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Knowing the Unknowns: Financial Policymaking in Uncertainty

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work with the exception of the first paper “Getting What You Want: Information and Crisis Management in Ireland and Korea”. I co-authored this paper with Mícheál O’Keeffe and certify that I exclusively researched and wrote the Korean case study. Mícheál O’Keeffe researched and wrote the Irish case study. I also certify that I contributed 60 percent of the work to developing the signaling model. The rest of the paper was written equally by both of us.

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A handwritten signature in black ink, appearing to be 'C. Gandrud', written over a horizontal line.

Christopher Gandrud

Abstract

How do policymakers make decisions during financial market uncertainty? I develop a straightforward framework of policymaking in uncertainty. To overcome uncertainty, policymakers gather information using strategies discussed across a variety of political science disciplines. Policymakers need information to be able to make goal-oriented decisions. The information strategies actors choose are conditioned on the uncertainty problems they face. In turn, the information they receive impacts their policy decisions. My three empirical papers investigate what strategies are likely to be chosen in different types of uncertainty and how these choices affect policy decisions. My first paper, co-written with Mícheál O’Keeffe, develops a signaling game that policymakers play when they perceive data uncertainty, i.e. uncertainty about economic fundamentals. The model is supported empirically with analytic narratives of recent crises in Korea and Ireland. My following two papers deal with situations of increasing causal uncertainty, i.e. uncertainty about how actions cause outcomes. In both of these papers I use Multi-state Event History Analysis. I find that when there is high causal uncertainty policymakers tend to use learning strategies that start with international-level policy recommendations. These recommendations are then updated with the experiences of regional peers who have adopted them. Beyond creating and finding evidence for a parsimonious framework of decision-making in uncertainty, I make a number of other contributions to political economy. I extend the empirical tools researchers can use to understand decisions in complex choice environments. I provide evidence that making financial bureaucrats “independent” does not ensure positive outcomes. Specifically, it does not guarantee that financial bureaucrats will provide accurate information needed for effective policymaking.

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List of Abbreviations

Anglo	Anglo Irish Bank
CB	Central Bank
CBG	Central Bank Governor
CBSS	Council of Baltic Sea States
DB	Deposit Bank
DI	Deposit Insurance
DoF	(Irish) Department of Finance
EA	East Asia
ECB	European Central Bank
EHA	Event History Analysis
EU	European Union
FDIC	Federal Deposit Insurance Corporation
FG-CREHA	Fine and Gray Competing Risks Event History Analysis
FR	(Irish) Financial Regulator
FSA	Financial Services Authority
GDP	Gross Domestic Product
IADI	International Association of Deposit Insurers

IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissioners
MoF	Ministry of Finance or Minister of Finance
MoFE	(Korean) Ministry of Finance and Economy
MSM	Multi-state Markov
NPL	Non-performing Loan
PH	Proportional Hazards
PM	Prime Minister
SE	Spatial Effect
SEC	Securities and Exchange Commission
SR	Specialised Regulator
SR/U	Unified Specialised Regulator
TOIR	Time Order and Increasing Relationship
UDS	Unified Democracy Scores
UK	United Kingdom
US	United States

Chapter 1

Introduction

I'm not sure even in my own mind if I were king, I'm not sure what I would do at this point and I don't think I'm alone in that viewpoint. This stuff is not easy. There are a number of different alternatives. A number of different thoughts on how to do it.

–Congressman John Campbell discussing the US House of Representatives Financial Services Committees' response to the 2008/09 Credit Crunch on 20 March 2009.

The recent 2008/09 crisis and ongoing European sovereign debt crisis has brought new attention to how policymakers decide to respond to financial crises. As Congressman John Campbell's quote illustrates, shocks to the financial system create uncertainty, upending established understandings about how policy choices affect outcomes. Compounding this problem is the existence of various types of uncertainty. First, it may be difficult to determine what the current state of the economy is. For instance, at numerous points during the 2008/09 financial crisis and the resulting European debt crisis it was unclear how many “toxic” assets banks held or what their exposure was to possible sovereign defaults. Uncertainty about current economic conditions hinders effective policymaking by making it difficult to determine what policies are most appropriate for the situation.¹ Second, crises can upend the causal models policymakers use to judge the likelihood of outcomes. New policies and ideas about how to manage financial markets may emerge to fill these gaps, but it can be difficult to determine their accuracy. For example, there has been much debate since 2009/10 about whether the proposed “Volcker Rule” separating deposit and investment banking would

¹For example, the Governor of the Bank of England Mervyn King on 24 June 2011 described how policymaking was hindered by a lack of information on bank's exposure to a potential Greek sovereign default.

contribute to a sustainable recovery or cripple the financial sector further.² Motivated by these recent and diverse experiences, in this thesis I try to answer the question:

How do policymakers make decisions during financial market uncertainty?

I address the question with three empirical papers. My papers largely focus on policymaking in deposit banking, though broader financial policymaking is never far from the discussion. In doing so, I also contribute to our understanding of domestic financial policymaking in “normal” times. Financial markets have become increasingly complex and opaque with the introduction of new financial instruments, technology, and regulatory changes (Crotty, 2009, Pozsar et al., 2010). During recent non-crisis periods actors have often perceived a high level of uncertainty about the appropriateness of many policies for achieving desired goals.³

Together my papers draw on many traditions in political economy, particularly rational choice and sociological and constructivist-type approaches,⁴ to understand policymaking in uncertainty. These traditions have often been set against each other as contrasting explanations of policy choices (Fearon and Wendt, 2002). It is often assumed that rational choice ignores uncertainty and that sociological and constructivist approaches are better suited to these situations (Abdelal, 2009, 74). Uncertainty has often been seen as the condition under which actors alter their strategies from strictly “rational” to more sociological and constructivist. This view comes from both ends of the rational choice-constructivist spectrum (for examples see Weingast, 1995 and Abdelal, 2009, respectively). As a result political economists are left with a piecemeal understanding of decision-making in uncertainty that does not fully incorporate each tradition’s strengths.⁵ I develop a framework that clearly structures these approaches and demonstrates empirically how they can be combined into a general understanding of decision-making in uncertainty.⁶

²Admittedly, some actors are not uncertain about the Volcker Rule’s consequences for their interests. In particular, actors at affected financial institutions with short-time horizons—possibly induced by pay-based incentives—may be fairly certain about the rule’s consequences for them. The rule will clearly hurt their interests by prohibiting them from making proprietary investments, with potentially high returns, if they also have access to bank deposits. However, actors concerned about the medium to longer-term health of the broader economy likely do face considerable uncertainty about the Volcker Rule’s impact on their goals.

³Majumdar and Mukand (2004, 1219) and Callander (2011), among others, argue more generally that uncertainty is common across many policy issues most of the time.

⁴This is not to say that the other recent major strand of political science, institutionalist approaches (see Hall and Taylor, 1996, Olsen, 2009, Streeck and Thelen, 2005), are not important also. The role of institutions is incorporated at numerous points in my thesis, for example as structuring policymaking processes and conditioning governance reforms. However, they are not the central focus of this framework.

⁵Callander (2011) has recently attempted to bring uncertainty into the rational choice tradition. Below, I discuss how my framework differs from his.

⁶The motivation behind my argument is captured by Pierson’s discussion of how to approach the limits of rational choice theory: “analysts should focus on establishing how insights from rational choice can be linked to other approaches, or where other approaches are simply more appropriate for addressing particular kinds of questions” (2004, 9). I apply the same argument to non-rational choice approaches as well.

The key to predicting when a given approach will be useful for understanding policymaking—and one of the key innovations of my thesis—is appreciating the types of uncertainty problems actors face. The two uncertainty types I identify are *data* and *causal* uncertainty.⁷ Actors respond to uncertainty by gathering new information.⁸ The type of uncertainty they perceive prompts them to choose different *information gathering strategies*. It is important to know what information gathering strategies actors use because these choices condition how they understand their options and ultimately the policy decisions they make.⁹

The remainder of the introduction develops my framework for understanding financial policymaking in uncertainty, discusses some of its limitations, and lays out my thesis’ three empirical papers.

