainly used existing scales that have been validated and proven reliable in previous research. All the multi-item scales have Cronbach alpha's above the 0.70 threshold, which assures reliability (e.g. Nunnally 1978). Face validity of all questionnaire items was assessed by three scholars in strategic management. After several modifications, we conducted pre-tests with eight employees from the two target companies. Observations and discussions during the pre-tests have resulted in minor modifications in phrasings to reduce ambiguity and to better emphasise organisational unit as the level of analysis in some items. To assure validity in respondents' answers, we sent the questionnaires to employees, not unit managers or unit leaders. In our opinion, employees are most knowledgeable about regulatory constraints and entrepreneurial opportunities in their organisational unit. In

addition, several scales (i.e. centralisation of decision-making, entrepreneurial proclivity) contain items that ask respondents to judge their supervisor or manager. Our findings indicate that the average working experience was 21.5 years (average age of respondents is 47.6), which further strengthens our confidence in the validity of our data.

Yet, as appropriate scales for intra- and inter-organisational regulative forces were not available, we took five steps to develop valid measures for these constructs. First, we conducted in-depth interviews with three industry experts regarding issues of both intra- and inter-organisational regulative forces. Second, we thoroughly examined relevant literature within the realms of Scott’s (2001) regulative pillar. According to Scott (2001: 51): “Scholars more specifically associated with the regulatory pillar are distinguished by the prominence they give to explicit regulatory processes: rule setting, monitoring, and sanctioning activities. In this conception, regulatory processes involve the capacity to establish rules, inspect other’s conformity to them, and, as necessary, manipulate sanctions – rewards or punishments – in an attempt to influence future behaviour.”

Table 6.4: Two factor solution of intra-organisational regulative forces and inter-organisational regulative forces

Item	Component	
	1	2
Employees in our unit conform to formal rules	-.009	.822
Managers are charged with protocols to improve the efficiency of organisational members	.069	.519
In our unit, rules and procedures are followed	-.057	.867
Rules, laws and sanctions occupy a central place in our unit	-.042	.896
In our unit, punishment is administered in case of rule violations	.140	.607
The impact of regulation and regulators is evident in our industry	.677	-.174
The regulatory agencies assume a very important role	.929	-.015
The legal environment affects many aspects of our business	.901	.134
Our industry is characterised by numerous regulatory limitations	.807	.106
In our industry, written records are kept of every organisations’ performance	.631	.110

Extraction method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalisation

Third, from the literature review, we collected a pool of quotations that tap into the domain of each construct. Then, we translated each quotation into a unique item (see Appendix C and D). Fourth, after the data collection, a factor analysis was conducted on all items of both constructs. This has resulted in a two factor solution where each item loads on its intended factor, either intra- or inter-organisational regulative forces (see table 6.4). Regarding our sample size, the factor loadings show statistical significance (Hair et al. 1998: 112). This suggests that intra-organisational regulative forces and inter-organisational regulative forces are not only conceptually different, but also empirically distinct from each other. Fifth, we compared the developed scales with comparable scales that had been proven valid and reliable in previous research. We included a five item formalisation scale ($\alpha = 0.71$) from Deshpandé and Zaltman (1982) in our questionnaire. Formalisation reflects the extent to which rules, procedures, instructions and communications are written down (Khandwalla 1977). Correlation statistics ($r = 0.66$; $p < 0.00$) indicate that our scale of intra-organisational regulative forces correlates highly with formalisation. We also included a four item complexity scale ($\alpha = 0.88$) from Volberda et al. (2006). Complexity regards the number of environmental factors that have an impact on an organisation and the relatedness between these factors (Volberda 1998). Correlation statistics ($r = 0.48$; $p < 0.00$) indicate that the inter-organisational regulative forces scale correlates highly with complexity.

6.4 Conclusion

In this chapter, all variables that have been specified in hypotheses 1-6 were made operational for empirical investigation. Overall, construct validity of our main construct – strategic renewal – is established by a triangulation of research methodologies. The document analysis is geared towards a dichotomous classification of reported/realised strategic renewal actions into either exploitation or exploration at industry level, whereas the survey research allows for a separate measurement of perceived exploitative and explorative strategic renewal at organisational unit level. At industry level, we found that 43.1% of the strategic renewal actions from thirteen incumbent energy firms are of an explorative nature (the remaining 56.9% are of an exploitative nature). This means that the

number of exploitative strategic renewal actions relates to the number of explorative strategic renewal actions by a factor 1.32. At organisational unit level of two Dutch incumbent energy firms, the average degree of perceived exploitative strategic renewal (4.78) relates to the average degree of perceived explorative strategic renewal (3.71) by a factor 1.29. As both approaches yield highly similar results, this suggests construct validity. Table 6.5 summarises both methodological approaches described in this chapter along several main characteristics.

Table 6.5: Summary of research methodologies

Research design	Level of analysis	Hypothesis	Main variable	Data collection
Document analysis	Industry level	H1 – H3	Exploitative <i>or</i> explorative strategic renewal	Financial Times and annual reports
Survey	Organisational unit level	H4 – H6	Exploitative <i>and</i> explorative strategic renewal	Questionnaire

Two methodological/empirical contributions are made in this chapter. First, while this and recent studies (e.g. Gibson and Birkinshaw 2004; Jansen et al. 2006) focus on survey data to measure exploitation and exploration, our document analysis also allows for a complementary way of measuring exploitation and exploration. A major strength of this method is the use of contemporaneous reporting on the actual realisation of exploitation and exploration at strategic action level. Second, as appropriate scales for intra- and inter-organisational regulative forces were not available, we took several steps to develop valid measures for these constructs.

7 European electricity and gas market statistics

7.1 Introduction

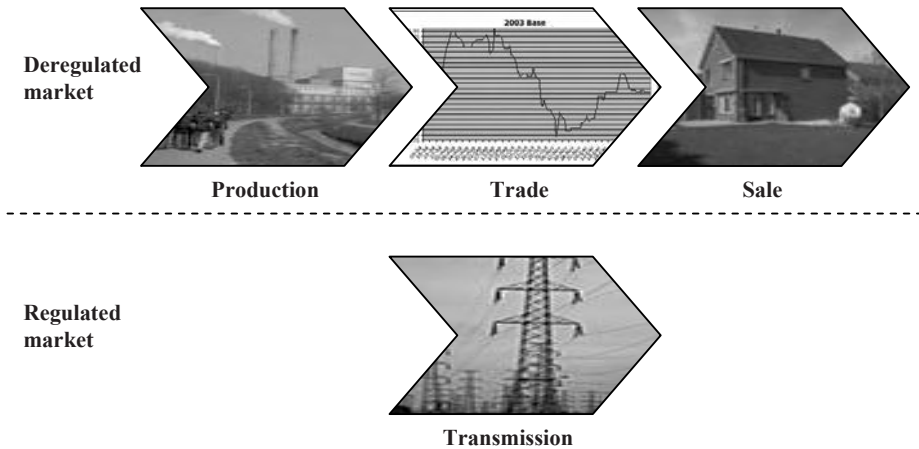
In this chapter, we address the research sub-question (1b) *at country level, how does regulatory reform diffuse across European energy markets?* Regulatory reform of energy services culminated in the late nineties with the announcement of directives 96/92/EC and 98/30/EC, which heralded the start of a single European market for electricity and gas, respectively. The intention of the EU was to contribute to the achievement of three major European energy policy objectives: (1) increased competitiveness, (2) environmental protection and (3) security of supply (European Union 1998; 2000). We describe the (changing) regulatory landscape of six Northwest European energy markets in the period 1999-2004. Due to the complex structure of network industries, paragraph 7.2 sets out with a description of the European energy market structure. In addition, we present production, trade and consumption figures of six EU member states. In paragraph 7.3, we describe patterns of regulatory reform across six EU energy markets along three characteristics: (1) opening of markets, (2) network unbundling and (3) third party access. In paragraph 7.4, we more closely examine European energy markets in terms of concentration ratios. All statistics in this chapter are presented for both the electricity and the gas segment, which allows for comparisons between the two. Finally, paragraph 7.5 concludes by addressing the issue of how a (lack of) European level playing field has impacted upon incumbent energy firms' strategic choices.

7.2 Structure of European electricity and gas markets

Considering European electricity and gas market structures, it is important to make a conceptual distinction between several value adding stages: production, trade and sale. In addition, transmission concerns the physical transportation of energy through networks: electricity grids/wires and gas pipelines. Figure 7.1 provides a simplified illustration of the relationship between these four stages. Regulatory reform in the European energy industry

contains elements of both deregulation and regulation (and re-regulation). Deregulation primarily concerns the production, trade and sale of energy. On the other hand, transmission can be considered as a natural monopoly that often remains subject to tight governmental regulation at national level.

Figure 7.1: The energy structure (simplified)



We will now present production, trade and consumption data of the six countries studied in this thesis. From these data, ratios will be calculated that control for factor market characteristics (i.e. resource position) in subsequent analyses in chapter 8.

Production

Production concerns the generation of electricity (e.g. power plants) and exploration of gas (e.g. gas fields at sea). Table 7.1 describes electricity generation statistics across six European markets in the period 1999-2004. Electricity generation volumes in Belgium remained relatively stable over time. In Sweden, total electricity generation in 2004 is less than the amount of electricity generated in 1999. The four remaining markets, on average, show a gradual increase of electricity generation from 1999 to 2004.

When looking at the breakdown of electricity production (EUROSTAT 2005; 2006), the six countries show interesting differences. Nuclear power plants account for

more than 50% of electricity generation in Belgium and France. For example, France has produced 448.241 Gigawatt hours (GWh) of nuclear electricity in 2004 (EUROSTAT 2006). In Germany, The Netherlands and the UK, the majority of electricity is generated from conventional power plants. Conventional power plants use coal or gas as the main energy source. Of the six countries, France and Sweden produce substantial amounts of electricity from hydro-electric power plants. For example, Sweden has produced 60.178 GWh of hydro-electric power in 2004 (EUROSTAT 2006). Finally, Germany is the only country that uses wind energy on a significant scale. In 2004, 25.270 GWh of electricity was generated from wind turbines (EUROSTAT 2006).

Table 7.1: Total electricity generation (in GWh)

	1999	2000	2001	2002	2003	2004
Belgium	84 521	83 894	79 697	82 060	84 618	85 441
France	523 985	540 668	550 488	559 197	566 949	572 241
Germany	555 465	571 551	586 340	571 645	599 470	606 636
Netherlands	86 396	89 615	93 747	95 965	96 775	100 736
Sweden	155 171	145 585	161 616	146 733	135 435	151 727
UK	368 363	377 309	384 682	387 506	398 671	395 853

Source: EUROSTAT (2005; 2006)

Table 7.2 describes gas production statistics across six European markets in the period 1999-2004. It appears that the UK and The Netherlands are by far the biggest gas producing companies. Further, (almost) no gas is explored in Belgium and Sweden. These countries therefore totally depend on gas imports for their gas consumption.

Table 7.2: Total gas production (in Terajoule -GCV)

	1999	2000	2001	2002	2003	2004
Belgium	17	96	0	0	0	0
France	77 670	69 999	70 222	67 438	59 621	51 530
Germany	777 245	735 038	741 143	743 728	740 615	685 342
Netherlands	2 517 547	2 414 593	2 591 786	2 524 867	2 428 905	2 864 924
Sweden	0	0	0	0	0	0
UK	4 147 772	4 538 225	4 431 339	4 345 335	4 309 312	4 019 594

Source: EUROSTAT (2005; 2006)

Trade

Energy trading involves buyers and sellers that engage in financial transactions with each other. Trade is also related to a country's imports and exports of energy with neighbouring countries. Imports and exports are often based on economic choices, rather than production shortages (EUROSTAT 2006). The figures in table 7.3 regard a country's net electricity import, which is calculated as total electricity imports minus total electricity exports. Belgium, The Netherlands and the UK are net importers of electricity in the entire period. On the contrary, France is a major net exporter. Germany and Sweden balance between net importer and net exporter over time.

Table 7.3: Net electricity import (in GWh)

	1999	2000	2001	2002	2003	2004
Belgium	825	4 326	9 106	7 588	6 410	7 777
France	-63 143	-69 479	-68 390	-77 034	-66 414	-62 040
Germany	1 040	3 057	3 657	9 998	-3 272	-2 621
Netherlands	18 440	18 915	17 283	16 382	16 992	16 217
Sweden	-7 482	4 678	-7 290	5 356	12 830	-2 104
UK	14 244	14 174	10 399	8 414	2 160	7 490

Source: adapted from EUROSTAT (2005; 2006)

Table 7.4 presents a country's net gas import statistics, calculated as total gas imports minus total gas exports. As Belgium and Sweden do not produce gas, these countries have to import all their gas needs. Additionally, France and Germany also have to import large

volumes of gas. The amounts of gas explored in these countries are far to less to meet consumption levels. The Netherlands and the UK are important gas exporting countries in the period under investigation.

Table 7.4: Net gas import (in TJ -GCV)

	1999	2000	2001	2002	2003	2004
Belgium	627 007	617 685	610 993	635 134	662 591	677 290
France	1 619 254	1 664 415	1 625 951	1 709 193	1 749 088	1 756 468
Germany	2 665 598	2 645 371	2 707 308	2 794 500	2 904 559	3 065 421
Netherlands	-909 113	-799 705	-938 409	-858 271	-753 811	-1 156 480
Sweden	33215	36092	40720	41439	41322	41142
UK	-257 658	-433 143	-387 967	-324 865	-326 662	68 123

Source: adapted from EUROSTAT (2005; 2006)

Consumption

Consumption is the final use of energy by customers. Although it is possible to distinguish between industry, transport and households/services (EUROSTAT 2005; 2006), table 7.5 presents total electricity consumption figures of the six countries. The countries, on average, show a slight increase in electricity consumption over time. Remarkably, electricity consumption in Sweden is higher than electricity consumption in The Netherlands, while the number of inhabitants in Sweden is roughly half the number of inhabitants in The Netherlands. This can be explained by the fact that electricity is the major heat source in Sweden. On the other hand, Dutch heat production is mainly based on gas.

Table 7.5: Total electricity consumption (in GWh)

	1999	2000	2001	2002	2003	2004
Belgium	74505	77539	78138	78443	79677	80603
France	374677	385111	395489	393230	408248	415880
Germany	467483	482603	505280	498840	509265	513327
Netherlands	94722	97938	99428	99736	100520	103118
Sweden	126580	128725	132673	131279	129443	130361
UK	322770	329533	332995	333337	337416	340042

Source: EUROSTAT (2005; 2006)

Table 7.6 shows total gas consumption figures of the six EU member states. The six countries show a tendency towards increased gas consumption over time. Gas consumption in Sweden lags far behind the consumption levels in the other five countries. Obviously, this relates to the fact that no gas is produced in Sweden.

Table 7.6: Total gas consumption (in TJ -GCV)

	1999	2000	2001	2002	2003	2004
Belgium	416 228	439 428	442 351	451 792	449 061	463 253
France	1 410 741	1 413 932	1 502 886	1 472 094	1 535 661	1 506 150
Germany	2 416 601	2 555 257	2 507 799	2 506 590	2 737 608	2 805 000
Netherlands	930 110	958 318	982 297	956 096	987 437	983 869
Sweden	19 940	20 623	22 902	21 359	23 117	22 341
UK	2 308 926	2 389 697	2 431 984	2 312 456	2 372 472	2 346 293

Source: EUROSTAT (2005; 2006)

7.3 Regulatory reform in European electricity and gas markets

Incumbent energy firms have operated in regulated environments for many decades. Owned by (local) governments, each energy firm was responsible for supplying utilities to all customers in (a specific region of) a country. With respect to energy production, trade and sale, the announcement of directives 96/92/EC and 98/30/EC heralded the start of a single European market for electricity and has, respectively. For the first time, European energy firms had to compete with (international) competitors for customers. Prospected

benefits of a single and competitive European market for energy are increased efficiency, lower prices, security of supply, less (expensive) reserve capacity, better use of resources, free choice of suppliers, improving service, and lower production costs for other industries (European Union 1998; 2000).

However, due to the network character of the energy industry, duplicating transmission systems in order to connect with each new customer is impossible. Further, parts of the transmission networks are often owned by large vertically integrated energy companies that perform all activities throughout the value chain. These factors are considered problematic in the context of energy market reform. Under the new rules of the directives 96/92/EC and 98/30/EC, transmission networks must offer access to both its owner and its competitors on equal terms. Regulatory reform in the European energy industry therefore involves a complex interaction of deregulation, regulation and re-regulation in order to assure fair competition. This is also referred to as the paradox of deregulation (Hancher and Van Damme 2000). In the context of regulatory reform, directives 96/92/EC and 98/30/EC affect three main areas: (1) opening of markets, (2) network unbundling and (3) third party access.

Opening of markets

Directive 96/92/EC provided for a gradual opening of electricity markets in three phases. In phase 1 (19 February 1999), eligible customers exceeding consumption of 40 GWh (CSFB 2002) were permitted to purchase freely throughout the EU. In phase 2 (19 February 2000), eligible customers exceeding consumption of 20 GWh (CSFB 2002) were permitted to purchase freely throughout the EU. Finally, in phase 3 (19 February 2003), eligible customers exceeding consumption of 9 GWh (CSFB 2002) were permitted to purchase freely throughout the EU. These were minimal requirements; EU member states were allowed to move faster and to open up their markets completely. Table 7.7 shows market opening rates of the six countries studied in this thesis. During the entire research period, all German, Swedish and UK customers were free to choose their electricity supplier. From these countries, UK was the first-mover as it had already opened up its market for competition in 1990 (CSFB 2002). Belgium, France and The Netherlands were relatively late in opening up their markets for all eligible customers.

Table 7.7: Market opening rates electricity markets

	1999	2000	2001	2002	2003	2004
Belgium	0	35	35	52	52	80
France	20	30	30	30	37	70
Germany	100	100	100	100	100	100
Netherlands	33	33	33	63	63	63
Sweden	100	100	100	100	100	100
UK	100	100	100	100	100	100

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 3); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 4); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 4); Third benchmarking report on the implementation of the internal electricity and gas market (2004: 4); Electricity liberalisation indicators in Europe (2001: 101); CSFB (2002); Annual Report Electricité de France (2003).

Similar to the opening of electricity markets, Directive 98/30/EC provided for a gradual opening of gas markets in three phases. In phase 1 (10 August 2000), eligible customers exceeding consumption of 25 million m³ were permitted to purchase freely throughout the EU (European Union 2000). In phase 2 (10 August 2003), eligible customers exceeding consumption of 15 million m³ were permitted to purchase freely throughout the EU (European Union 2000). Finally, in phase 3 (10 August 2008), eligible customers exceeding consumption of 5 million m³ were permitted to purchase freely throughout the EU (European Union 2000). Again, these were minimal requirements; member states were allowed to move faster and to open up their markets completely. Market opening statistics of the six European gas markets are presented in table 7.8. Germany and the UK had already fully open gas markets in 1999. As with electricity, UK was the first-mover in opening up its gas market. UK started to liberalise its gas market in 1982 (CSFB 2002).

Table 7.8: Market opening rates gas markets

	1999	2000	2001	2002	2003	2004
Belgium	0	47	59	59	59	83
France	0	20	20	20	20	37
Germany	100	100	100	100	100	100
Netherlands	45	45	45	60	60	60
Sweden	0	47	47	47	47	51
UK	100	100	100	100	100	100

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 5); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 5); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 6); Third benchmarking report on the implementation of the internal electricity and gas market (2004: 7); DRI*WEFA (2001); CSFB (2002); Annual Report Gaz de France (2004).

Unbundling

Under the new rules of the directives, transmission networks must offer access to all distribution companies on equal terms. Historically, network and distribution activities are often integrated in the same firm. Unbundling or separation of network activities from distribution activities is required to increase transparency and to avoid cross-subsidisation and discrimination. The directives require three measures to be taken (European Union 1998; 2000): (1) Management unbundling: the day to day management of the transmission network by the transmission system operator should be independent of the distribution company; (2) Accounting separation: transmission and distribution activities from other parts of the company should be separated; (3) Confidential information should not be passed by the transmission system operator to other parts of the company (Chinese walls). These are minimal requirements with respect to unbundling. A more extreme type of unbundling is legal separation of the transmission network from the distribution company. In this case, the transmission network operates completely independent from other distribution companies. The most extreme type of unbundling, ownership unbundling, concerns a physical separation of the transmission network from the distribution company. Table 7.9 presents the degree of unbundling of high-voltage electricity networks across the six European countries. In 1999, Sweden and the UK had already opted for ownership

unbundling. In 2002, ownership of the high-voltage electricity network in The Netherlands was transferred from the distribution companies to state company Tennet.

Table 7.9: Degree of unbundling high-voltage electricity networks (Ownership=3; Legal=2; Management=1; Accounts=0)

	1999	2000	2001	2002	2003	2004
Belgium	2	2	2	2	2	2
France	1	1	1	1	1	1
Germany	1	1	1	2	2	2
Netherlands	2	2	2	3	3	3
Sweden	3	3	3	3	3	3
UK	3	3	3	3	3	3

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 3); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 4); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 4); Third benchmarking report on the implementation of the internal electricity and gas market (2004: 4).

Table 7.10 presents statistics about the degree of unbundling of gas networks. In comparison with electricity network unbundling, gas networks are characterised by lower levels of unbundling in France, Germany, Netherlands and Sweden. Only the UK has chosen for the most extreme type of gas network unbundling: ownership unbundling.

Table 7.10: Degree of unbundling gas networks (Ownership=3; Legal=2; Management=1; Accounts=0)

	1999	2000	2001	2002	2003	2004
Belgium	2	2	2	2	2	2
France	0	0	0	0	0	0
Germany	0	0	0	0	0	1
Netherlands	0	0	0	1	1	1
Sweden	0	0	0	0	0	0
UK	3	3	3	3	3	3

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 5); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 5); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 6); Third

benchmarking report on the implementation of the internal electricity and gas market (2004: 7); DRI*WEFA (2001).

Third party access

With respect to the owners of electricity wires, a distinction can be made between transmission system operators and distribution system operators. The transmission system operator is responsible for running the high voltage transmission grid. Distribution system operators are responsible for running the medium and low voltage networks. Access to the electricity wires by third parties is essential in the success of liberalisation. Under a negotiated third party access system, each user of the network negotiates the terms of access with the system operator. Under a regulated third party access system, the tariffs to use the network are based on fixed prices that are published by relevant authorities. A regulated third party access system is beneficial as it prevents discrimination against competitors and offers transparent prices (European Union 1998). Third party access statistics of electricity networks are presented in table 7.11. Except for Germany, all countries have a regulated third party access system.

Table 7.11: Third party access to electricity networks (Regulated=1; Negotiated=0)

	1999	2000	2001	2002	2003	2004
Belgium	1	1	1	1	1	1
France	1	1	1	1	1	1
Germany	0	0	0	0	0	0
Netherlands	1	1	1	1	1	1
Sweden	1	1	1	1	1	1
UK	1	1	1	1	1	1

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 9); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 9); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 11); Third benchmarking report on the implementation of the internal electricity and gas market (2004: 14).

Table 7.12 shows how third party access is arranged in the six European gas markets. Similar to electricity, third party access to gas networks in Germany is negotiated from 1999 to 2004. Belgium has shifted from a negotiated to a regulated system in 2001. The

Netherlands has chosen for a hybrid TPA system, which is a combination of both a regulated and a negotiated system.

Table 7.12: Third party access to gas networks (Regulated=1; Hybrid=0.5; Negotiated=0)

	1999	2000	2001	2002	2003	2004
Belgium	0	0	1	1	1	1
France	1	1	1	1	1	1
Germany	0	0	0	0	0	0
Netherlands	0.5	0.5	0.5	0.5	0.5	0.5
Sweden	1	1	1	1	1	1
UK	1	1	1	1	1	1

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 9); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 9); Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 11); Third benchmarking report on the implementation of the internal electricity and gas market (2004: 14); DRI*WEFA (2001).

7.4 Concentration in European electricity and gas markets

In this section, we describe the extent to which the first main European energy policy objective – increased competitiveness – has been achieved. Market concentration is a widely used measure to assess competitiveness. There are various ratios to measure market concentration. First, concentration ratio can be calculated as the combined market share of the n largest firms in a (national) market. For example, the CR3 ratio indicates the concentration ratio of the three biggest companies in a (national) market. Following the German Federal Cartel Office (www.bundeskartellamt.de), market dominance is presumed to exist if three or fewer companies have a combined market share of at least 50 percent. Second, market concentration can be calculated as the sum of squared market shares of all firms that compete in a (national) market. This is known as the *Herfindahl-Hirschman Index* (HHI). Following the United States Department of Justice (www.usdoj.gov), markets in which HHI exceeds 1800 points are considered highly concentrated. Concentration ratio and HHI are related to each other. In this paragraph, market concentration is considered to be high if the biggest three companies in a national market

(either electricity or gas) have a combined market share of at least 75%. Further, if the combined market share is at least 50%, but less than 75%, market concentration is considered to be moderate. Finally, if the three biggest companies have a combined market share below 50%, market concentration is presumed to be low.

Production

In table 7.13, market concentration statistics are presented of six European electricity and gas production markets.

Table 7.13: Market concentration in electricity and gas production markets (approximate market share of three biggest producers between brackets)

	Electricity		Gas	
	1999	2004	1999	2004
Belgium	High (97)	High (95)	Import (-)	Import (-)
France	High (98)	High (96)	High (90)	High (98)
Germany	Moderate (63)	Moderate (72)	Moderate (54)	High (80)
Netherlands	Moderate (64)	Moderate (69)	High (80)	High (85)
Sweden	High (77)	High (86)	Import (-)	Import (-)
UK	Low (44)	Low (39)	Moderate (50)	Low (36)

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 19); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 19). Second (Update) benchmarking report on the implementation of the internal electricity and gas market (2003: 4); Fourth benchmarking report on the implementation of the internal electricity and gas market (2005: 44, 55); OXERA (2006: 20); Öko-Institut (2005). EC: Electricity liberalisation indicators in Europe (2001); EREG (2005).

Belgian, French and Swedish electricity production markets are highly concentrated from 1999-2004. Regarding these three countries, there is a single company that holds a dominant position in electricity generation: Electrabel, EDF, and Vattenfall, respectively.

Germany and The Netherlands are moderately concentrated. In Germany, there are four large electricity producers: RWE, E.On, EnBW and Vattenfall. The Dutch market is also characterised by four large electricity producers: Essent, Nuon, Electrabel and E.On. The UK market is the most competitive market. The combined market share of the three biggest generators is below the critical level of 50%. Further, this ratio has declined from 44% in 1999 to 39% in 2004.

Regarding market concentration in European gas markets, it appears that gas markets are generally highly concentrated (see table 7.13). More than electricity markets, a single company has often been nominated to deal with national gas production or gas imports. For example, the largest gas production company in the Netherlands is NAM. NAM is a subsidiary of the Dutch state (50%). Shell and Exxon-Mobile each hold a 25% stake. However, NAM is not included in our sample of European energy incumbents as it is not involved in the sale of gas to retail customers. Regarding our sample companies, GdF is the largest gas production company in France. Further, Centrica (British Gas) used to be the incumbent monopolist in the UK. However, Centrica was required to transfer gas resources to other market players in order to promote a competitive market. Similar to electricity market concentration, UK has the most competitive gas market. Gas market concentration in Germany has risen from moderate in 1999 to high in 2004. This can be explained by several major acquisitions in the German gas market the in the period of investigation. For example, RWE merged its gas business with VEW in 2000 and E.On's acquisition of Ruhrgas was finalised in 2003.