1.1 The Framework: Uncertainty Problems, Information Gathering, & Choices

Though the three papers in my thesis are designed to make independent contributions to specific political economy sub-literatures—signaling games and policy diffusion—they each examine ways that financial policymakers choose policy responses in uncertain situations. As such, they contribute theoretically and empirically to my overarching argument. The argument has five parts:

1. Policymakers are assumed to be rational in that they are goal-oriented and instrumental.
2. However, uncertainty hinders rational action by making it difficult to predict what policy means are likely to achieve preferred ends.
3. So, policymakers actively try to overcome uncertainty by gathering new information.
4. The type—data or causal—of uncertainty they perceive conditions the information gathering strategies they use.

⁷These are related to a lack of knowledge about two of the three “concepts of order” that March (1994, 176-177) identifies. Data uncertainty is uncertainty about *reality*, i.e. events that objectively happen. Causal uncertainty is uncertainty about, just that, causality, i.e. how reality is *structured* “by chains of causes and effects”. Note, I largely assume March’s third concept of order, intentionality, to not be uncertain. Policymakers are assumed to be able to reasonably predict the intentions of those they interact with. This is largely for simplicity and nothing excludes uncertainty about intentionality from being included explicitly in a more complex extension of the framework.

⁸I sidestep the intricacies of the information, pseudo-information, misleading information, false information debate (see Floridi, 2005). It is ancillary to my focus on explaining policy choices and best left to semanticists. Instead, information is understood broadly to be anything that may help actors develop a correspondence between means and ends. Information here covers a spectrum of concepts including economic fundamentals (complete definitive data and know causal relations) as well as recommendations, and ideas (hypotheses about how policies will affect outcomes). This approach to information is common in rational choice, diffusion, and policy learning literatures (see McCarty and Meirowitz, 2007, Linos, 2011, Volden, Ting and Carpenter, 2008, respectively). As will be discussed later, there is some contention in the constructivist literature about using the term in this way.

⁹The information gathering strategies I identify could be very broadly thought of as heuristics policymakers use to make decisions in uncertainty (Kahneman, Slovic and Tversky, 1982).

- (a) In data uncertainty policymakers search for information about economic fundamentals and update this over time.
- (b) In causal uncertainty policymakers search for new causal models and update their information about these models over time.

5. The information they gather conditions policy choices by structuring how they understand their options.

It is important to quickly note that the focus of my framework is on actors' *perceptions* of uncertainty. Perceptions of uncertainty, rather than objective uncertainty, influence policymakers' information gathering strategy choices. This assumption is based on the Thomas, Berger, and Luckmann argument summarized by Sikkink as "situations actors define as real are real in their consequences" (1991, 243). Actors' perceptions of uncertainty are real in that they lead to real information gathering choices that shape real decisions. Ideally, perceptions and reality should be highly correlated so that actors can choose the most effective strategies for their situations. However, I focus on understanding how actors actually make decisions. To do this, I consider perceptions of uncertainty to be more important than actual uncertainty.

1.1.1 Rational Choice, Risk, & Data Uncertainty

Before jumping into uncertainty, let's look at better understood territory. Consider how decisions are made in a hypothetical world where there is not a financial crisis and which is very well known. Actors are said to have *full information*. This is the decision-making context best approached with traditional rational choice theory. Assume economic policymakers¹⁰ are goal-oriented and instrumental in that they pursue "optimal correspondence between means and ends" (Tsebelis, 1990, 18).¹¹ When goal-oriented actors have complete information they "are sufficiently knowledgeable that they perfectly predict the consequences of each action" (McCarty and Meirowitz, 2007, 7). Rational action is straightforward with complete information. To illustrate formally, consider that there is a set of actions A that policymakers can choose from such that $a \in A$ and also a set of outcomes X such that $x \in X$. Complete information assumes that actors know perfectly the function that maps actions to outcomes $x : A \rightarrow X$. They know the consequences of their actions. They can simply choose the policy means that correspond to their preferred ends. This is represented in Figure 1.1 by the graph's origin.

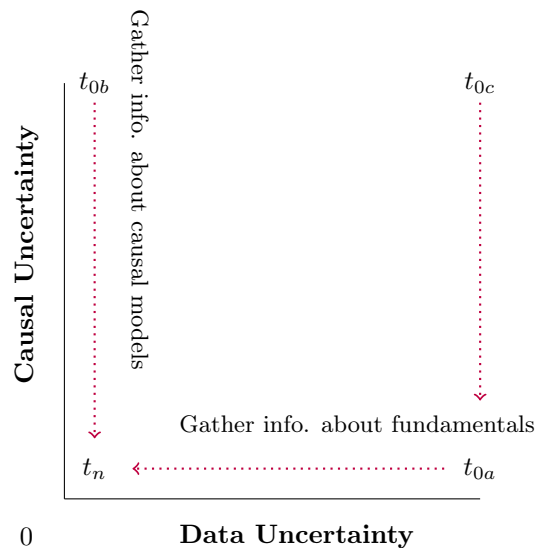
¹⁰I generally treat actors as individuals, e.g. ministers of finance or central bank governors. At times I treat, largely for empirical simplicity, groups such as central banks or ministries of finance as actors. I assume that they act like they have preferences and make decisions roughly analogously to collective veto players (Tsebelis, 2002, Ch. 2).

¹¹I assume that actors are *intendedly rational* in that they want to make strategic decisions even if they are not able to (Jones, 1999). This view of human behaviour is illustrated in Edwards' simple hypothetical question and answer:

Q: What is he doing?

A: He's doing the best he can. (1971, 644)

Figure 1.1: Uncertainty Dimensions and Information Gathering Paths, selected starting points



A slightly less certain state is risk. *Risk* is when actors do not know the exact mapping of actions to outcomes, but they do know the set of outcomes and their probability distributions (Huettel et al., 2006).¹² This is also dealt with easily in rational choice with approaches such as expected utility theory (see Tversky and Kahneman, 1986, Weber and Johnson, 2009). In risk, a third element is added to the outcome function that includes a set of actions A and a set of outcomes X . To this we add a set S of states s such that $s \in S$. In risk actors have beliefs about the likelihood of each state, so in effect these states are the probability π of an outcome resulting from an action.¹³ The new outcome function is $x(a, s) : A \times S \rightarrow X$ (McCarty and Meirowitz, 2007, 27).

However, policymakers may not be fortunate enough to have complete information or even good guesses about state and therefore outcome probabilities (Callander, 2011, 643). This is especially true during financial crises or when financial market technology is changing rapidly. In situations like these policymakers can face *means-ends uncertainty*—($x : A ? X$). They do not know the set of likely outcomes and/or their probabilities (Knight, 1921, Weber and Johnson, 2009).¹⁴

For example, the first paper in this thesis (“Getting What You Want: Information and Crisis Management in Ireland and Korea”) discusses how Irish and Korean decision-makers in 2008 and 1997 respectively needed

¹²Note: traditionally rational choice theorists refer to these situations as “uncertain” (for example Machina, 1987, McCarty and Meirowitz, 2007, 27). However, as I discuss in further detail below, I treat risk and uncertainty as distinct states in this thesis. My usage is closer to the rational choice concept of ambiguity (see March, 1994, Ch. 5). See also Blyth (2006, 495) for a critique of the rational choice tendency to confuse risk and uncertainty.

¹³Formally: for $S = \{s_1, \dots, s_k\}$, $\pi(s_k) \equiv \pi_k$.

¹⁴These situations are also referred to as Knightian uncertainty (Blyth, 2006, 495) and were also discussed extensively by John Maynard Keynes (1921, 1936).

to know how many insolvent—rather than just illiquid—banks their countries had in order to decide how to guarantee and restructure them.¹⁵ However, shocks to the Irish and Korean financial systems meant that decision-makers no longer had enough data about present economic conditions to predict policy outcomes. These situations are examples of data uncertainty: uncertainty because of a lack of information about fundamental economic conditions up to the present. This is represented in Figure 1.1 by the far right of the x -axis.