Trade

Historically, market players traded electricity and gas in bilateral contracts, which cover relatively long time periods. Regulatory reform has led to the introduction of wholesale markets for electricity and gas. Following the first benchmarking report (2001: 109) on the implementation of the internal electricity and gas markets, there are several advantages of wholesale markets over bilateral contracts. First, wholesale markets provide a transparent price. Second, wholesale markets offer flexibility as it is no longer necessary to perfectly match customer demand with generation/production capacity. Third, with regard to

electricity only, wholesale markets offer a more flexible pricing strategy when production volumes depend on climatic conditions (e.g. wind) or when oil or gas prices fluctuate.

Wholesale markets are important for liberalisation to succeed and liquidity is an essential feature of a well developed wholesale market (Newbery, Von der Fehr and Van Damme 2003). According to Newbery et al. (2003: 1): “Liquid markets enable the immediate execution of standard orders, exhibit prices that are resilient to large orders, and have enough participants trading sufficient volume to ensure low transaction costs”. Figure 7.14 presents liquidity figures of the six European electricity gas and wholesale markets. In the UK, both electricity and gas markets are liquid from 1999-2004. Swedish electricity trading, i.e. the Scandinavian electricity exchange NordPool, also benefits from sufficient liquidity. The remaining markets are not liquid or show limited levels of liquidity.

Table 7.14: Liquidity of electricity and gas wholesale markets (1 = Yes; 0.5 = limited; 0 = No)

	Electricity		Gas	
	1999	2004	1999	2004
Belgium	0	0	0.5	0.5
France	0	0	0	0
Germany	0	0.5	0	0
Netherlands	0.5	0.5	0	0.5
Sweden	1	1	0	0
UK	1	1	1	1

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 110). Fourth benchmarking report on the implementation of the internal electricity and gas market (2005: 44, 55-56).

Supply

Supply involves the sale of energy to industrial or retail customers. Supply of electricity or gas (or both) to retail customers was one of the main considerations in the constitution of our research sample. Table 7.15 presents market concentration statistics of energy retail supply markets. Despite the EU energy objective of increased competitiveness, it appears that electricity retail supply market concentration in Germany and the UK has increased from 1999 to 2004, not decreased. Further, market concentration statistics of the other four countries have remained relatively stable over time. Regarding gas retail supply, it is

difficult to compare the statistics over time. This is because gas market data in 1999 indicate the market share of the biggest gas retail supply company, whereas 2004 relates to the market share of the biggest three gas retail supply companies.

Table 7.15: Market concentration in electricity and gas retail supply markets (approximate market share of three biggest suppliers between brackets)

	Electricity		Gas	
	1999	2004	1999*	2004
Belgium	High (100)	High (94)	High (95)	High (99)
France	High (96)	High (96)	High (95)	High (n.a.)
Germany	Moderate (62)	High (n.a.)	High (n.a.)	High (n.a.)
Netherlands	High (80)	High (83)	High (n.a.)	High (83)
Sweden	Moderate (52)	Moderate (50)	High (100)	High (77)
UK	Low (37)	Moderate (59)	Moderate (50)	High (77)

*Note: Gas data 1999 indicates market share of biggest gas retail supply company.

Source: First benchmarking report on the implementation of the internal electricity and gas market (2001: 19); Second benchmarking report on the implementation of the internal electricity and gas market (2002: 20); Fourth benchmarking report on the implementation of the internal electricity and gas market (2005: 45, 58). OXERA (2006: 21).

7.5. Conclusion

In this chapter, we have presented electricity and gas market statistics of six Northwest European countries. These statistics are beneficial in at least four ways. First, the statistics deepen the insights in the basic research context: the European energy industry. The six energy markets are the home countries of the sample companies selected in this thesis. Second, findings illustrate that the first EU energy objective – increased competitiveness – was not achieved in the period under investigation. On the contrary, several European

electricity and gas markets show a tendency towards increased market concentration from 1999-2004. However, our interviews with an industry expert point at increased levels of competition after 2004. Table 7.16 shows aggregate market concentration levels of the six Northwest European electricity and gas markets. It can be concluded that the degree of market concentration in the six gas markets, on aggregate, is generally higher than in electricity markets. This can be explained by the shorter time horizon since the implementation of Directive 98/30/EC in gas (August 2000) compared with Directive 96/92/EC in electricity (February 1999). Further, regarding energy production, gas exploration is generally more capital-intensive than electricity generation. New entrants in energy production may therefore prefer electricity production.

Table 7.16: Conclusion on aggregate concentration levels in electricity and gas markets

	Electricity	Gas
Production	Moderately concentrated	Highly concentrated
Trade	Lack of liquidity (except UK and Sweden)	Lack of liquidity (except UK)
Retail supply	Highly concentrated, but less than gas	Highly concentrated, more than electricity

Third, data provided in this chapter will be used to calculate scores of several independent variables. Hypothesis 2 relates to the concept of permeability. Permeability is operationalised as the percentage of market opening (see tables 7.7 and 7.8). The control variable resource position is calculated as yearly annual production divided by yearly annual consumption (see tables 7.1, 7.2, 7.5 and 7.6). The higher the score, the higher a country's (and its incumbents) self-sufficiency in managing its resource flows. Finally, we have addressed the research sub-question (1b) *at country level, how does regulatory reform diffuse across European energy markets* from an empirical point of view. Findings suggest that differences in characteristics of regulatory reform across six EU energy markets have hampered the creation of a European level playing field in the period 1999-2004. With respect to market opening, countries have opened up their national markets for (foreign) competition at a different pace, which has resulted in unequal strategic renewal opportunities for firms across different countries. For example, since competition had

already been introduced in the UK electricity retail supply market before 1999, several foreign companies have successfully entered the UK in the period under investigation, including EdF. However, UK electricity companies did not have an equal opportunity to enter EdF's home market because France kept its electricity retail supply market closed in the period 1999-2004.

In the next chapter, we will use the Pearson Chi-Square statistic to investigate if the relative incidence of exploitative and explorative strategic renewal actions differs across incumbent firms' home countries (characterised by different patterns of regulatory reform). In addition, we will use the Pearson Chi-Square statistic to investigate if sector (electricity or gas) matters in incumbent firms' choices of exploitative and explorative strategic renewal actions. Further, binary regression analysis allows for a more sophisticated investigation of the relationship between governmental policy issues (including market opening as a proxy for permeability) and the nature of strategic renewal actions.

8 Strategic renewal paths in the European energy industry²

8.1 Introduction

Hypotheses 1-3 call for a multivariate analysis at strategic action level to investigate the (combined) effect of external dependency, permeability and mimicry on the likelihood that strategic actions of incumbent firms will be exploitation (or exploration), while controlling for a number of variables that can also have an impact on exploitation (or exploration). In paragraph 8.2, descriptive statistics are presented that indicate the relative incidence of exploitative and explorative strategic renewal actions across countries and organisational fields. In addition, we graphically illustrate strategic renewal paths across countries, organisational fields and incumbent firms. In paragraph 8.3, strategic renewal paths are further analysed at strategic action level. We present binary logistic regression results of our sample of 1127 strategic actions from incumbent energy firms. Finally, in paragraph 8.4, we apply a 5% level of significance to confirm or reject each of the hypotheses 1-3. We conclude by addressing the research questions (2a) *which environmental determinants are related to firms' exploitative strategic renewal actions* and (3a) *which environmental determinants are related to firms' explorative strategic renewal actions?*

8.2 Descriptive statistics

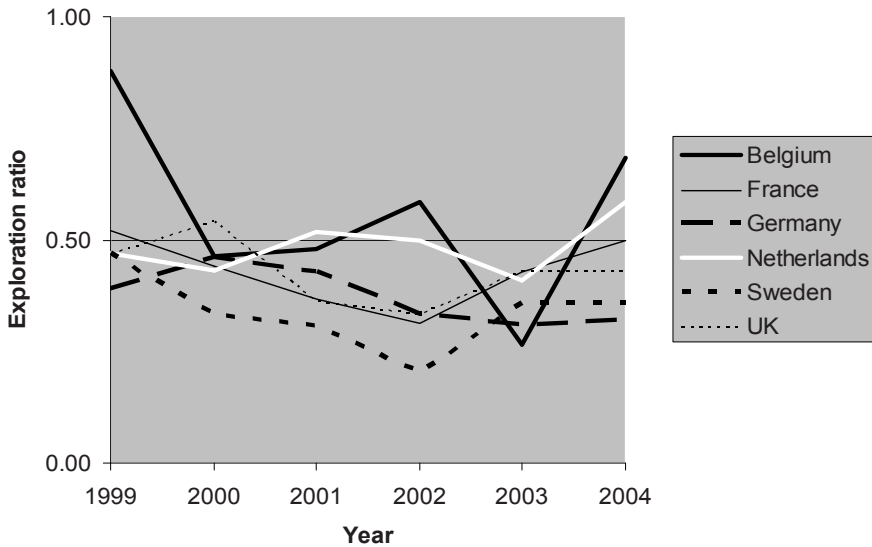
In table 8.1, the absolute and relative incidence of exploitative and explorative strategic renewal actions are shown per country. The chance that a randomly selected strategic renewal action will be exploration is highest for Belgian firms (57.4%) and lowest for Swedish firms (36.8%). Due to the dichotomous nature of strategic renewal actions, the chance that a randomly selected strategic action will be exploitation is lowest for Belgian firms (42.6%) and highest for Swedish firms (63.2%).

² Parts of this chapter are published as Stienstra, M., Van den Bosch, F.A.J. and Volberda, H.W. (2008) Strategic renewal paths in institutionalised environments. *Working paper presented at the 2nd JMS Conference*, September 23 – 25, Oxford, United Kingdom.

From table 8.1, it further appears that French and UK firms score quite similar on exploitative and explorative strategic renewal actions. Likewise, Swedish and German firms show much similarity. From the last column in table 8.1, it appears that there is a 43.1% chance of randomly selecting an explorative strategic renewal action from the total sample. In this respect, strategic renewal actions undertaken by Belgian and Dutch firms have an above-average exploration probability, while actions from French, German, Swedish and UK firms have a below-average exploration probability. In addition, we used the Pearson Chi-Square statistic to determine whether firms from different countries differ in their strategic renewal behaviour. Results indicate a Pearson Chi-Square value of 21.2, which relates to a p value of (0.00). At a 1% level of significance, the null hypothesis that the nature of a strategic renewal action is independent of country should be rejected. In other words, country matters in the nature of strategic renewal actions. Cramer's V (0.14) indicates the strength of the relationship.

Figure 8.1 graphically illustrates how incumbent firms from the same country – on aggregate – balance between exploitative and explorative strategic renewal activities over time. Exploration ratio is used as a metric, which is calculated by dividing the total number of explorative strategic renewal actions in a year by the total number of actions (exploration and exploitation) in a year. An exploration ratio of 0.50 indicates that the number of exploitative strategic renewal actions equals the number of explorative strategic renewal actions in a year. Overall, incumbents set out with relatively high levels of explorative strategic renewal actions in 1999, show a tendency towards decreased explorative activity in the years thereafter, but put increased emphasis on explorative strategic renewal actions in 2004. Further, in 2003, incumbent energy firms preferred exploitative strategic renewal actions over explorative strategic renewal in all six countries.

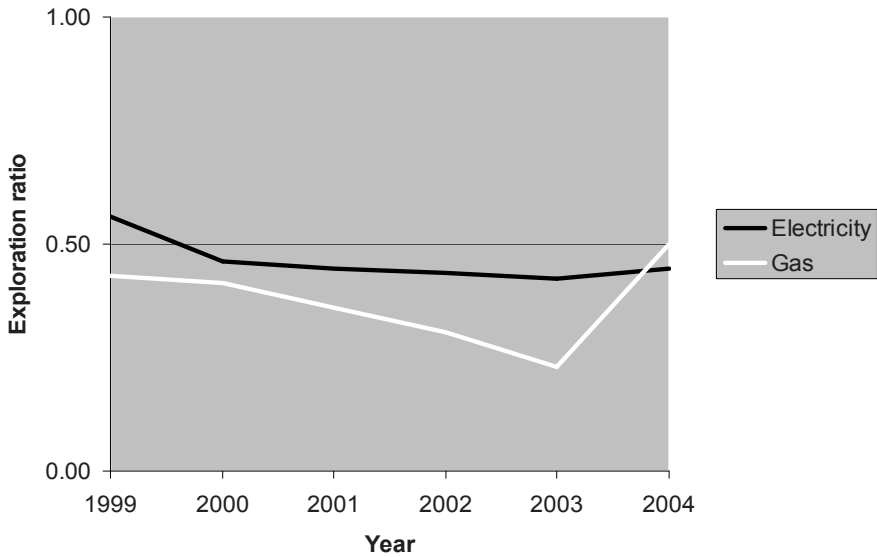
Figure 8.1: Strategic renewal paths across six countries in the EU energy industry



N Belgium = 136; N France = 210; N Germany = 354; N Netherlands = 201; N Sweden = 106; N UK = 120; N Total = 1127. Source: based on company annual reports and Financial Times articles.

Table 8.2 displays exploitative and explorative strategic renewal action statistics split up by organisational field. The chance that a randomly selected strategic renewal action will be exploration is highest in the electricity sector (46.3%) and lowest in the gas sector (37.4%). Applying similar reasoning, the chance that a randomly selected strategic renewal action will be exploitation is lowest in the electricity sector (53.7%) and highest in the gas sector (62.6%). Results further indicate a Pearson Chi-Square value of 8.36, which relates to a p value of (0.00). At a 1% level of significance, the null hypothesis that the nature of a strategic renewal action is independent of organisational field should be rejected. This suggests that organisational field matters in the nature of strategic renewal actions. However, Cramer's V (0.09) indicates a less strong relationship at organisational field level than at country level (Cramer's V = 0.14). Figure 8.2 displays how strategic renewal paths of exploitative and explorative strategic renewal actions evolve over time across organisational fields.

Figure 8.2: Strategic renewal paths across organisational fields in the EU energy industry



N electricity = 721; N gas = 406; N Total = 1127

Source: based on company annual reports and Financial Times articles.

Except for the year 2004, one can see that the electricity sector has a higher exploration ratio than the gas sector. This may suggest that electricity and gas are characterised by different sector business models, which prescribe the sources of value that can be created within an industry (e.g. Grant 2002; Rodrigues and Child 2003). Regarding the energy production segment, for example, it appears from our database of strategic renewal actions that electricity (rather than gas) is often generated in a number of ways that are novel to the firm, e.g. biomass, wind, solar and wave tidal.

Table 8.1: Exploitative and explorative strategic renewal actions across countries

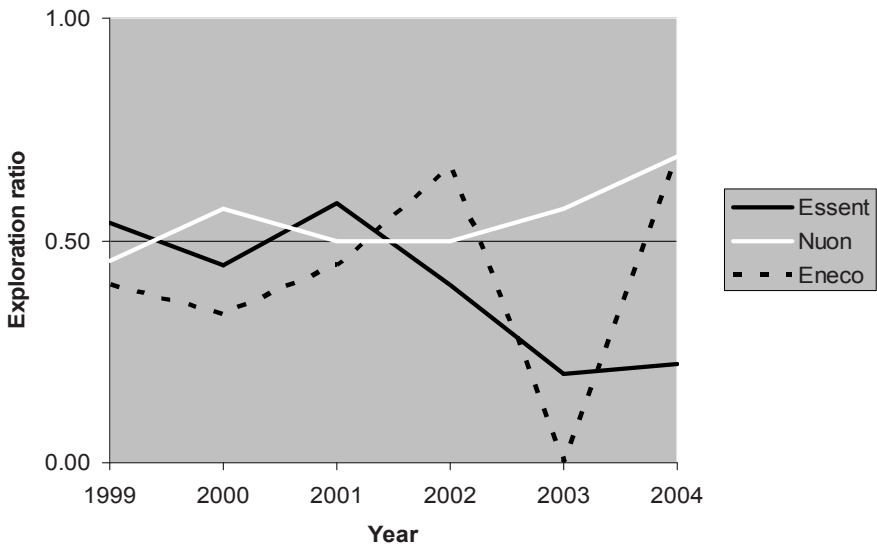
Strategic actions	Country													
	<i>Belgium</i>		<i>France</i>		<i>Germany</i>		<i>Netherlands</i>		<i>Sweden</i>		<i>UK</i>		<i>Total</i>	
	N	Perc.	N	Perc.	N	Perc.	N	Perc.	N	Perc.	N	Perc.	N	Perc.
Exploration	78	57.4%	88	41.9%	132	37.3%	99	49.3%	39	36.8%	50	41.7%	486	43.1%
Exploitation	58	42.6%	122	58.1%	222	62.7%	102	50.7%	67	63.2%	70	58.3%	641	56.9%
Total	136		210		354		201		106		120		1127	

Table 8.2: Exploitative and explorative strategic renewal actions across organisational fields

Strategic actions	Organisational field					
	<i>Electricity</i>		<i>Gas</i>		<i>Total</i>	
	N	Perc.	N	Perc.	N	Perc.
Exploration	334	46.3%	152	37.4%	486	43.1%
Exploitation	387	53.7%	254	62.6%	641	56.9%
Total	721		406		1127	

Figure 8.3 presents strategic renewal paths of energy incumbents that operate in the same macro institutional context of The Netherlands. From the figure, one can see that the three Dutch energy incumbents display quite homogeneous strategic renewal paths from 1999 to 2002. However, as from 2003 on, the strategic renewal paths start to diverge from each other.

Figure 8.3: Strategic renewal paths across incumbent firms in the Dutch energy industry



N Essent = 72; N Nuon = 70; N Eneco = 59; N Total = 201

Source: based on company annual reports and Financial Times articles.

8.3 Inter-organisational institutional determinants of exploitative and explorative strategic renewal actions

So far, the findings are based on static comparison of groups. However, our hypotheses call for a multivariate analysis. Binary logistic regression is used to predict the outcome of a dichotomous dependent variable based on (a number of) independent variables. From figures 8.1 – 8.3, we learn that there is sufficient variation in the dependent variable, which is an important assumption in regression analysis. Contrary to OLS regression, binary

logistic regression does not assume linearity between the independent variables and the dependent variable. Binary logistic regression applies the maximum likelihood estimation, which concerns the natural logarithm of the odds of the dependent variable to occur or not (e.g. Bowen and Wiersema 2004; Hoetker 2007). Furthermore, binary logistic regression does not require normally distributed variables and does not assume homoscedasticity. In our study, binary logistic regression estimates the probability the most frequent category of strategic renewal to occur (i.e. exploitative strategic renewal actions).

Model specification and assessment (goodness of fit)

The main dependent variable, *nature of strategic renewal action*, is modeled as a dichotomous variable which takes two numbers of discrete values: exploitation (1) versus exploration (0). Our explanatory variables differ in type of scale: *involvement of external parties* is a categorical variable (yes or no), *market opening* is a continuous variable and mimicry will be analysed using a set of *firm dummies*. The dummy variable Gaz de France (GdF) is left out and regression results of other firm dummy variable are therefore interpreted with reference to GdF. Our control variables also differ in type of scale. Time will be controlled for using a set of *year dummies* (1999 is left out), *geographic location* is a categorical variable (international market or domestic market) and *resource position* is a continuous variable.

In table 8.3, binary logistic regression results are presented. The first column (null model) is the baseline prediction. There is a 56.9% chance of blindly estimating the most frequent category of strategic renewal actions (i.e. exploitation). The second column (controls model) explains the effect of the control variables on the dependent variable. The third column (full model) explains the combined effect of both control and explanatory variables on the dependent variable. Before individual hypotheses can be examined, one has to examine overall model significance and goodness of fit. The chi-square goodness-of-fit test tests the null-hypothesis that the step from the controls model to the full model is justified. This step is justified as the significance level ($p = 0.00$) is less than the critical value of (0.05). The Hosmer Lemeshow test computes a chi-square from observed and expected frequencies. In the controls model, a p-value of (0.61) is computed from a chi-square distribution with 8 degrees of freedom. In the full model, a p-value of (0.13) is

computed from a chi-square distribution with 8 degrees of freedom. If the Hosmer Lemeshow statistic is (0.05) or less, one has to reject the null hypothesis that there is no difference between observed and predicted values of strategic renewal actions. As our Hosmer Lemeshow statistics exceed (0.05) in both models, we fail to reject the null hypothesis. This implies that our models fit the data adequately, which suggests a significant explanation of the variance in the nature of strategic renewal actions.

Pseudo R-Squares are attempts to resemble R-Square in OLS regression (Hoetker 2007). SPSS reports the Nagelkerke R-Square, which ranges from 0 to 1. Our controls model shows a Nagelkerke R-Square of (0.02). This has been increased to (0.22) in the full model. The higher the pseudo R-square, the more significant the full model compared to the null model (Bowen and Wiersema 2004). The proportion of correct predications is another measure of fit, which indicates how well the model fits in terms of predictive ability (Bowen and Wiersema 2004). From table 8.3, it appears that the controls model accurately predicts 58.3% of all observations. This has been raised to 70.1% in our full model. While the overall proportion of correct predictions seems reasonably good at 70.1%, one should note that blindly estimating the most frequent category (exploitation) yields a percentage of 56.9 correctly predicted estimations. Following Long (1997) and Train (1986), we emphasise that the proportion of correct predictions is not predicting exploitation (or exploration) in a given instance. Rather, it relates to the proportion of times that the nature of strategic renewal actions is correctly predicted in repeated trials. In for example 100 trials, we expect 70 strategic renewal actions being predicted correctly.

Table 8.3: Binary logistic regression results predicting exploitation (versus exploration)

Variable	Model					
	Null model		Controls model		Full model	
	B	Odds	B	Odds	B	Odds
Constant	0.28**	1.32	0.13	1.14	-0.66*	0.52
Year 2000			0.29	1.34	-0.11	0.90
Year 2001			0.39	1.48	0.21	1.23
Year 2002			0.52*	1.69	0.12	1.12

Year 2003	0.64**	1.89	0.28	1.32
Year 2004	0.24	1.27	0.08	1.08
Geographic location	0.12	1.01	-0.53**	0.59
Resource position	-0.20*	0.82	-0.36**	0.70
<i>Regulative forces:</i>				
External dependency			1.77**	5.89
<i>Normative forces:</i>				
Permeability			1.24*	3.45
<i>Cognitive forces:</i>				
Firm 1 (Essent)			0.20	1.23
Firm 2 (Nuon)			-0.45	0.64
Firm 3 (Eneco)			-0.08	0.93
Firm 4 (Vattenfall)			-0.33	0.72
Firm 5 (Centrica)			-0.55	0.58
Firm 6 (SSE)			-1.11	0.33
Firm 7 (E.On)			-0.68	0.51
Firm 8 (RWE)			-1.04	0.36
Firm 9 (EnBW)			-0.70	0.50
Firm 10 (Electrabel)			-0.57	0.56
Firm 11 (Distrigas)			-0.88	0.41
Firm 12 (EdF)			0.26	1.30
<hr/>				
Chi-square goodness of fit	0.02		0.00	
Hosmer Lemeshow test	0.61		0.13	
Nagelkerke R-Square	0.02		0.22	
Predictability	56.9%	58.3%	70.1%	

N = 1127; * p < 0.05; ** p < 0.01

Results

Table 8.3 reports the estimated coefficients for the binary logistic model that indicate the nature of the relationship between independent variables and exploitation. Furthermore, our model estimates the effect that independent variables have on the probability that a strategic action will be exploitation. Unfortunately, the non-linear nature of logistic models complicates the interpretation of results (Hoetker 2007). Logistic regression results are therefore often interpreted in terms of odds effects, which indicates the effect that a one unit change in an independent variable will have on the odds in favour of outcome $y = 1$ versus $y = 0$ (Bowen and Wiersema 2004). The effect of a one unit change in a variable on the odds of the dependent variable is the exponential of that variable's coefficient. In our study, and considering the effect of a one unit change in a particular independent variable, an odds ratio of 1 means that exploration and exploitation are equally likely to occur. Concerning an odds ratio of 2, this means that exploitation is twice more likely to occur than exploration. On the other hand, odds ratio's less than 1 increase the odds of exploration to occur. For example, an odds ratio of 0.5 tells that exploration is twice more likely to occur than exploitation. An advantage of the odds ratio is its independency from other variable in the model (Bowen and Wiersema 2004). Odds effects are listed in the right-sided columns in table 8.3.

The results in table 8.3 indicate that external dependency is positively related to exploitative strategic renewal actions ($b = 1.77$). An odds-ratio of 5.89 tells that the likelihood of exploitation is almost 6 times higher when a firm depends on external institutional constituents in the realisation of a strategic renewal action. Further, we found a positive relationship between the degree of permeability and exploitation ($b = 1.24$). A one percent increase in market opening increases the odds of strategic renewal actions being exploitation by a factor 3.5. Finally, our findings allow investigating the extent to which the likelihood of a strategic renewal action being exploitation (or exploration) is contingent upon the extent to which other firms' strategic renewal actions are exploitation (or exploration). Using GdF as the reference category, we found that the twelve other firms do not differ significantly from GdF in the likelihood of exploitation (or exploration), which suggests that firms have modeled their strategic renewal actions to each other in the period 1999-2004.

8.4 Conclusion

In this chapter, we have empirically addressed research question (2a) *which environmental determinants are related to firms' exploitative strategic renewal actions* and (3a) *which environmental determinants are related to firms' explorative strategic renewal actions?* To conclude, we test hypotheses 1-3 applying a 5% level of significance (see table 8.4).

Table 8.4: Hypotheses testing at industry level

Hypothesis	Supported
Hypothesis 1: The higher the degree of external dependency in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an exploitative nature.	Yes
Hypothesis 2: The higher the degree of permeability in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an explorative nature.	No
Hypothesis 3: Incumbent firms mimic competitor firms in the realisation of exploitative and explorative strategic renewal actions.	Yes

Binary logistic regression results indicate that all three inter-organisational institutional predictor variables identified in paragraph 5.3 significantly influence exploitative and explorative strategic renewal actions. First, the more a firm depends on external institutional constituents for resources, the greater the likelihood that a strategic renewal action will be exploitation. Similarly, due to the dichotomous nature of exploitation and exploration, the less a firm depends on external institutional constituents for resources, the greater the likelihood that a strategic renewal action will be exploration. Second, the higher the degree of permeability, the greater the likelihood that a strategic renewal action will be exploitation (and not exploration). Similarly, the lower the degree of permeability, the greater the likelihood that a strategic renewal action will be exploration. Third, the likelihood of exploitative and explorative strategic renewal actions is roughly equal across incumbent firms in the Northwest European energy industry, which suggests mimetic behaviour. In the next chapter, we will investigate intra-organisational antecedents of exploitative and explorative strategic renewal.