Scholars working within the rational choice framework have attempted to decrease the stringency of the full information requirement to increase the realism of their models (Austin-Smith, 2006, 909). I focus on one prominent approach, signaling games (see Austen-Smith and Wright, 1996, Banks, 1991, Battaglini, 2004, Besley, 2007, Cho and Kreps, 1987, Gilligan and Krehbiel, 1987, McCarty and Meirowitz, 2007, Satyanath, 2006, Spence, 1973), to understand how financial policymakers gather new information about economic fundamentals.

In signaling games, policymakers respond to data uncertainty by trying to gather new information from other actors who have privileged information (see Calvert, 1985, McCarty and Meirowitz, 2007, Tsebelis, 1990).¹⁶ For economic policymaking the domestic policymaking process (for a discussion of the policymaking process see Spiller, Stein and Tommasi, 2008) is very important for structuring who provides information.¹⁷ The policymaking process defines who is available to request information from, what information they have, and, since it structures repeated interactions, contributes to policymakers' priors about information providers.¹⁸ In general, the financial policymaking process includes financial bureaucrats, such as the minister of finance, the central bank governor, financial regulators, as well as private actors, banks in particular.¹⁹ Seeking new information about economic fundamentals from particular actors focuses policymakers' attention on certain information and shapes what information they receive. Ideally, these actors would provide accurate

¹⁵This is similar to the problem Mervyn King described in June 2011 (see above).

¹⁶Note, in the first paper Mícheál O'Keeffe and I use a Bayesian learning process, which is typical in the signaling literature. We largely do this for convenience. A number of alternative learning processes, based largely on experimental evidence (see Epstein, Noor and Sandroni, 2010, 3), have been developed. These have influenced the behavioural economics critiques of traditional rational choice decision-making since at least Tversky and Kahneman (1974). My introduction and framework's level of generality is such that it is not necessary to specify the learning function in detail. It is simply assumed that policymakers use some sort of learning function to update their priors with the intention of making goal-oriented decisions.

¹⁷Narrowing the number of information providers by relying on policymaking processes structures can be thought of as a way to filter and frame information (see Tversky and Kahneman, 1981, Sell and Prakash, 2004, 145) so that actors can meaningfully process it. Listening to certain international organisations' and prominent countries' ideas, discussed below, also filters information and makes it easier to manage.

¹⁸Blyth (2006, 495) argues that in uncertainty actors do not have any priors. However, he is somewhat vague about what actors do not have priors about. In extreme uncertainty actors may truly have no priors. In most real-life cases I assume that policymakers do have priors in the form of (a) understandings of the world before there was uncertainty and (b) beliefs about information providers. Whether or not these are the best priors to solve uncertainty problems that may even be unsolvable is a separate issue from the one I am concerned with; whether or not policymakers use these priors to try to solve uncertainty problems.

¹⁹See the first paper for a discussion of the conditions under which external actors may become information providers in these situations.

and timely information to policymakers.

However, this ideal rarely comes about. Instead policymakers and information providers engage in a signaling game. If policymakers are goal-oriented, there is no reason to assume that information providers are not also. Information providers give advice in order to shape–bias–policymakers’ understanding of present economic conditions to achieve their own policy goals. Policymakers in turn have prior information about signalers’ motives and the likely quality of their information. They use this prior information to try to correct signaler bias and develop accurate posterior understandings of economic conditions. These posteriors condition policymakers’ choices.

The data uncertainty information gathering path is represented in Figure 1.1 by the bottommost dotted arrow. It starts at some time t_{0a} ²⁰ when policymakers first perceive that they are uncertain because of a lack of data. It ends at some time in the future t_n when they perceive that they have close to full information and can make appropriate rational choices. How close perceptions of information correspond to reality, depends on the nature of the signaling game.²¹

1.1.2 Sociological and Constructivist Approaches: Policymaking in Causal Uncertainty

Policymakers may perceive another type of uncertainty that prompts different information gathering strategies. So far we have only discussed situations where ignorance about present data prevents policymakers from making means-ends correspondences. What about when uncertainty is more abstract? What happens when actors feel their models–formal or implied–of how data fits together to create outcomes do not work? This state is causal uncertainty: when actors lack adequate causal models for reasonably predicting future policy outcomes. Causal uncertainty is represented by high positive values on the y -axis in Figure 1.1, but perhaps it is easier to understand the distinction between it and data uncertainty through analogy.

Imagine that you would like to build a stable house. Data uncertainty is analogous to not knowing what building materials–wood, cement, and so on–you have and the condition of the building site–the soil type, the climate, and so on. Causal uncertainty is not having the blueprints for how the materials fit together. In both situations you cannot start construction, but responses to these problems differ in that the starting

²⁰The starting point t_{0b} is discussed below. I do not discuss t_{0c} directly in this thesis. Based on Jacob’s (2008) argument that ideas structure causal models, which in turn structure data gathering processes, actors may try to construct causal models first and then use them to guide their data gathering. This proposition, however, is not fully examined here. The second paper (Chapter 3) does look at a situation of some data and causal uncertainty, though this is determined not to be as extreme as that in t_{0c} (see Figure 1.2).

²¹It may also depend on cognitive constraints discussed by bounded rationality (Jones, 1999, March, 1978, March and Simon, 1993, March, 1994). These are generally not explicitly examined here, but would certainly be an interesting area of further study.

points for resolving them and resolution strategies are different. One type requires gathering materials and surveying the site, the other requires finding effective templates for fitting the materials together so that they will make a sturdy house given the site's conditions.

In data uncertainty, policymakers ask actors in the domestic policymaking process, especially financial bureaucrats, for information about economic fundamentals and weigh this information based on their priors about the data and about the actors. Gathering information about causal models is broadly similar in that it involves finding new priors and learning about them. However, it starts from a very different point: searching for new ideas²² about how political economy works. In economic policymaking, learning about the validity of new ideas usually involves examining other countries' experiences with them.²³ So, the process behind learning about new models is generally more familiar to sociological, constructivism, and the broad policy diffusion literature (see Abdelal, 2009, Blyth, 1997, 2002, 2003, Checkel, 1999, Dobbin, Simmons and Garrett, 2007, Finnemore and Sikkink, 1998, 2001, Haas, 1992, Jacobs, 2008, McNamara, 1998, 2002, Steinmo, 2003, Weyland, 2007, Yee, 1996).

The process broadly follows three steps. The first two follow the leftmost vertical dotted line in Figure 1.1. At t_{0c} the first step is to adopt a good guess—ideas and recommendations—of what new causal models are plausible. The second is to learn more about the models' validity by observing the experience of jurisdictions that have already adopted them. Finally, if after information gathering the new model seems plausible, then we have returned to the origin of Figure 1.1 where strategic action is at least perceived to be possible.²⁴ When viewed as part of an information gathering strategy chosen to make goal-oriented decisions in uncertainty, these approaches have clear similarities to the overall learning process discussed earlier. The difference in causal uncertainty is what actors are learning about, what their priors are, and who they are learning from.

Over the period and level of decision-making covered in this thesis policymakers often gathered new policy ideas from international financial organisations, such as the International Monetary Fund, and policymakers

²²See Blyth (2003) and Jacobs (2008) for discussions of ideas as structuring actors' causal models. In a broadly similar tradition, Goldstein and Keohane (1993) referred to them as "road maps".

²³In some cases sub-national jurisdictions that adopt a policy may be observed (Gilardi and Füglistler, 2008, Volden, 2006). This of course depends on the existence of sub-national units with jurisdiction over the relevant policy area.

²⁴At its extreme, causal uncertainty resembles Blyth's (2006) "type-three" world. To varying degrees, in Blyth's "type-one" and "two" worlds outcomes are normally distributed and it is merely a matter of sampling from past experiences to make accurate predictions of future policy outcomes. In type-three worlds no amount of sampling of past events, no amount of learning about what has happened up until now help's predict future outcomes, because the outcome distribution is unknowable. No model will predict it. Whether or not we actually are in a type-three world is unimportant for my focus on how actors make policy decisions. What is important is whether or not actors perceive that they do not know or even have a good guess of how policy means correspond to ends because their prior models for understanding causal relationships no longer work. If actors abhor uncertainty—an uncertainty aversion has been demonstrated with experimental evidence (Ellsberg, 1961, Hsu et al., 2005)—and, being intendedly rational, want to take actions to achieve their goals, but their old causal models do not work what can they do? Blyth (2006, 497) argues that people actively construct understandings of how the world works that allow them to believe they are in merely risky situations or uncertain situations that can be overcome by gathering more data.

in countries, such as the United Kingdom, with major international financial centres (Walter, 2008, 23-24).²⁵ These actors can form epistemic communities of knowledge-based experts that articulate “the cause-and-effect relationships of complex problems” (Haas, 1992, 2). Often this came in the form of “best practice” recommendations (see Walter, 2008). These actors were likely chosen because prior information about them suggests that they are good sources of effective financial governance ideas. For example, priors may have been based on information providers’ research capacity or perceived success at building a financial services industry. This is particularly shown in my final paper (“Who is Watching?: A Multi-state Event History Analysis of Financial Supervision Governance Diffusion”) where the United Kingdom’s unified and specialised financial regulator—the Financial Services Authority—became the dominant model of financial regulation for at least the 11 years preceding the 2008/09 crisis. Causal models are also more likely to be accepted not only based on policymakers’ priors about the information provider, but also if they fit into accepted policy paradigms (Hall, 1993). Both of the latter two papers show how the widely accepted paradigm of economic policy independence made recommendations for delegation in deposit insurance and financial regulation more likely to be adopted. Paradigms are essentially prior beliefs about higher-order causal relationships that influence how actors arrive at posterior understandings of new ideas.²⁶

Once recommendations that policymakers perceive to be reasonable are found, they are updated by observing how ‘successful’ the recommendations are in other countries that adopted them as policy. More weight is likely given to outcomes in countries, such as regional peers or fellow members of international organisations, who may have similar economies and therefore have more relevant experiences to learn from (see Brooks, 2007, Gilardi, Füglistler and Luyet, 2009, Simmons and Elkins, 2004). Given the complexity of the policy areas I am examining and the fact that policymakers generally have short time spans and small sample sizes to observe, I only assume that policymakers often measure success loosely. This assumption is similar to Ikenberry’s assertion that countries “copy what *seems* to work” (1990, 103, emphasis added).²⁷ The standards of success could include whether or not adopters have experienced a crisis since adopting a policy or whether or not their finance sectors have grown. Another measure of success could be policy prevalence. The more a given recommendation is adopted, the more policymakers may perceive it to be successful. As Simmons and Elkins note about the spread of neoliberal ideas, their high prevalence “both reflects and buttresses the power of the . . . ideational consensus” (2004, 173). Policymakers may also have

²⁵I unfortunately do not examine the intentions that these types of actors have when they promote certain policy recommendations as we did in signaling games. This would be an interesting area of further study and would likely benefit from the signaling game literature. See the following section for a related discussion.

²⁶Hall (1993, 279) uses the terminology “interpretive frameworks” rather than the pseudo-Bayesian “priors.”

²⁷See Weyland (2007) for a further discussion of how policymakers learn from other countries’ experiences when they have small samples and short observation periods.

electoral or credibility incentives to adopt best practice ideas, especially as they become adopted by more and similar countries. They can claim that policies were “vetted” and negative consequences legitimately unforeseen (Linos, 2011, 681). Overall, when there is more uncertainty about how a policy affects outcomes and fewer opportunities to learn about these relationships, because of short time spans and small sample sizes we would expect actors to rely more heavily on these more heuristic ways of adopting priors and have looser criteria for learning about them.

Moreover, as more jurisdictions adopt certain policies successful outcomes may actually become more likely. Policymakers are not the only actors trying to overcome uncertainty problems to make goal-oriented choices. Market actors are doing so as well. As market actors observe countries successfully adopting recommended policies they will view the policies as more credible. They will therefore be more likely to invest in countries that adopt these policies. Increased credibility can improve adoption outcomes and create further incentives for adoption (see McNamara, 2002).

Just as we hope that policymakers will have accurate information about economic fundamentals, ideally the causal models policymakers choose will closely approximate true causal relationships. However, just as data accuracy is a function of signalers’ knowledge and what they signal, the accuracy of policymakers’ posterior causal models is a function of how closely promoted ideas actually capture real causal relationships. Hopefully, overtime policymakers will have enough opportunities to gather accurate information in order to learn about how closely policy ideas relate to real causal relationships.

Broadly, all of the approaches discussed in this framework follow Hall’s social learning concept: “a deliberate attempt to adjust the goals or techniques of policy in response to past experience and new information” (1993, 278).²⁸ The framework presented here specifies some situations under which social learning is likely to be used and what forms it is likely to take given different types of uncertainty. The papers in my thesis attempt to find evidence for how policymakers’ priors about information and information provides and the strategies they use condition what information they find and in turn what policies they choose. I summarise my framework with some examples of information providers from this thesis in Table 1.1.

²⁸Clearly, I take a broad view of policymakers’ goals, preferences, and interests. Though I assume that policymakers try to maximize their preferences in a traditionally rational manner, my focus on uncertainty shows that the goal actors may first need to achieve is to decide what their preferences should be. The goal-oriented processes behind overcoming uncertainty that involves learning about both ideas of causal relationships and economic circumstances changes actors’ policy preferences. These types of information are taken seriously as causal factors. Once they are collected they shape policy choices. Nonetheless they are also part of policymakers’ general goal-oriented behaviour.

Table 1.1: Decision-making Processes

Information Level	Information Gathering Strategy	Information Providers (Ex.)	Decision-making Strategy
Complete			Rational goal-oriented
Data Uncertainty	(1) Search for <i>economic conditions</i>	- Financial Bureaucrats - Banks	Rational goal-oriented, but constrained by information gathered
	(2) Updating of economic conditions info. accuracy	- Int. Org. (when domestic depends on capital)	
Causal Uncertainty	(1) Search for <i>causal models</i>	- Int. Org. - Int. Financial Centres	
	(2) Updating of causal model's validity	- Regional Peers	

1.2 Limitations & Critiques

Like any parsimonious model of human action, my framework cannot encompass all of reality or even all of the previous well thought out models of human behaviour. I have to treat many factors as exogenous to the framework. Before proceeding onto my empirical research, consider some of the framework's major limitations and possible critiques.

1.2.1 A Recent Development in Rational Choice & Uncertainty

Recently, Callander (2011) has attempted to bring uncertainty fully into the rational choice tradition, with a parsimonious and precise model of policy learning. The major differences between his model and mine are (a) the sources of actors' priors, (b) the sources of uncertainty, and (c) how actors learn about policy outcomes. He assumes that actors start with complete information about what the status quo policy is and the outcome that it produces, as well as the full set of previous policies and their outcomes up until that point in time. Uncertainty in his model is mostly the result of Brownian Motion. The mapping between action A and outcome X is defined by a "drift" parameter μ (the slope) and a variance parameter σ^2 . Actors learn more about (though never completely) policy-outcome mappings as policies are changed over time by new governments and new outcomes are revealed. This is a more realistic model of learning and decision-making in situations where outcomes are unknown than had previously dominated rational choice theory, in

particular Gilligan and Krehbiel's (1987) model of committees and legislative policymaking.²⁹

My general framework encompasses a wider array of prior information sources, including ideas, than just previously observed outcomes. Because I use the concept of data uncertainty, I do not assume that actors even fully know the status quo outcome, but gather, often inaccurate, information about it. Moreover, I do not assume that actors can always determine what outcomes result from a given policy. This is a more realistic assumption in many policy areas where outcomes can have multiple and even interactive causes. To overcome this problem policymakers may rely on simple heuristic information gathering strategies, such as observing peer adopters' general experiences. I feel that these differences allow my framework to be a more realistic representation of decision-making in uncertainty. However, since it makes looser assumptions to attain this level of realism, it is admittedly less precise.