9 Strategic renewal at organisational unit level of Dutch energy firms

9.1 Introduction

Hypotheses 4-6 call for a multivariate analysis at organisational unit level. OLS regression allows investigating the (combined) effect of intra-organisational institutional explanatory variables on exploitative and explorative strategic renewal, while controlling for a number of unit characteristics that can also have an impact on exploitative and explorative strategic renewal. In paragraph 9.2, we present descriptive statistics of the main study variables across the two sample firms. Further, we present a correlation matrix of all variables in the regression analyses. In paragraph 9.3 we present OLS regression results of a sample of 111 organisational units. More specifically, hierarchical moderated regression analysis will be used to test hypotheses 4 and 5. In order to investigate independency of the two dependent variables specified in hypothesis 6a (exploitative strategic renewal) and 6b (explorative strategic renewal), we use a standard procedure to check for mediating effects when testing both hypotheses. Finally, in paragraph 9.4, we apply a 5% level of significance to confirm or reject each of the hypotheses 4-6. We conclude by addressing research question (2b) *which internal factors influence a firm's proclivity towards exploitative strategic renewal actions* and (3b) *which internal factors influence a firm's proclivity towards explorative strategic renewal actions?*

9.2 Descriptive statistics

Our sample consists of 111 organisational units from two major Dutch energy companies, which will be referred to as firm A and B. Further, within company A and B, organisational units were sampled from nine and two divisions, respectively. Table 9.1 classifies the hierarchical embeddedness of organisational units in divisions and firms.

Table 9.1: Hierarchical embeddedness of organisational units

Firm	Division	# Organisational units
A	1	19
	2	14
	3	16
	4	7
	5	1
	6	2
	7	7
	8	1
	9	13
B	10	18
	11	13

Table 9.2 displays means and standard deviations of the main study variables across the two companies. We used T-tests to determine whether selected units that belong to different companies, on average, differ significantly in the main study variables. T-values for explorative strategic renewal, exploitative strategic renewal, entrepreneurial proclivity, intra-organisational regulative forces and inter-organisational regulative forces are -0.714, -0.246, 0.392, 2.080 and 0.362, respectively.

Table 9.2: Comparison of main study variables across firms

Study variable	Company				P-Value
	<i>A</i>		<i>B</i>		
	Mean	S.D.	Mean	S.D.	
Explorative strategic renewal	3.65	1.48	3.87	1.30	0.48
Exploitative strategic renewal	4.77	1.05	4.82	0.99	0.81
Entrepreneurial proclivity	4.55	0.99	4.47	0.85	0.70
Intra-organisational regulative forces	4.63	1.08	4.14	1.17	0.04
Inter-organisational regulative forces	5.57	0.98	5.50	0.82	0.72

N Company A = 80; N Company B = 31

From table 9.2, it appears that organisational units from firm A and B do not differ significantly in the degree of explorative strategic renewal, exploitative strategic renewal, entrepreneurial proclivity and inter-organisational regulative forces. Yet, units from firm A and B differ in the extent of intra-organisational regulative forces when applying a 5% level of significance. In addition, we used ANOVA to examine potential differences in study variables among divisions. F-values for explorative strategic renewal, exploitative strategic renewal, entrepreneurial proclivity, intra-organisational regulative forces and inter-organisational regulative forces are 1.700, 0.257, 0.707, 2.020 and 0.890, respectively. Applying a 5% level of significance, we again find that organisational units on average differ significantly in the extent of intra-organisational regulative forces across divisions. From table 9.2, it furthermore appears that units on average score higher on exploitative strategic renewal than on explorative strategic renewal. Also, the extent of inter-organisational regulative forces is perceived higher than the extent of intra-organisational regulative forces.

So far, our findings are based on static comparison of groups (companies and divisions respectively). However, our hypotheses call for a multivariate analysis. OLS regression is used, which allows investigating the effect of explanatory variables on exploitation and exploration, while simultaneously controlling for a number of organisational unit characteristics that can also have an impact on exploitation or exploration. In table 9.3, descriptive statistics and bivariate correlations of all control, independent and dependent variables are presented. Because of roughly equal outcomes in the main study variables across companies and divisions, we decided to control for company effects only in our analyses. As qualitative variables with n values are modeled with $n-1$ dummy variables, we use one dummy variable in which company A is the reference group. From table 9.3, the highest bivariate correlation ($r = 0.60$) appears to be between entrepreneurial proclivity and exploitative strategic renewal. Moreover, the variables discipline dominance, connectedness and decision-making correlate significantly ($p < 0.01$) with at least one of the main dependent variables, which supports our considerations to control our analyses for these effects.

Table 9.3: Descriptive statistics and correlation matrix

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
<i>Main study variables:</i>												
01. Explorative strat. renewal	3.71	1.43	0.93									
02. Exploitative strat. renewal	4.78	1.03	0.42**	0.88								
03. Entrepreneurial proclivity	4.53	0.95	0.35**	0.60**	0.73							
04. Intra-org. regulative forces	4.49	1.12	-0.01	0.20*	0.15	0.80						
05. Inter-org. regulative forces	5.55	0.94	0.11	0.36**	0.31**	0.07	0.78					
<i>Control variables:</i>												
06. Size	16.76	11.89	0.07	0.06	0.05	0.06	0.07	--				
07. Company	0.28	0.45	0.07	0.02	-0.04	-0.20*	-0.04	-0.35**	--			
08. Discipline dominance	3.99	1.67	0.15	0.33**	0.24*	0.06	0.14	-0.01	-0.11	--		
09. Connectedness	5.27	0.90	0.14	0.35**	0.40**	0.08	0.35**	0.05	0.15	-0.08	0.71	
10. Decision-making	3.57	1.53	-0.32**	-0.27**	-0.38**	0.21*	0.00	-0.06	-0.14	-0.06	-0.21*	0.84

N = 111; * p < 0.05; ** p < 0.01; Cronbach alpha's on diagonal.

9.3 Intra-organisational institutional determinants of exploitative and explorative strategic renewal actions

We used hierarchical moderated regression analysis to investigate hypotheses 4 and 5 (see table 9.4). Three models are constructed to explain exploitative strategic renewal. The first model explains the combined effect of the control and moderating variables on exploitative strategic renewal. The second model explains the effect of intra-organisational regulative forces on exploitative strategic renewal in addition to the variables in model 1. The third model explains the moderating effect of inter-organisational regulative forces on the relationship between intra-organisational regulative forces and exploitative strategic renewal in addition to the variables in model 2. Hierarchical regression allows investigating if added variables make a significant contribution in explaining the dependent variable (Significant F change). Adjusted R^2 indicates how much of the variance in the dependent variable is explained by all independent variables. Multicollinearity occurs when two or more independent variables are highly correlated. In this respect, the regression cannot disentangle the individual effect of each variable on the dependent variable (Carver and Nash 2000). To limit multicollinearity, inter-organisational regulative forces and intra-organisational regulative forces were mean centered before creating the interaction term (e.g. Aiken and West 1991). The variance inflation factor (VIF) indicates the degree to which each independent variable is explained by all other independent variables (Hair et al. 1998). Variables that exceed a VIF score of 10 are assumed to correlate highly with one or more other independent variables (Hair et al. 1998). All of the variables entered in model 3 have a VIF score below 1.6, which suggests that multicollinearity is not a problem in our analyses. Finally, the Durbin Watson statistic is used in order to detect autocorrelation. Autocorrelation implies correlation between residuals in period $t-1$ and residuals in period t . If the Durbin Watson statistic has a score of 2, there is no autocorrelation. Our Durbin Watson scores indicate that we have no or little autocorrelation. Other statistical considerations, i.e. constant variance of error terms and normality of the error term distribution do not raise any concerns.

Table 9.4: Linear regression results predicting exploitative strategic renewal

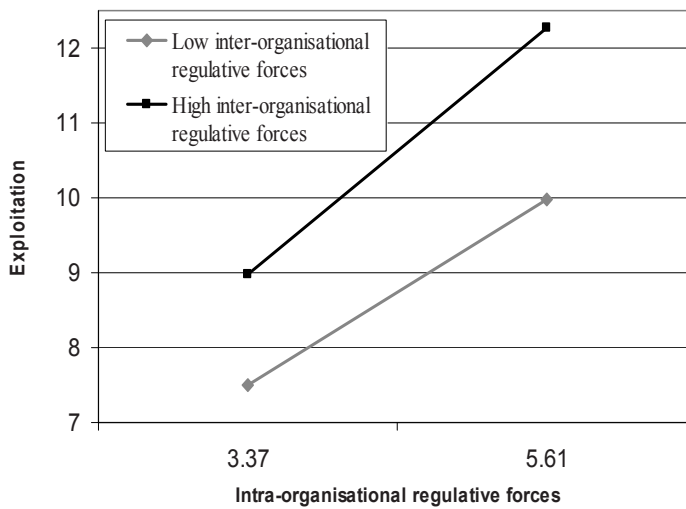
Variable	Exploitative strategic renewal		
	Model 1	Model 2	Model 3
Intercept	1.54*	0.99	1.59*
<i>Control variables and moderator:</i>			
Size	0.00	0.00	0.00
Discipline dominance	0.19**	0.18**	0.20**
Connectedness	0.30**	0.26*	0.25*
Decision-making	-0.13*	-0.17**	-0.15**
Company	0.01	0.10	0.09
Inter-organisational regulative forces	0.25*	0.25*	0.12
<i>Independent variables:</i>			
Intra-organisational regulative forces		0.20*	0.19*
<i>Interaction term:</i>			
Intra-organisational regulative forces x Inter-organisational regulative forces			0.20**
R ²	0.33	0.37	0.41
Adjusted R ²	0.29	0.33	0.37
Significant F Change	0.00**	0.01*	0.01**
Durbin Watson	2.03	2.07	2.13

Unstandardised regression coefficients; N = 111; * p < 0.05; ** p < 0.01

We use the results from model 3 to interpret our findings. First, we find a significant positive relationship between intra-organisational regulative forces and exploitative strategic renewal (b = 0.19). In addition, inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal (b = 0.20). This finding is graphically illustrated in figure 9.1. To create the lines, all variables in model 3 took the value of their mean (see table 9.3), except inter-organisational regulative forces and intra-organisational regulative forces. These two variables took values of one standard deviation below (low) and above (high) the mean.

From figure 9.1, one can see that there is a positive relationship between intra-organisational regulative forces and exploitative strategic renewal, even when the degree of inter-organisational regulative forces is low. When respondents perceive a high degree of inter-organisational regulative forces, the positive relationship between intra-organisational regulative forces and exploitative strategic renewal strengthens. The significant positive interaction term (table 9.4) indicates that the slopes of the two lines in figure 9.1 differ significantly from each other.

Figure 9.1: The moderating effect of inter-organisational regulative forces



Hypothesis 6 specifies a relationship between one explanatory variable (entrepreneurial proclivity as a proxy of institutional entrepreneurship) and two dependent variables (exploitative strategic renewal and explorative strategic renewal). In order to check for the possibility of interdependence between the two dependent variables, we used a standard procedure to investigate: (1) if exploitative strategic renewal mediates the relationship between entrepreneurial proclivity and explorative strategic renewal; or (2) if explorative strategic renewal mediates the relationship between entrepreneurial proclivity and

exploitative strategic renewal. To test for a mediating effect, three conditions have to be met (e.g. Baron and Kenny 1986). First, the independent variable should significantly predict the mediating variable. Second, the independent variable should significantly predict the dependent variable without the mediating variable. Third, regressing the dependent variable on both the independent variable and the mediating variable should lead to a significant relationship between the mediating variable and the dependent variable, while attenuating the relationship between the independent variable and the dependent variable. In this respect, the mediating variable takes over predictive power of the independent variable in explaining the dependent variable. When the independent variable is no longer significantly related to the dependent variable after the third step, this is referred to as full mediation (Baron and Kenny 1986).

Table 9.5: Linear regression results predicting exploitative and explorative strategic renewal

Variable	Exploitative strategic renewal		Explorative strategic renewal
	Model 1	Model 2	Model 3
Intercept	0.93	2.33*	1.92
<i>Control variables:</i>			
Size	0.00	0.01	0.01
Discipline dominance	0.15**	0.07	0.01
Connectedness	0.20*	-0.04	-0.12
Decision-making	-0.03	-0.19*	-0.18*
Company	0.11	0.27	0.22
<i>Independent variables:</i>			
Entrepreneurial proclivity	0.49**	0.39*	0.17
Exploitative strategic renewal			0.45**
R ²	0.43	0.18	0.24
Adjusted R ²	0.39	0.13	0.18
F value	12.86**	3.70**	4.53**
Durbin Watson	1.92	2.20	2.18

Unstandardised regression coefficients; N = 111; * p < 0.05; ** p < 0.01

From our analyses, we find that exploitative strategic renewal mediates the relationship between entrepreneurial proclivity and explorative strategic renewal. This has been illustrated in table 9.5, which presents the three steps (model 1-3) to test for the mediating effect of exploitative strategic renewal. Model 1 tests the relationship between entrepreneurial proclivity and exploitative strategic renewal. Findings indicate a significant positive relationship ($b = 0.49$). Model 2 tests the relationship between entrepreneurial proclivity and explorative strategic renewal. Findings indicate a significant positive relationship ($b = 0.39$). These two steps are initially supportive for hypothesis 6a and 6b, respectively. However, when regressing explorative strategic renewal on both entrepreneurial proclivity and exploitative strategic renewal in model 3, findings show a significant relationship between exploitative strategic renewal and explorative strategic renewal ($b = 0.45$), while the relationship between entrepreneurial proclivity and explorative strategic renewal (hypothesis 6b) is no longer significant. This indicates a full mediation effect of exploitative strategic renewal on the relationship between entrepreneurial proclivity and explorative strategic renewal. More specifically, our findings indicate that a one point increase in exploitative strategic renewal increases explorative strategic renewal by 0.45, which suggests that firms have to achieve relatively high levels of exploitation when engaging in any substantial amount of exploration.

All the variables in the three models have VIF scores below 2, suggesting no multicollinearity problems. Durbin Watson scores indicate no or little autocorrelation in the three models. Finally, statistical assumptions regarding constant variance of error terms and normality of the error term distribution are met.