1.2.2 The Unimportance of Priors With Extensive Opportunities to Learn

In my framework I have stressed the importance of the priors policymakers have for understanding the means-ends correspondences and the policies they choose. Meseguer (2006), conversely, argues that priors are not particularly important. She comments that "regardless of initial beliefs, if exposed to the same (abundant and consistent) information, governments will eventually converge to the same choices" (2006, 162).³⁰ I do not disagree with this general assertion, but I do feel that it is largely inapplicable to my current focus on policymaking in financial market uncertainty.

I am concerned with what policymakers actually do when they are in uncertainty. For highly uncertain policies there simply are not many opportunities, especially over the short to medium-term, to learn about a policy's effectiveness enough to negate the importance of actors' priors.³¹ I am essentially interested in what actors do before they have enough information. As Savage noted about scientists "when they have little data, [they] disagree and are subjectivists; when they have piles of data they agree and become objectivists" (paraphrased in McGrayne, 2011, 103). I am interested in what policymakers do before they have "piles of data." I argue that they often rely on fuzzier, more heuristic-like strategies to gather information and that, at least over the time spans and policies I examine, are often unlikely to be able to gather the amount of information that would lead to completely congruent choices. In my framework, priors do matter for

²⁹As Callander describes, his model is largely the same as Gilligan and Krehbiel's with the important addition of the variance parameter. In Gilligan and Krehbiel's model, a particular policy outcome x is the result of policy a and some unknown ω such that $x = a + \omega$. Callander's inclusion of the variance parameter makes it impossible to know the mapping function after observing only one policy-outcome pair, as is the case in the Gilligan and Krehbiel model.

³⁰This assumes that policymakers use Bayesian updating, have similar goals, and do not face institutional constraints.

Also, in a review jointly with Fabrizio Gilardi (2009, 535-537), she made a similar critique of Weyland's (2007) approach to understanding how Latin American countries may have used heuristics to evaluate Chile's pension reforms in the 1990s.

³¹This may be one of the reasons that there is uncertainty to begin with.

explaining policy choices, as do the strategies actors use to update these priors.

Work in Bayesian decision analysis (for an introduction see Smith, 2010) has shown how outcome probabilities can actually be estimated even for very rare events. Gelman, King and Boscardin (1998) demonstrate how to calculate the probability that a vote will be decisive in a future election. As far back as 1958 Albert Mandansky predicted the likelihood of an unauthorised or accidental nuclear detonation with what turned out to be relatively high accuracy (McGrayne, 2011, Ch. 9). Though I did not conduct an exhaustive search, I did not find evidence that policymakers used such techniques to overcome uncertainty on the issues examined here. These methods may be highly desirable and perhaps they should become part of actors' strategies for overcoming uncertainty in the future, but they do not explain the decision-making covered here.

1.2.3 Information, Idea Formation, & Persuading Others

A number of authors, especially in the constructivist literature, would bristle at the inclusion of both ideas and economic data as simply forms of information. They would also contest my focus on methodological individualism. Mark Blyth (1997) criticized rational choice institutionalists (particularly those writing in the volume by Goldstein and Keohane, 1993) for not taking ideas seriously as independent causal factors. He suspected, as this thesis also indicates, that an approach based on methodological individualism would likely end up reducing ideas to information. For Blyth, in such a conceptualization ideas are not taken seriously, but are instead “filler” for holes in existing research programs (1997, 229). He proposes in both that work and later papers (see Windmaier, Blyth and Seabrooke, 2007) that to take ideas “seriously” political scientists should focus on how actors construct ideas and how they persuade others to accept them (1997).

I would argue that the budding disagreement between myself and Blyth is largely the result of differences in focus and terminology, rather than fundamental. In fact his critique of information ignores the ways that economic data can be used in much the same way as ideas.

He asserts that in times of crisis there is an “ongoing process in which the legitimacy of claims about ‘what is to be done’ is open to contestation” therefore actors in this process “must consider what ideas will be persuasive and establish institutional and political support for ideas to translate into policy action” (Windmaier, Blyth and Seabrooke, 2007, 754).³² Such a focus on the reasons that actors choose to *create* and *send* certain information is not necessarily alien to the framework proposed here. However, because I am concerned with why policymakers choose the policies that they do from the policymakers' perspective, I mostly focus on why certain information is *received* during times of uncertainty rather than created or sent.

³²Though Blyth generally has a more structure-centered approach, this is similar to what Finnemore and Sikkink (1998) call “strategic social constructions.”

As such, a major limitation of my thesis from a Blythian point of view is that I do not address why ideas were created, why actors such as the IMF or Basel Committee chose to promote them, or why they used the persuasive strategies—e.g. including them as best practice “Core Principles”—that they did.³³ Ideational senders’ motives and choices of persuasive strategies are largely beyond the scope of my thesis. Presumably, knowing why policymakers are more likely to receive information and use it to develop means-ends correspondences is important for actors to know when they are trying to craft and choose what ideas to send.³⁴ However, I do not directly address this.

Nonetheless, I feel that in his critique of treating ideas as information he may be missing the ways that types of information, such as economic data, can be created and used by senders to shape policy choices in much the same way as ideas. Though I am mostly concerned with why actors gather information rather than send it, I actually do address one aspect of this issue in the thesis’ first paper. In this paper I argue that financial bureaucrats choose what economic data to provide based on how it will affect policy choices. Actors like ministers of finance choose economic data that they believe will influence policy decisions in their favoured direction. This is broadly similar to Blyth’s assertion that agents “must consider what ideas will be persuasive . . . [to influence] policy action.”

More generally, I would argue that the persuasion processes that Blyth and others (see Cobb and Kurlinski, 1997, Krebs and Jackson, 2007, Majone, 1989) discuss, but which I largely do not directly address, could be incorporated into my information gathering framework by other researchers. We could think of data or ideational information’s persuasiveness as part of the weighting that actors assign to new information and information providers during uncertainty. For instance, all else being equal new ideas about governance structures given by prominent international actors with large research budgets, such as the International Monetary Fund, will probably be more persuasive than those made by an individual 30-year old economist. The former is endowed with more authority and rhetorical persuasiveness than the latter (see Bauer, 2002, for an overview of rhetorical persuasion devices). This would likewise be reflected in policymakers’ priors about their information. Far from being alien to an information gathering processes actors use to enable rational choices, persuasion and rhetoric could be fully part of it. However, another piece of research is needed to properly make this argument and demonstrate its empirical usefulness.

³³An example of this type of research is Chwieroth’s (2010) study of how the IMF came to adopt and promote capital control liberalisation.

³⁴We could think of this as a form of backwards induction.

1.2.4 Causes of Perceived Uncertainty/Certainty

I largely treat the causes of actors' beliefs about whether or not they are in uncertainty as exogenous. I do not examine how actors might intentionally highlight or link to uncertainty to promote their own policy ideas.³⁵ Moreover, I do not examine why uncertainty is not perceived even when perhaps it should be. This is related to the behavioural economics concept "illusion of validity" (see Tversky and Kahneman, 1974, Einhorn and Hogarth, 1978). Similarly, recent work in economics has argued that causal models can be incredibly resilient even when there is considerable empirical evidence that they are incorrect (Quiggin, 2009, 2010). In these situations actors seem to believe that they can reasonably predict a given means-ends correspondence despite the existence of considerable new information to the contrary. They are not perceiving uncertainty when they should be, instead believing that their ideas are still valid. Alternatively, these actors might have experienced some uncertainty, but the information gathering strategy they use, for instance their priors about the sources of new information, may incline them to ignore it. Regardless, some attempts have been made to understand these types of issues (for an example from a political economy perspective see Majumdar and Mukand, 2004), but unfortunately I do not significantly contribute to them.