9.4 Conclusion

To conclude, we test hypotheses 4-6 applying a 5% level of significance. More specifically, hypotheses 4 and 5 are tested based on the outcomes of the third model in table 9.4. Hypothesis 6a is tested by using the findings of the first model in table 9.5, whereas hypothesis 6b is tested by using the findings of the third model. From table 9.6, it appears that hypotheses 4, 5 and 6a are supported, while hypothesis 6b is not.

Table 9.6: Hypotheses testing at organisational unit level

Hypothesis	Supported
Hypothesis 4: At organisational unit level, the extent of intra-organisational regulative forces is positively related to the degree of exploitative strategic renewal.	Yes
Hypothesis 5: At organisational unit level, the extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal.	Yes
Hypothesis 6a: At organisational unit level, the extent of institutional entrepreneurship is positively related to the degree of exploitative strategic renewal.	Yes
Hypothesis 6b: At organisational unit level, the extent of institutional entrepreneurship is positively related to the degree of explorative strategic renewal.	No

In this chapter, we have empirically addressed research question (2b) *which internal factors influence a firm's proclivity towards exploitative strategic renewal actions* and (3b) *which internal factors influence a firm's proclivity towards explorative strategic renewal actions?* OLS regression results indicate that the identified intra-organisational institutional predictor variables significantly explain exploitative and explorative strategic renewal. First, the degree of intra-organisational regulative forces is positively related to the degree of exploitative strategic renewal. However, this relationship is contingent upon the extent of inter-organisational regulative forces. If the extent of inter-organisational regulative forces is high, there is a strong positive relationship between the extent of intra-organisational regulative forces and the degree of exploitative strategic renewal. If the extent of inter-organisational regulative forces is low, there is a less strong positive relationship between the extent of intra-organisational regulative forces and the degree of exploitative strategic renewal. Second, the extent of institutional entrepreneurship is initially positively related to both exploitative and explorative strategic renewal. However, from our analyses, it appears that exploitative strategic renewal fully mediates the relationship between the extent of institutional entrepreneurship and the degree of explorative strategic renewal. In the next chapter, we will discuss the research findings that were presented in this and the previous chapter.

Part IV
Conclusion

10 Discussion and conclusion

10.1 Introduction

In this final chapter, we start with a discussion of our main findings in paragraph 10.2. In paragraph 10.3, we describe theoretical and methodological/empirical limitations of the research. From these limitations, we explore directions for future research. Paragraph 10.4 discusses the major scientific and managerial contributions of this study. Regarding the latter, we apply the strategic renewal framework that was presented in paragraph 3.3 to discuss implications for practitioners. Finally, in paragraph 10.5, we conclude by addressing our main research problem of – in the context of regulatory environments – how and to what extent incumbent firms undertake strategic renewal actions in pursuit of a competitive advantage.

10.2 Discussion of main findings

At inter-organisational level of analysis, a new institutional theory approach was adopted and three hypotheses were specified that predict how a firm's strategic renewal actions are influenced by regulative, normative and cognitive forces in an organisational field. Starting with inter-organisational regulative forces, hypothesis 1 predicts that the higher the degree of external dependency in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an exploitative nature. In line with hypothesis 1, findings indicate that strategic renewal actions have the odds in favour of exploitation to the extent that firms depend on external institutional parties for resources in the realisation of the strategic action. Similarly, strategic renewal actions that arise from within organisational boundaries have the odds in favour of exploration. This is also supported by D'Aunno et al. (2000), who found support that those firms that meet regulatory requirements are less likely to make divergent changes (i.e. explorative strategic renewal).

In the context of inter-organisational normative forces, hypothesis 2 predicts that the higher the degree of permeability in an organisational field, the greater the likelihood that strategic renewal actions of incumbent firms are of an explorative nature. Contrary to our expectations, findings point at significant increased exploitative activity – not exploratory activity – after an increase in sector permeability. Using market opening as a proxy, it is likely that European incumbent energy firms already formed the normative context for each other before deregulation. As Walker et al. (2002: 91) argue: “In contrast to entrants, whose variation in strategy and performance reflects the relative uncertainty of the new deregulated era, incumbent strategies are initially constrained by the investment policies formed in the much more certain competitive conditions of regulation”. Then, as the market opens, firms become more and more focused on becoming as efficient as possible in order to beat each other. Silverman et al. (1997: 31) point out: “Managers simultaneously face a novel focus on operating efficiency and an onslaught of new competitors”. This has also been confirmed in one of our discussions conducted with a leading industry expert in which it was emphasised that managers have first strived for operational excellence in existing businesses (i.e. exploitative strategic renewal) before exploring new ways of wealth generation (i.e. explorative strategic renewal) in the face of deregulation. Perhaps, managers of incumbent energy firms may have taken a longer time perspective to engage in explorative strategic renewal after an increase in permeability than the one given credit for in this study.

Regarding inter-organisational cognitive forces, hypothesis 3 predicts that incumbent firms mimic competitor firms in the realisation of exploitative and explorative strategic renewal actions. The extent to which firms model strategic renewal actions after each other was analysed using a set of firm dummy variables. Findings indicate that none of the twelve European incumbents differed significantly from GdF in the likelihood of exploitative (or explorative) strategic renewal actions, which suggests mimetic behaviour among the sample firms. Although we have no statistical reasons to reject hypothesis 3, we acknowledge that our findings may insufficiently explain mimetic behaviour. Concluding on mimetic behaviour because our sample firms do not differ significantly from each other in exploitative and explorative strategic renewal actions leaves important issues unanswered. Did firms indeed mimic competitors that they perceived successful?

Similarity can also result from firms' embeddedness in a homogeneous institutional context at industry level. In this respect, we have tested the basic assumption of new institutional theory that firms are homogeneous entities (e.g. DiMaggio and Powell 1991b). Moreover, taking a random company from the sample, are the remaining twelve sample companies really its peers? Furthermore, not all strategic actions seem suitable for imitation. Focusing mimetic behaviour on particular strategic renewal efforts (e.g. those actions that relate to green energy), rather than a firm's complete bundle of strategic actions, will most certainly better reflect empirical reality.

Overall, at inter-organisational level of analysis, our results indicate that firms face pressures from Scott's (2001) three pillars of institutionalism simultaneously (e.g. Wicks 2001). Although selection arguments seemed plausible for the first two hypotheses, mimetic behaviour implies following adaptations that others found successful. Though it is not firm idiosyncratic adaptation, it is adaptation to look alike. Theorising mimetic behaviour, therefore, blurs in a sense the boundaries between selection and adaptation. In this respect, selection can also be understood from collective adaptations of firms in an organisational field.

Building upon old institutionalism, neo institutionalism and institutional entrepreneurship literature, we have specified three hypotheses that relate intra-organisational institutional predictor variables to exploitative and explorative strategic renewal. From an old institutional theory perspective, hypothesis 4 predicts a positive relationship between the extent of intra-organisational regulative forces and the degree of exploitative strategic renewal. Our findings support hypothesis 4. The extent of intra-organisational institutional forces is positively related to routine behaviour. However, as has been argued in chapter 4, intra-organisational regulative forces are not the sole institutional constituent of old institutional theory. Although regulatory issues are of focal interest in this thesis, two of our control variables also tap into the domain of the intra-organisational institutional context. First, in the context of intra-organisational normative forces, the extent of discipline dominance (i.e. high percentage of employees with the same educational background) is positively related to the degree of exploitative strategic renewal. Second, in the context of intra-organisational cognitive forces, the degree of connectedness (i.e. interaction between organisational members) is also positively related

to the degree of exploitative strategic renewal. Thus, at intra-organisational level of analysis, our findings indicate that organisational units experience pressures for exploitative strategic renewal from Scott's (2001) three pillars of institutionalism simultaneously (e.g. Wicks 2001).

From a neo institutional theory point of view, we argued that the strength of the relationship between intra-organisational regulative forces and exploitative strategic renewal does not exist in an organisational vacuum, but is affected by the inter-organisational regulatory context. This argument was specified as hypothesis 5, which predicts that the extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal. Findings indeed indicate that the strength of the relationship between intra-organisational regulative forces and exploitative strategic renewal is contingent upon the extent of inter-organisational institutional forces. High inter-organisational regulative forces provoke regulatory legitimacy, or "consonance with relevant rules or laws" (Scott 2001: 45), which creates and reinforces routine behaviour intended to make firms reliable and accountable for their performance (D'Aunno et al. 2000). Results from hypothesis 5 contribute to the understanding how environmental selection and firm level adaptation are interrelated in the context of regulation.

Adopting an institutional entrepreneurship lens, hypothesis 6 predicts that the extent of institutional entrepreneurship is positively related to (a) the degree of exploitative strategic renewal and (b) the degree of explorative strategic renewal. Using entrepreneurial proclivity (Griffith et al. 2006) as a proxy of institutional entrepreneurship, we find a significant positive relationship between entrepreneurial proclivity and the degree of exploitative strategic renewal. Further, although the extent of entrepreneurial proclivity and the degree of explorative strategic renewal is initially significant, subsequent analyses reveal that it is no longer significant when modeling exploitative strategic renewal as a mediating variable between entrepreneurial proclivity and explorative strategic renewal. In the context of our results, organisational units enter explorative strategic renewal from exploitative strategic renewal, not the other way around. This contributes to the question of how exploitative and explorative processes relate to each other (e.g. Crossan et al. 1999; Holmqvist 2004). Adopting an organisational learning framework, Holmqvist (2004: 71)

argues that “exploitation can become a cause of exploration”. Following Nelson and Winter (1982: 129), Malerba and Brusoni (2007: 5) emphasise that innovation does not happen in a vacuum, but that the institutional context matters: “One way in which the routine functioning of an organization can contribute to the emergence of innovation is that useful questions arise in the form of puzzles or anomalies relating to prevailing routines”. Paradoxically, an increased emphasis on exploitation involves an increased exploration for new solutions to overcome those problems associated with exploitation. This is referred to as opening up: “the organization creates variety in experience by opening up to new sources of experience” Holmqvist (2004: 72). Overall, our findings put limits on the idea that embedding agency in the organisational structure acts as an internal adaptation mechanism of both exploitative and explorative strategic renewal. Rather, our findings point at the internal (institutional) selection environment (e.g. Burgelman 1983; Galunic and Eisenhardt 1996) as a predictor of explorative strategic renewal in regulatory environments.

10.3 Limitations and future research

Unfortunately, this study is not without limitations. We discuss both theoretical and methodological/empirical limitations and suggest interesting issues for future research. At least three theoretical limitations deserve special attention. First, although an institutional theory lens has been proven valuable to explain path (in)dependency of incumbent firms’ strategic renewal actions, the role of economic factors in strategic decision-making have largely been ignored. Economic factors include, amongst others, economies of scale that arise from decreasing costs per unit after an increase in production, sunk costs in past investments (e.g. Hannan and Freeman 1977) and resource complementarities through network externalities (e.g. Katz and Shapiro 1985). In these cases, firms may have difficulties to redeploy their resources for alternative purposes (Mahoney 2000). Future research could investigate the extent to which firms stick with their current path of institutionalised activities after a cost-benefit analysis of alternative strategic options (Mahoney 2000).

A second theoretical limitation stems from the fact that our theoretical framework was geared towards a rather static application of Scott's (2001) institutional pillars. In the context of environmentalism, Hoffman (1999) illustrates the situation in which the three institutional pillars were built in the sequential order of regulative, normative and cognitive. Hafsi and Zian (2005) studied the transformation of the Chinese electricity industry from 1980 to 2002 in three distinct, though intertwined cycles: (1) changes in the cultural-cognitive cycle, (2) changes in industrial norms and regulations and (3) changes in professional behaviour. Future research should take the temporal dimension of Scott's (2001) institutional pillars into account. For example, if a process of institutional change is initiated by regulatory authorities, the regulative pillar is most likely to come first, and the normative or cultural-cognitive pillar to come later. We therefore suggest a longitudinal analysis that covers a longer time period than the one examined in this study (1999-2004). In addition, future research is needed to more precisely investigate how regulative, normative and cognitive forces interact (Vermeulen et al. 2007).

Third, in the context of institutional adaptation mechanisms, our thesis partly fails to address how institutional change is translated across levels. Zietsma and Lawrence (2005) point out that this brings the relationship between levels into question. Although we delve into the issue of how inter-organisational regulative issues impact upon the relationship between intra-organisational regulative forces and exploitative strategic renewal, we do not investigate how institutional developments at micro level impact meso (or macro) level changes. For example, we analysed institutional entrepreneurship in relation to institutional change at organisational unit level without studying the implications for the wider organisation or the industry. We advise a co-evolutionary perspective (e.g. McKelvey 1997; 2002; Rodrigues and Child 2003; 2008) in future research to study a mutual-causal process (Maruyama 1963), in which A influences B and B influences A. Case study research (including interviews) seems a more suitable research design to inform about how institutional change is translated across levels.

Having discussed three theoretical limitations, we will now address several methodological/empirical issues. First, regarding our database of strategic renewal actions, we considered the actions as events that are undertaken independently of previous actions. However, firms may think about strategic renewal actions in bundles, or at least undertake

a strategic renewal action conditional on previously-chosen actions. Huff et al. (1992: 60) emphasise the importance of history in affecting future renewal efforts: “Our overarching assumptions are that the interaction between stress and inertia will change over the history of renewal efforts, and that the transition from one type of relationship to another will have an impact on subsequent levels of stress and inertia and thus on the likely path of further renewal efforts”. Our survey results provide some evidence indicating that a unit’s level of explorative strategic renewal is contingent upon the degree of exploitative strategic renewal. Statistically, treating strategic renewal actions independently of previous actions does not seem problematic as homoscedasticity is not an assumption in binary logistic regression. Nevertheless, future research may take better advantage of the time-series nature of the strategic renewal actions. Specific dates can be obtained from those strategic renewal actions that have been extracted from Financial Times articles. Other steps to improve or expand the document analysis could tap into the process dimension of a firm’s strategic renewal path, e.g. speed of strategic renewal. Speed is important for achieving first-mover advantages and putting competitors on the defensive (e.g. Schoonhoven, Eisenhardt and Lyman 1990; Stalk 1988). Speed can be measured, for example, by investigating the (average) time span between strategic renewal actions in a certain period.