Researchers need to develop better indicators of perceived uncertainty to be able to understand what causes it. This thesis largely assumed the existence of uncertainty if a shock was observed or if a policy area was complex. The reason that these assumptions were made was that it is often very difficult to actually operationalise perceived uncertainty. Some attempts have been made to operationalise uncertainty at the macro level. For example, Bloom (2009) uses stock market volatility as an indicator of economic uncertainty. Nonetheless, future research needs to develop better indicators of perceived uncertainty, especially at the micro policymaker level.

1.2.5 Voter's Preferences & Learning

Another criticism of my approach is the lack of attention given to citizens' influence on policymaking. Linos (2011) argues that much of the diffusion literature, from which I draw heavily, does not pay enough attention to how voters' learning processes and preferences influence policymakers choices. Because of this, the diffusion literature often assumes "leaders have powers they likely lack" (2011, 679). Apart from a specific discussion of the electoral incentives in democracies to adopt independent deposit insurance governance in the second paper, I focus on the behaviour of elite policymakers. I assume that many of the policy issues examined here,

³⁵For example Sell and Prakash (2004) argue that pharmaceutical companies were able to frame uncertainty about United States competitiveness in the 1990s as a way of gaining the acceptance of their idea of HIV/AIDS patent regulation.

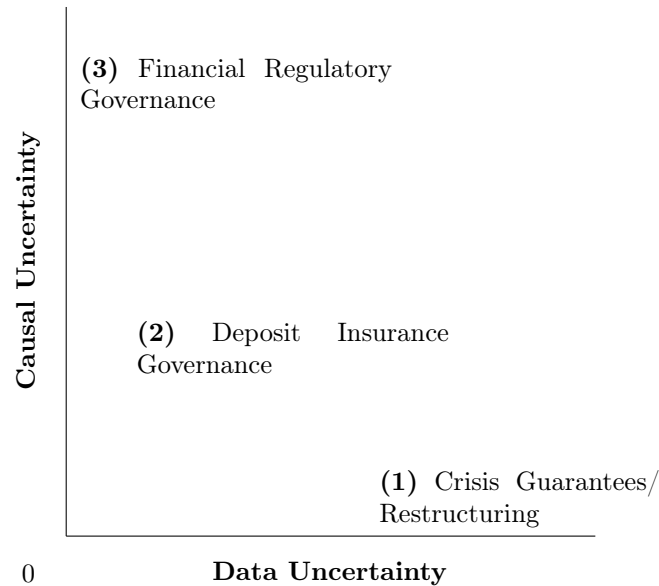
such as financial regulatory governance, are not very salient for most voters.³⁶ I do not expect that voters would expend much energy to learn about these issues and lobby their representatives in a specific direction nor be influenced to vote in a certain way specifically because of them (see Lohmann, 1998). Instead I make a standard assumption that voters would be concerned with more general outcomes (Callander, 2011, 648), such as achieving economic growth or preventing financial crises and resolving them at minimum public expense. Policymakers' preferences and actions are treated as influenced by the electorate to the extent that they have electoral incentives to achieve these broad goals (see Rosas, 2009, for an examination of how electoral incentives influence financial crisis policymaking). Nonetheless, many of my overarching findings regarding uncertainty and the use of information gathering may also apply to the electorate's learning strategies. Further work on this issue could contribute to the diffusion literature, which Linos (2011) rightly describes as having an underdeveloped view of diffusion among voters and the electoral incentives that result.

1.2.6 Veto Players

Finally, my framework does not pay much attention, either theoretically or empirically, to what actors do when they have gathered enough information to perceive that they can make goal-oriented policy decisions. I largely ignore the strategic interactions between policymakers directly preceding a policy decision. I have two reasons for this. First, I assume that at this point policymakers simply engage in strategic interaction. This type of interaction has been examined at some length in the political economy literature, most prominently with Tsebelis' (1990, 2002) veto players approach. Second, as will be shown throughout the thesis, crises and highly complex policy areas are often simple policymaking environments in terms of strategic interactions, once key decision-makers feel that they have developed an adequate understanding of their situation. The information gathering strategies mentioned in my framework are costly and involve access to privileged information. Because of this, most lawmakers and citizens do not readily engage in them. These actors effectively delegate decision-making to a limited set of policymakers, such as chief executives. During uncertainty, normal policymaking processes often become stripped of their numerous veto players and many of the institutional rules that condition policy choices. This may explain why the literature has often produced conflicting predictions of the role of veto players during crises (see Chapter 2 for a discussion).

³⁶This is in contrast to the higher valence issue of maternity leave that Linos (2011) examined.

Figure 1.2: Thesis Structure: 3 Papers in Different Types of Uncertainty



1.3 Overview of the Papers

My three papers are ordered in relation to the type of uncertainty policymakers face. I illustrate this in Figure 1.2. Though the papers are each aimed at specific political economy sub-literatures, together they empirically examine my framework’s implications. I show that the type and level of uncertainty in these papers impacts what information gathering strategies policymakers use and ultimately what policy choices they make.

1.3.1 A Study In Data Uncertainty

The first paper is entitled “Getting What You Want: Information and Crisis Management in Ireland and Korea”. It most closely draws on traditional rational choice ways of addressing the means-ends uncertainty problem. Co-authored with Mícheál O’Keeffe, our paper examines how policymakers try to overcome incomplete information about fundamental economic conditions. Building on Satyanath (2006), we propose a signaling model for how decision-makers gather information needed to make bank guarantees and restructure the ownership of insolvent financial institutions during banking crises. We were motivated by an anomalous observation: though Irish and Korean policymakers had largely constant preferences as their respective 2008 and 1997 crises hit, the policymakers had very different abilities to choose policies that achieved their pref-

erences. Irish policymakers, despite strong free market preferences, ended up effectively fully guaranteeing the banking system and nationalising it for a number of years. Korean policymakers were somewhat more successful at limiting guarantees so that they more closely matched their preferences. They were also better able to restructure their banking system with their preferred ownership change method: mergers. Our model explains differences in Irish and Korean decision-makers' ability to 'get what they wanted' as the result of differences in the quality of information about fundamental economic conditions that they received from financial bureaucrats, banks, and external actors. We find some initial evidence that these actors provided information to decision-makers which influenced policy choices in ways that decision-makers might not have preferred. We test the plausibility of our model in the Korean and Irish cases using analytic narratives (Bates et al., 1998, 2000*a,b*, Alexandrova, 2009).

Given the severity of their crises, it initially seems unlikely in the Irish and Korean cases that actors faced no doubts about causal relationships on guarantee and ownership change policymaking. However, the analytic narratives do indicate that actors had largely stable broad policy preferences at given levels of banking system health over the period of interest.³⁷ In the two cases actors chose their policies not based on new information about causal relationships, but new information about the severity of the crises they faced. Policymakers' beliefs about causal relationships given certain economic conditions were largely stable. Their understanding of economic conditions changed.

1.3.2 Studies in Increasing Causal Uncertainty

In the latter two papers entitled "Competing Risks Analysis and Deposit Insurance Governance Convergence" and "Who is Watching?: A Multi-state Event History Analysis of Financial Supervision Governance Diffusion" I expand the scope of my investigation to areas where causal relationships are less certain. Choosing a type of financial governance is fundamentally more complex than choosing an immediate guarantee during a crisis. There is more causal uncertainty. It is very difficult to determine how and if at all a certain type of deposit insurance or financial supervisor governance will affect outcomes. By examining financial governance choices, I investigate other mechanisms policymakers use to gather and evaluate information, particularly best practice ideas from external actors, and how they affect choices. The observation that motivates these papers was that when I considered the distribution of governance choices for deposit insurance (see Figure 3.1) and financial supervision (see Figure 4.1) across countries and over time I saw striking temporally and spatially located convergence. Especially if countries are in some way close to each other, they often chose

³⁷At the very least, we do not need to have shifting preferences to explain what we observed.

the same actors to run their deposit insurers or supervise their financial sectors at around the same time. My findings indicate that to understand how a country reforms its financial governance institutions we need to consider not only domestic individual country factors, but also the possibility that interactions between countries at certain points in time are important. Particularly, given the complexity of the financial system and crises, actors share information in the form of best practice recommendations about who is best to run deposit insurance and supervise financial institutions. This sharing produces patterns of policy convergence partially shaped by decision-makers' prior beliefs about external information providers and previous policy adopters.

My research draws on the recent diffusion literature in political economy (see Boehmke, 2009, Brooks, 2005, Elkins and Simmons, 2005, Elkins, Guzman and Simmons, 2006, Füglistner, 2011, Gilardi, 2005, Gilardi and Füglistner, 2008, Gilardi, Füglistner and Luyet, 2009, Gilardi, 2010, Jordana and Levi-Faur, 2005, Lee and Strang, 2006, Linos, 2011, Meseguer, 2006, Meseguer and Gilardi, 2009, Shipan and Volden, 2008, Simmons and Elkins, 2004, Simmons, Dobbin and Garrett, 2006, Strang and Tuma, 1993, Weyland, 2007). I expand the literature methodologically with Competing Risks and other Multi-state Event History Analyses (EHA) (see Pintilie, 2007, Putter, Fiocco and Geskus, 2007) to be able to apply the diffusion literature to these policy areas. I also use EHA to demonstrate how to implement an easily observable minimum test that any ideational causal argument needs to meet: the observed relationship between possible ideational diffusion mechanisms and a given policy choice must increase significantly soon after a positive idea about the policy is promoted. I refer to this as the minimum as a Time Order and Increasing Relationship (TOIR) criteria. It is by no means a criteria that can definitively establish causation. It is a minimum criteria that hypotheses about ideational diffusion has to meet.

My second paper examines why certain actors are chosen to administer a country's first deposit insurance program. For reasons that will be discussed in the paper, there is only moderate uncertainty about what if any difference a given type of governance has on policy outcomes.³⁸ Because of the common status quo of no deposit insurance and the existence of competing alternatives—it could be administered by the ministry of finance, the central bank, or an independent agency—I use a Fine and Gray (1999) Competing Risks EHA to determine why one actor was chosen over the others. I do not know of any previous work in the diffusion literature that has applied Competing Risks EHA in this way.

My final paper examines financial supervisory governance choices, an area of considerable causal uncer-

³⁸The choice is also related to uncertainty about economic fundamentals. Ministries of finance with direct access to fiscal resources may be more likely to be given control over a new deposit insurer if the amount of deposits that need to be guaranteed to restore confidence in the banking system is relatively large. This requires knowing the size of deposits that would need to be guaranteed to restore confidence.

tainty. As will be shown, opinion has frequently shifted over just the past 30 years about how supervisory governance affects outcomes. Governance decisions also take place in a very complicated choice environment. There are many different status quos and many governance types to choose from. To be able to make the same kind of findings as the previous paper, I needed to use a different multi-state model. Ideally, I would have used Non-Homogenous Multi-state Markov models (Jackson, 2011). Unfortunately, data constrictions limited my ability to fully apply this approach. Therefore I employed a pragmatic set of Event History models. I used a Non-Homogeneous Multi-state Markov model to examine the mediating role of institutional path dependence (Thatcher and Coen, 2008, Pierson, 2004, Ch. 1) on information sharing. I then used both Single Transition Cox Proportional Hazard and Fine and Gray Competing Risk EHA to examine the role of other factors that could be operationalised as traditional covariates. The first analysis is a novel way of evaluating institutional path dependence with large-n data. Both analyses demonstrate how a pragmatic model-building approach can be used to examine policy diffusion and learning in complex choice environments and with limited data.

Together my papers make important contributions to developing our theoretical understanding of how financial policy is made in uncertainty and the methodologies we can use to empirically examine these claims. My main empirical findings and contributions to political economy are discussed in the conclusion (Chapter 5).

Chapter 2

Getting What You Want: Information and Crisis Management in Ireland and Korea

Christopher Gandrud and Mícheál O’Keeffe

Abstract:¹ Governments have a range of policy options for managing banking crises, but it can be difficult for them to determine and choose policies that will best further their aims. During banking crises, policymakers must rely on information from bureaucrats and actors in the financial system with different preferences. Moreover, initial crisis containment choices can constrain future resolution options. The 2008/09 banking crisis in Ireland and the following effective nationalisation of the banking sector reminds us that it can be difficult to actually choose policies that will successfully manage a crisis in a preferred direction. Our paper contrasts the Irish case with South Korea’s 1997 experience, where guarantee and ownership policy choices more closely matched decision-maker’s preferences. We build on Satyanath’s (2006) signaling approach to create a model of how decision-makers could be influenced by information to make choices they ultimately do not prefer. We examine the empirical plausibility of our model by comparing analytic narratives of Ireland’s and Korea’s crises. A key finding is Ireland, as a

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Eurozone member, did not need to listen to external actors giving more accurate information. Because of this, Irish decision-makers were unable to get what they wanted.

Despite different development paths and histories, both Ireland in 2008 and the Republic of Korea (henceforth Korea) in 1997 faced generally similar problems. Many of their banks were threatened with insolvency.² Indeed exactly 13 years apart, the governments of both ‘tiger’ economies were forced to submit letters of intent to the International Monetary Fund (IMF), requesting assistance to deal with collapsing banking systems. Despite some similar crisis containment and resolution policy choices, their level of guarantees and overall ownership restructuring policies differed noticeably. This paper explores the political economy of these differences.

Relatively soon after the start of Korea’s crisis in November 1997 nine merchant banks had their operating licenses suspended. In the one and a half years from November 1997 to June 1999, 15 percent of Korea’s banks measured by assets were merged, 15 percent closed, and 14 percent nationalised (Lindgren et al., 1999, 36). Five of the top 12 banks became majority foreign owned in a country where at the start of the 1990s only two foreign banks³ had any presence (Dymski, 2002, 455-456). All of this occurred partially due to carrots and sticks employed by the Korean government to drastically restructure the banking sector (Kim, 1999). Two years from the start of the crisis, Korean bank restructuring and recovery were well underway.

In Ireland, more than two years after the start of the banking turmoil the restructuring process was just beginning. Banks continued to reveal further losses requiring additional recapitalizations. None of the 82 regulated credit institutions had completed mergers and no banks had been forced to exit the market. In September 2008, during the height of the crisis, the Irish government announced an exceptionally broad plan to guarantee all deposits and some debt of the six largest domestic banks. As the crisis continued, the guarantee compelled the government to take major stakes in the banks. In January 2009 the Irish Government announced its intention to nationalise one of the nation’s biggest lenders, Anglo Irish Bank (Anglo). Four other major domestic banks were later effectively nationalised. Ireland’s protracted crisis management policies led to incredibly high socialisation of bank losses.

The Irish Government’s crisis management response was initially believed to minimise social costs. This sentiment was expressed by the Minister for Finance who early on commented that it was “the cheapest

²This paper explicitly focuses on the banking crisis aspects of these situations. The impact of other related crises, such as currency crises are considered to the extent that they impact the banking crises.

³Bank of America and Citibank

bailout in the world so far”.⁴ But by Spring 2011 the direct fiscal costs reached €70 billion, leading the central bank Governor to note that it had ended up being “the most expensive [banking crisis] in history”.⁵ This subsequently forced the Government into accepting an IMF/European Union (EU) bailout in November 2010. The Korean Government also used guarantees and nationalisation.⁶ Guarantees, however, were much more limited and the Government was generally better at actually achieving its goals of merging unhealthy banks with healthy ones (Kirk, 1999, 29). Overall, nationalisation was much less significant in Korea than Ireland where the banking sector has been effectively nationalised for a number of years.

Why did an Irish Government with a preference for low state involvement in the market effectively nationalise the banking sector, whereas the Korean Government was able to limit its exposure to insolvency much more effectively and restructure the industry in ways closer to its preferences?