Second, our main construct has been designed to capture a limited range of possibilities: exploitative strategic renewal and explorative strategic renewal. Future research could develop more sophisticated measures to take account of multiple alternative options or ‘vehicles’ within each strategic renewal category. For example, regarding explorative strategic renewal, the alternatives include, among others, new product launches, new market entry, and alliances that may lead to new learning and skills (e.g. Koza and Lewin 1999).

A third empirical limitation relates to the weighting of strategic renewal actions. Strategic actions can differ extensively in terms of size (e.g. full time employees) or money spent. Although weighting strategic seems preferable, this is insufficiently reported across annual reports or Financial Times articles. Further, irrespective of strategic action weightings, binary logistic regression estimates the probability of highest discrete value (exploitation = 1 versus exploration = 0) to occur. Nevertheless future research could

probably ask informants to assess strategic renewal actions in terms of present or expected future value.

Fourth, throughout this thesis, we considered government policy as an exogenous event taking place in the environment of our sample firms (e.g. Fligstein 1996). However, it seems very unlikely that none of the sample firms participated in – or even influenced – the EU regulatory reform schemes. Especially as our sample companies belong to the largest firms in the Northwest European energy industry. In a study of the financial services sector, Flier et al. (2003: 2179) illustrate the interaction between strategic renewal behaviour of Dutch incumbent ING and changes in the Dutch financial regulatory and supervisory structure. Future research should therefore include strategic actions (document analysis) or scales (survey research) that express political activity, like lobbying and activities directed towards the European Commission.

Fifth, electricity and gas are treated independently of each other. Although findings in table 8.2 point at significant differences between the two sectors, this study does not take the blurring boundaries between electricity and gas into account. For example, statistics indicate that the amount of natural gas that is used to fuel power stations has increased over time (EUROSTAT 2006). Regarding strategic renewal actions in the gas sector, future research could control for those gas actions that relate to electricity production.

Sixth, this thesis has its focus on incumbent firms in the European energy industry. In response to the implementation of EU regulatory reform schemes, which heralded the opening of national markets for electricity and gas, our findings show that incumbent energy firms reacted by putting increased emphasis on exploitation, not exploration. This suggests that incumbent firms – as opposed to new entrants – may suffer from the liability of oldness (Hensmans et al. 2001), meaning difficulties to adapt to changing circumstances. Future research could shift the attention to relatively small European energy firms (e.g. Fortum from Finland), foreign subsidiaries of incumbent energy firms (e.g. RWE Energy Netherlands) or even brand new entrants (e.g. Greenchoice in the Netherlands) to investigate whether these firms prefer explorative strategic renewal over exploitative strategic renewal. In addition, researchers might study the impact of new entrants on elements of institutional change in the energy industry.

Seventh, we sent the questionnaires to employees, not unit managers. One reason for choosing employees was because several measures contain items that ask for the respondent's assessment of his/her supervisor. However, we recognise that unit managers are probably in a better position to inform about issues of exploitative and explorative strategic renewal. Targeting employees to inform about independent variables and unit managers to assess dependent variables is further beneficial to reduce common method bias. In addition, to overcome problems associated with single-informant data, future research should make use of multiple questionnaires from organisational units to investigate interrater reliability.

Finally, our research does not delve into the relationship between strategic renewal and performance. For example, are certain strategic moves more profitable than others? In the short run, do firms (units) with an above average emphasis on exploitative strategic renewal outperform firms (units) that score below average on exploitative strategic renewal (e.g. March 1991). These illustrative questions could be addressed next by including financial performance data.

10.4 Scientific contributions and managerial implications

Scholars can build on our insights to deepen their understanding how institutional theory relates to strategic renewal. Practitioners may benefit from our research as we offer a tool to detect activities which make up a firm's strategising in practice (Johnson et al. 2003). The document analysis allows identifying how a firm's strategic actions – in retrospect – have contributed to its current resource (and knowledge) base, which gives clues on what future strategic renewal actions it might undertake. From the survey findings, managers can deepen the understanding of how exploitation and exploration can actually be built into an organisation (e.g. Birkinshaw and Gibson 2004).

Scientific contributions

Scholars can benefit from our multi-level institutional framework which constitutes both inter-organisational institutional forces and intra-organisational institutional forces that concurrently explain exploitative and explorative strategic renewal. Our multi-level

institutional framework complements a rational-actor approach – in which managers would decide upon exploitative or explorative strategic renewal actions given the cost/benefit conditions at hand – and our statistical findings clarify “what has meaning and what actions are possible” (Zucker 1983: 2).

In the context of our results, it can be argued that the joint outcome of environmental selection and firm level adaptation (e.g. Flier et al. 2003; Lewin and Volberda 1999) underlies how and to what extent firms balance between exploitation and exploration (Sidhu, Volberda and Commandeur 2004). At industry level of analysis, findings from hypotheses 1-3 indicate that inter-organisational regulative and normative elements act as an external selection environment upon firm level adaptations of exploitative and explorative strategic renewal actions, which might in turn have an impact on the inter-organisational institutional environment (e.g. through mimetic isomorphism). At organisational unit level of analysis, findings from hypothesis 5 provide insights how environmental selection and firm level adaptation are interrelated in the context of regulation. The extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal. As Rodrigues and Child (2008: 17) point out, this “posits a framework of analysis, focusing on firms, in which there are ongoing recursive processes linking the evolution of institutional and extra-institutional environments with that of the firms themselves”.

Furthermore, scholars can benefit from our quantitative approach to institutional theory. Our operationalisation of Scott’s (2001) three institutional pillars (i.e. regulative, normative and cultural-cognitive) at industry level can be applied to other research settings as well. Nevertheless, as we did not find a significant positive relationship between the degree of sector permeability and the likelihood of explorative strategic renewal actions, we advise other potential measures to investigate inter-organisational normative forces. Another test of the permeability hypothesis could focus on the opening of sector boundaries to completely different stakeholder groups – not competitors – who participate in strategic-decision making. D’Aunno et al. (2000) provide some clues here regarding issues of private versus public ownership of firms’ assets within an industry. Finally, scholars may benefit from our survey scales. Two survey scales have been developed and

validated to measure the degree of intra- and inter-organisational regulative forces. In addition, the entrepreneurial proclivity measure (Griffith et al. 2006) has been adapted and applied at organisational unit level. In this respect, we divert the attention away from the individual level so common in institutional entrepreneurship literature (Lounsbury and Crumley 2007).

Managerial implications

In the context of our results, we discuss how issues at country, industry, and firm level might affect the strategic agenda of managers at incumbent energy firms. At country level, descriptive statistics indicate a significant relationship ($p = 0.00$) between country and the nature of strategic renewal actions. Further, patterns of regulatory reform that were presented in chapter 7 suggest a lack of European level playing field. Although factors like technological inefficiencies and customer preferences for local attention may also have impeded a European level playing field, differences in regulatory conditions have had clear implications for the strategic renewal opportunities of our sample firms. Table 10.1 illustrates how developments at country level impact strategic decision-making of managers.

Table 10.1: Managerial implications at country level

Although regulatory differences between EU countries are diminishing, they have hampered the creation of a European level playing field in the period 1999-2004. This has resulted in unequal strategic renewal opportunities for managers of firms across different countries. For example, a firm from country A, which is relatively late in opening up its market for competition, benefits from a regulated home market and can simultaneously explore strategic renewal actions in country B, which has already opened up its market for competition. On the other hand, a firm from country B has to compete with competitors from country A to defend established positions, but it has not an equal opportunity to explore strategic renewal actions in country A.

At industry level, descriptive statistics indicate a significant relationship ($p = 0.00$) between sector and the nature of strategic renewal actions. The likelihood of a strategic renewal action being exploration is significantly higher in the electricity sector than in the gas sector. Applying more fine-grained binary regression, results from hypotheses 1-3

show that firms' exploitative and explorative strategic renewal actions significantly adhere to coercive, normative and mimetic pressures in an organisational field. This fits with an emergent renewal journey (Volberda et al. 2001a) in which top management and frontline- and middle management are essentially passive regarding the environment and strategic decision-making is limited to following the rules of the industry. Table 10.2 illustrate how a firm's embeddedness in the institutional environment controls managers in the actual realisation of exploitative and explorative strategic renewal actions.

Table 10.2: Managerial implications at industry level

First, the more a firm depends on external institutional constituents for resources, the greater the likelihood that a strategic renewal action will be exploitation. Similarly, the less a firm depends on external institutional constituents for resources, the greater the likelihood that a strategic renewal action will be exploration. Second, the higher the degree of permeability, the greater the likelihood that a strategic renewal action will be exploitation (and not exploration). Similarly, the lower the degree of permeability, the greater the likelihood that a strategic renewal action will be exploration. Third, the likelihood of exploitative and explorative strategic renewal actions is roughly equal across incumbent firms in the Northwest European energy industry, which suggests mimetic behaviour.

At firm level, survey findings provide insights how lower managers can renew the organisation. Entrepreneurial proclivity appears to be a catalyst of both exploitative and explorative strategic renewal at organisational unit level. Further, our findings indicate that the degree of hierarchy in decision-making negatively impacts an organisational unit's level of exploitative and explorative strategic renewal. These findings are suggestive for the facilitated renewal journey (Volberda et al. 2001a), which emphasises an essentially active role for lower managers in strategic renewal choices in combination with a relatively passive role for top management. In this renewal journey, top management's role is defined as creating an internal selection environment (Burgelman 1994) for promising renewal initiatives that originate from lower levels in the organisation. Table 10.3 illustrates how managers can make use of several organisational design elements to influence exploitative and explorative strategic renewal at organisational unit level.

Table 10.3: Managerial implications at firm level

First, the amount of internal rules and procedures, the percentage of employees with the same educational background and the degree of interaction between organisational members are all positively related to the degree of exploitative strategic renewal. Second, lowering hierarchy in decision-making will increase both the degree of exploitative and explorative strategic renewal. Third, embedding entrepreneurship in the organisational structure is positively related to the degree of exploitative strategic renewal, which is in turn beneficial for explorative strategic renewal.

10.5 Conclusion

How do incumbent firms strategically renew in regulatory environments? Based on the assumption that regulation can both constrain and enable a firm's strategic renewal opportunities, this thesis has addressed the research problem of how and to what extent incumbent firms undertake strategic renewal actions in pursuit of a competitive advantage.

First, in the context of inter-organisational regulative forces, it can be argued that a position of external dependency cannot bestow firm-specific sources of competitive advantage. Following Barney (1986), those strategic renewal actions that require external resources cannot be sources of competitive advantage because these are available to all competing firms in an organisational field. Further, the costs of acquiring the resources equal the economic value they create (Barney 1986). Second, regarding inter-organisational normative forces, incumbent firms have entered the new competitive landscape with essentially the same business model and strategy. Following Porter (1996), when firms have the same strategy, competition is all about operational excellence, i.e. exploitative strategic renewal. In the short run, firms with an above average emphasis on exploitative strategic renewal can outperform competitor firms (e.g. March 1991). However, as operational efficiency is aimed at becoming better – not different – operational efficiency cannot lead to a sustainable competitive advantage (Porter 1996). Third, in the context of inter-organisational cognitive forces, our results suggest that firms often model their strategy to those of competitor firms. In this respect, an organisation's perceived threat to loose competitive advantage vis-à-vis competitors may outweigh the perceived value of an equal or higher competitive advantage (Kahneman and Tversky 1979). Fourth, from a neo institutional theory perspective, our results provide insights how

environmental selection and firm level adaptation are interrelated in the context of regulation. Following Burgelman (1994) and Volberda et al. (2001a), the higher the congruence between external selection pressures stemming from the industry and internal selection criteria set by top management, the better the selection mechanism guarantees co-evolution of a firm's competencies with the sources of competitive advantage in the industry. Finally, when applying an institutional entrepreneurship perspective, we find that managers of incumbent energy firms are challenged to start 'thinking strategically', thereby renewing some of their current resource deployments in addition to making a credible or legitimate claim on the outside world. Strategic choice theorists (e.g. Child 1997) presume that (top) managers have latitude in their choice of strategic renewal actions and therefore "reverses the assumption of environmental determinism" (Rodrigues and Child 2008: 12). Entrepreneurial proclivity appears to be a catalyst of both exploitative and explorative strategic renewal choices. Addressing exploitation and exploration simultaneously is suggested to obtain superior performance (e.g. Jansen et al. 2008) and even underlies a firm's real source of competitive advantage (Chakravarthy 1997).

The twin concepts of exploitation and exploration involve a number of complex variables and contingencies (Gupta et al. 2006). Applying a multi-level institutional framework, our results deepen the insights how processes of exploitative strategic renewal and explorative strategic renewal are driven by the concurrent operating of environmental selection and firm level adaptation in regulatory environments. As a follow up, future research should more precisely investigate how selection and adaptation arguments might interact in the context of normative and cognitive issues to further deepen the understanding of how institutional theory contributes to strategic renewal.

Appendix A: Coding rules document analysis

General coding rules

1. Accept and code a strategic renewal action only if it is explicitly mentioned that the action is materialised in the year under review, otherwise skip it. Rumours, speculations, etc. are not to be coded.
2. In case of doubt whether an action should be coded, i.e. is a strategic renewal action, do not code.
3. In case actions are retrieved that do not relate to strategic changes, but that are part of daily operations, these are not coded. The same goes for actions that are not aimed at expanding activities.
4. In some instances two (or more) potential renewal actions are addressed in one text unit. In case these actions are discussed (or valued) separately, they should be coded separately. In case the discussion (or value) of the strategic actions is general, implying they fall within the same category, they should be coded as one action.
5. Strategic actions that are complementary should be coded as a single action. An example is obtaining a licence and making use of that licence by establishing a branch. Another example would be the takeover of a company and subsequent integration of that company into the focal company.
6. Deciding on dates: first, look for official date of implementation. If not available, look for date of agreement/signing of contract. In case the action is detected from an FT article, look for newspaper clipping date.
7. Actions executed by daughter companies in which the parent has majority control (higher than or equal to 50%), are considered actions of the parent and should be coded. Actions of minority holdings (less than 50%) are not to be coded.
8. A merger counts as one strategic action.
9. Obtaining a license is per definition exploration.
10. In case an action is detected which took place in the period under review, but cannot be exactly dated, it should be coded in the year of detection. If an action probably took place outside the time period, the action is not coded!

11. Cost control/cost cutting programs are coded as exploitation actions. Yearly reports on the progress of the cost saving programme are only coded once.
12. In case reference is made to e.g. 'streamlining operations'; 'cost ratio went down', etc., to which no referral is made to a concrete action, this should not be coded.
13. As a rule of thumb, financial actions such as bonds and warrants issues are not to be coded.

Additional coding rules in this study

14. In line with the research scope, only those strategic actions are retrieved which are undertaken in the gas or electricity sector. Actions that relate to heat, cable, environmental services, etc. are excluded from the strategic action database.
15. As the focus is on generation/production, trade and supply, actions that relate to infrastructure (e.g. network operations, grid maintenance, etc.) are excluded from the strategic action database.
16. Some major actions (e.g. mergers, takeovers, new structure) are logically followed by several smaller activities that relate directly to the major action (e.g. integration, restructuring). These actions should not be coded separately as they fall under the umbrella of the major action. An example would be the announcement of a new organisational structure that involves the creation of relatively autonomous business units.
17. Pure financial actions such as 'lease and lease back' constructions are not considered to be strategic and are not coded.
18. Programs or campaigns (e.g. related to advertising or marketing of green electricity) will not be coded.
19. Reorganisations and restructurings at business unit level are not to be coded.
20. In case an action is not explicitly aimed at exploration, it should be coded as exploitation.
21. In response to general coding rule 10, some actions are only materialised after a relatively long period of time after their announcement (e.g. the building of a wind park). In these cases, look at the date when the action has become operational.

Appendix B: Survey measures and items

Exploitative strategic renewal (i.e. exploitative innovation by Jansen et al. 2006)

- We frequently refine the provision of existing products and services
- We regularly implement small adaptations to existing products and services
- We introduce improved, but existing products and services for our local market
- We improve our provision's efficiency of products and services
- We increase economies of scales in existing markets
- Our unit expands services for existing clients

Explorative strategic renewal (i.e. exploratory innovation by Jansen et al. 2006)

- Our unit accepts demands that go beyond existing products and services
- We invent new products and services
- We experiment with new products and services in our local market
- We commercialise products and services that are completely new to our unit
- We frequently utilise new opportunities in new markets
- Our unit regularly uses new distribution channels

Intra-organisational regulative forces

- Employees in our unit conform to formal rules
- Managers are charged with protocols to improve the efficiency of organisational members
- In our unit, rules and procedures are followed
- Rules, laws and sanctions occupy a central place in our unit
- In our unit, punishment is administered in case of rule violations

Inter-organisational regulative forces

- The impact of regulation and regulators is evident in our industry
- The regulatory agencies assume a very important role
- The legal environment affects many aspects of our business
- Our industry is characterised by numerous regulatory limitations

In our industry, written records are kept of every organisations' performance

Entrepreneurial proclivity (Griffith et al. 2006)

Managers at our unit encourage the development of innovative strategies, knowing some will fail

Managers at our unit value creative solutions more than the solutions of conventional wisdom

Managers at our unit tend to talk more about opportunities than problems

Managers at our unit treat most people the same regardless of rank or status

Managers at our unit typically adopt a very competitive "undo-the-competition"

Managers at our unit are very aggressive and very competitive

All items are measured on a seven-point scale, anchored by 1 = strongly disagree and 7 = strongly agree

Appendix C: Formation of scale intra-organisational regulative forces

Quotation	Item
“There were countless occasions when miners did things that they would probably not have done otherwise, because they felt constrained by formal rules and threatened by sanctions for non-compliance” (Wicks 2001: 671).	Employees in our unit conform to formal rules
“Organizational managers are often charged with devising protocols to improve the accuracy and efficiency of functioning between groups” (Elsbach 2002: 42).	Managers are charged with protocols to improve the efficiency of organisational members
“This assumption is based on the view that organizations function according to their formal blueprints: coordination is routine, rules and procedures are followed, and actual activities conform to the prescription of formal structure” (Meyer and Rowan 1977: 342).	In our unit, rules and procedures are followed
“The hallmark of regulative aspects of institutions is in the presence of rules, laws and sanctions” (Wicks 2001: 676).	Rules, laws and sanctions occupy a central place in our unit

“... the rules and informal codes are sometimes violated and punishment is enacted. Therefore, an essential part of the functioning of institutions is the costliness of ascertaining violations and the severity of punishment” (North 1990: 4).

In our unit, punishment is administered in case of rule violations

Appendix D: Formation of scale inter-organisational regulative forces

Quotation	Item
“The impact of regulation and regulators is evident in many industries” (Beardsley et al. 2005: 95).	The impact of regulation and regulators is evident in our industry
“The role that the regulatory agency assumes is very important” (Mahon and Murray 1980: 127).	The regulatory agencies assume a very important role
“The existence of a common legal environment affects many aspects of an organization’s behaviour and structure” (DiMaggio and Powell 1991b: 67).	The legal environment affects many aspects of our business
“Until the mid-1980s, the European financial services sector was characterized by significant governmental involvement and by numerous institutional and regulatory limitations on the domestic, cross-border and cross-sector activities of financial service firms” (Flier et al. 2001: 182).	Our industry is characterised by numerous regulatory limitations
“The organization kept a written record of everyone’s performance” (Desphandé and Zaltman 1982: 27).	In our industry, written records are kept of every organisations’ performance

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Dutch summary

Hoe beïnvloedt regelgeving het strategische vernieuwingsgedrag van grote gevestigde bedrijven? In de veronderstelling dat regelgeving de mogelijkheden voor strategische vernieuwing zowel kan beperken als bevorderen, wordt er onderzocht hoe en in welke mate grote gevestigde bedrijven in gereguleerde omgevingen exploitatiegerichte dan wel exploratiegerichte strategische vernieuwingsacties ondernemen, teneinde een concurrentievoordeel te behalen. Exploitatiegerichte strategische vernieuwing omvat activiteiten die de huidige resource-allocatie van een bedrijf versterken of optimaliseren, terwijl exploratiegerichte strategische vernieuwing betrekking heeft op activiteiten waarmee nieuwe bronnen van waardecreatie voor het bedrijf worden gegenereerd. Op basis van institutionele theorie wordt een raamwerk met selectie- en adaptatieargumenten ontwikkeld en toegepast om het strategische vernieuwingsgedrag van een aantal grote gevestigde Europese energiebedrijven te onderzoeken.

Nieuwe institutionale theorie ligt ten grondslag aan de eerste empirische studie op sectorniveau. Op basis van historische documentenanalyse (jaarverslagen, krantenartikelen) is een database gecreëerd met 1127 exploitatiegerichte en exploratiegerichte strategische vernieuwingsacties van 13 Europese energiebedrijven over de periode 1999-2004. Binaire logistische regressieanalyse toont aan dat de inter-organisatiele institutionele context een significante invloed heeft op zowel exploitatiegerichte als exploratiegerichte strategische vernieuwingsacties van bedrijven door regulerende, normatieve en cognitieve krachten.

Bij de tweede empirische studie wordt een survey-instrument op het niveau van organisatie-eenheid ontwikkeld op basis van oude institutionele theorie, neo-institutionele theorie en institutionele ondernemerschapsliteratuur. Een belangrijk onderdeel hierbij is de ontwikkeling en validatie van twee belangrijke schalen waarmee de mate van interne en externe regulering kan worden gemeten. De survey is uitgezet bij twee grote Nederlandse energiebedrijven, waarbij informatie is verkregen vanuit 111 organisatie-eenheden. Lineaire regressieresultaten laten zien dat de mate van interne regelgeving een positieve invloed heeft op exploitatiegerichte strategische vernieuwingsacties. Echter, de sterkte van het verband tussen interne regelgeving en exploitatiegerichte strategische vernieuwingsacties is afhankelijk van de mate van externe regelgeving. Tot slot blijkt dat

‘institutioneel ondernemerschap’ als katalysator fungeert voor zowel exploitatiegerichte als exploratiegerichte strategische vernieuwingsacties. Additionele bevindingen tonen echter aan dat de mate van exploitatiegerichte strategische vernieuwing de relatie tussen ‘institutioneel ondernemerschap’ en exploratiegerichte strategische vernieuwingsacties medieert. Dit betekent dat exploratiegerichte strategische vernieuwing niet direct een gevolg is van ‘institutioneel ondernemerschap’, maar wordt aangestuurd door de mate van exploitatiegerichte strategische vernieuwing.

Concluderend kan worden gesteld dat onze resultaten inzichtelijk maken hoe het strategische vernieuwingsgedrag van grote gevestigde bedrijven wordt beïnvloed door een complexe interactie van inter- en intra-organisationale institutionele factoren en processen. Complementair aan een rationele actorbenadering, waarbij verondersteld wordt dat managers in het kader van winstmaximalisatie de beste strategische optie kiezen naar de omstandigheden, tonen onze statistische resultaten aan dat managers ook (ogenschijnlijk) irrationele strategische vernieuwingsacties ondernemen. Regulatieve, normatieve en cognitieve issues uit de inter- en intra-organisationale institutionele context dragen ertoe bij dat juist die strategische vernieuwingsacties worden ondernomen waarmee aan de verwachtingen van stakeholders wordt voldaan, zelfs als dit een negatief effect heeft op concurrentievoordeel. Wetenschappers kunnen voortborduren op onze inzichten hoe selectie en adaptatie aan elkaar gerelateerd zijn in de context van regelgeving. Vervolgonderzoek is gebaat bij een co-evolutionaire benadering, waarbij nauwkeurig in kaart wordt gebracht hoe intra-organisationale institutionele processen leiden tot veranderingen in de inter-organisationale institutionele context en vice versa.

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Marten Stienstra was born on October 6th, 1977, in Purmerend, The Netherlands. After graduating from Secondary School in 1996, he decided to study Business Administration at RSM, Erasmus University. In 1999, he joined the department of Strategy and Business Environment as a student assistant and got involved in the activities of the Erasmus Strategic Renewal Centre. In this period, he participated in various research projects, like the Long Range Planning Special Issue on Strategic Renewal (2001). Marten obtained his Master's degree in Business Administration in June 2001. During the thesis process, he has worked in close cooperation with Nolan Norton & Co., a KPMG business consulting firm. His master thesis was awarded second-best at the Cap Gemini Ernst & Young Strategy Award 2001. In 2001, Marten became fully employed at the department. He taught both Bachelor and Master courses and supervised numerous master theses.

In September 2003, Marten started a PhD project at the Erasmus Research Institute of Management at RSM Erasmus University. In his PhD research, he investigated strategic renewal of large incumbent firms in regulatory environments. More specifically, his research was focused on the question of how inter- and intra-organisational institutional forces influence European energy incumbents. During his PhD research, he has worked with companies like Delta, ENECO Energie, Essent, and RWE Energy Netherlands. Marten presented his work at various international conferences, including the Annual Conference on Corporate Strategy, the Strategic Management Society, and the Journal of Management Studies Conference. In the last couple of years, he has authored and co-authored several scientific and practitioner-oriented papers.

Currently, Marten works as an Assistant Professor at the department of Strategy and Business Environment at RSM Erasmus University. He prepares several submissions to international journals. Marten's research interests include topics like strategic renewal, selection, adaptation, institutional theory, exploitation, exploration, regulation and energy industry.

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STRATEGIC RENEWAL IN REGULATORY ENVIRONMENTS

HOW INTER- AND INTRA-ORGANISATIONAL INSTITUTIONAL FORCES INFLUENCE EUROPEAN INCUMBENT ENERGY FIRMS

How do incumbent firms strategically renew in regulatory environments? Assuming that regulation can both constrain and enable a firm's strategic renewal opportunities, we investigate how and to what extent incumbent firms undertake exploitative and explorative strategic renewal actions in order to remain competitive. Exploitative strategic renewal involves those actions that strengthen or optimise a firm's current resource deployments, whereas explorative strategic renewal relates to actions that generate new sources of value creation for the firm. Based on old institutional theory, new institutional theory, neo-institutional theory and institutional entrepreneurship literature, a multi-level framework that combines selection and adaptation arguments has been developed and applied to investigate strategic renewal behaviour of a sample of European energy incumbents. At industry level of analysis, results show how inter-organisational institutional forces significantly impact firms' choices of exploitative and explorative strategic renewal actions through regulative, normative and cognitive forces. At organisational unit level of analysis, we find that the extent of intra-organisational regulative forces is positively related to exploitative strategic renewal actions. In addition, entrepreneurial proclivity appears to be a catalyst of both exploitative and explorative strategic renewal actions. Finally, our results provide insights how environmental selection and firm level adaptation are interrelated in the context of regulation. The extent of inter-organisational regulative forces positively moderates the relationship between intra-organisational regulative forces and exploitative strategic renewal actions.

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