There have been many contributions to the political economy literature on public responses to banking crises (see Alesina and Drazen, 1991, Keefer, 2007, Rodrik, 1999, Rosas, 2006, 2009, Satyanath, 2006). Despite these advances, the current literature largely focuses on differences between democracies and non-democracies, institutional weaknesses in emerging economies, or the number of veto players within democracies. These works do not directly help us explain the contrasting Irish and Korean choices and outcomes. Both countries had similar numbers of veto players⁷ and, despite different histories with democracy, both were undeniably democratic and had relatively developed economies at the time of their crises.⁸ Rather than simply being anomalous to these theories, we argue that the contrasting Irish and Korean cases provide us with insight into important understudied aspects of banking crisis management policymaking.

Building on Satyanath (2006) we create a signaling model to explain crisis management policy choices. We start with the assumption that though all policymakers want a stable banking sector they have different preferences about how to achieve this. Preferences especially diverge in terms of *guarantees*, defined broadly, and types of government led *ownership changes*. To maximise their preferences, actors engage in a signaling game that goes on between information poor policymakers—e.g. presidents—and information rich actors, such as regulators, international financial institutions, and banks. The former relies on the latter for information needed to be able to tailor policies to achieve their desired ends. Information providers—signalers—have

⁴Brian Lenihan to the Leinster Society of Chartered Accountants lunch in Dublin, October 23rd, 2008.

⁵Patrick Honohan, March 31st, 2011

⁶Notably this involved the takeover of Seoulsbank and Korea First Bank.

⁷According to the Database of Political Institutions (Keefer and Stasavage, 2003, updated to 2010) measure of political checks, similar to the veto players concept, Korea had 4 checks for the entire period of interest and Ireland went from 4 in 2007 to 5 from 2008 to 2009.

⁸It is true that Korea’s democracy was much newer and possibly weaker than Ireland’s. However, as will be discussed below, if we regard Korea’s democracy as less ‘advanced’ than Ireland’s we are still left with the problem that observed outcomes are the opposite of those predicted. This is also true of their level of economic development.

policy preferences that can diverge from decision-makers'.⁹ Signalers can use their information as a tool to nudge policy outcomes in their favoured direction. We use this model to conclude that the key difference between how well policymakers were able to achieve their preferences was that in Korea they had to listen to non-national actors with strong preferences for low guarantees, whereas policymakers in Eurozone member Ireland did not.

We begin in section 1 by briefly describing systemic financial crisis management policies. Section 2 lays out the previous literature on banking crisis management policymaking. Section 3 describes our signaling game. Finally, in section 4 we use analytical narratives to examine how well our argument empirically explains these cases compared to the major alternative hypotheses.

2.1 Banking Crisis Management Policies

When a country has widespread bank insolvencies it is traditionally said to be in a banking crisis (Sundararajan and Baliño, 1991). As recent events reminded us, banking crises are interesting not just to people in the banking industry. Rosas notes that “because bank balance sheets are tightly integrated and bank capital is highly leveraged, the failure of a single insolvent bank may threaten to upset the entire banking system and have effects on the real economy” (2009, 6). If bank failures have potentially large and widespread negative externalities it is reasonable to assume that most actors—policymakers, bankers, the public—greatly prefer mitigating the impact of these crises with government intervention to inaction. This seems like an overly broad assumption, but it is notable that almost no government in recent times has not responded to wide-spread bank insolvencies (Rosas, 2009) whereas public responses to insolvencies in other economic sectors have been much more varied.

Though we can reasonably assume that there is an almost universal preference for mitigating banking crises, actual crisis management responses have varied considerably even within specific policy areas (see Detragiache and Ho, 2010, Laeven and Valencia, 2008*a*, Rosas, 2009). These policies can be categorised by their use during two broad phases (Honohan and Laeven, 2005). The first phase is *containment*. A shock to the banking system from economic or political developments, can trigger a liquidity crisis which threatens otherwise solvent banks (Frydl and Quintyn, 2006). Governments responses can include deposit and liability guarantees, liquidity assistance, and recapitalization. In this paper we very broadly call all of these measures *guarantees*. We focus on how these policies are guarantees from the banks' perspective. They help guarantee that bank balances sheets are in balance, i.e. assets can cover liabilities. They help prevent banks from

⁹We use ‘decision-maker’ and ‘policymaker’ interchangeably.

failing. They help contain crises. As a crisis is contained, it is typical for political actors to begin the second phase: *restructuring* insolvent banks (see Honohan and Laeven, 2005). Deciding what to do with insolvent institutions involves choosing who will *own* them. Should they be publicly owned—i.e. nationalised—merged with healthy banks, or allowed to fail?

2.2 Previous Explanations of Banking Crisis Management Policy-making

Before developing our argument for how decision-makers choose crisis management policies we discuss some of the major previous approaches in the political economy literature.

Crony Capitalism Crony capitalism is possibly the most straightforward political economy approach to understanding why countries choose high bank guarantees and little ownership changes. Bankers prefer public to private losses as public losses in banking crises are wealth transfers to them. Also they prefer to retain control of their companies rather than lose control. These preferences lead them to push for high public guarantees that might also be able to forestall insolvency, i.e. they gamble for resurrection (see Downs and Roche, 1994). Politicians with cronyistic ties to bankers are therefore more likely to bail them out at the expense of diffuse public interests (see Rosas, 2006). If the crony capitalism theory is correct we would expect to observe:

- Decision-makers with close ties to the banking sector are more likely to pursue policies that maintain the solvency of banks and their current management, even at substantial public expense.

Veto Players Another major stream in the literature focuses on veto players effects. Opinion about how the number and polarization of a country's veto players effects policy choices during banking crisis ranges considerably. On the one hand, Alesina and Drazen (1991) argue that as the number of veto players increases, we are less likely to expect them all to agree on a new policy. Therefore crisis responses in general will be slow and inadequate. Conversely, Rodrik (1999) suggests that having many veto players, if organised to manage conflicts, will result in more appropriate and quickly implemented crisis management policies.

Given this heterogeneity of views, there are two somewhat contradictory implications from the veto players approach:

- Having many veto players results in slow and inadequate crisis responses.

- More veto players, if structured to manage crises, are more likely to implement effective responses.

Competitive Elections Keefer (2007) argues that the number of veto players has no effect on crisis responses, but that competitive elections encourage better crisis responses for the general public since they weaken policymakers' ties to banking interests. Similarly, Rosas (2009) argues that actors in democratic rather than authoritarian countries are more likely to use public cost reducing crisis responses, since electoral incentives push them to favour limiting public losses.

- Countries with competitive elections, regardless of the number of veto players, are more likely to choose crisis response policies that limit public costs.

Bureaucratic Capacity Choices may be constrained or shaped by bureaucratic capacity (for a discussion of this type of argument see Satyanath, 2006, 18). Bureaucratic institutions do not have equal capacity across all countries. Higher capacity¹⁰ regulators, ministries of finance, and central banks have the expertise and ability to implement complex policies, such as orchestrating sustainable bank mergers. Lower capacity bureaucrats might be constricted in the policies they can plausibly enact. Policymakers may take this into account when choosing policy responses. Furthermore, high capacity bureaucracies may be able to obtain better quality information about the true health of the banking sector (Abonyi, 2005).

How might bureaucratic capacity help us predict guarantees or ownership changes? We would expect that if a bureaucracy had better information and could more accurately monitor banking activity that the country would accurately target guarantees at solvent, though illiquid institutions and would be less likely to issue blanket guarantees. We would also expect that the country would be better able to manage the collapse of insolvent institutions, i.e they would not need to choose blunt policies such as unguided market exit or complete nationalisation. We therefore expect to observe:

- Countries with higher capacity bureaucracies are less likely to issue blanket guarantees and are more likely to manage insolvent institutions through mergers.

International Institution Coercion Through conditions on loans that countries in financial crises desperately need, international institutions may coerce countries to adopt certain policies (Vreeland, 2003). If countries are coerced to choose certain policies we would expect to see:

- Receiving support from international institutions will result in policies closer to the preferences of these institutions.

¹⁰Higher capacity implies relatively numerous and highly qualified staff with plentiful resources.

2.3 Our Argument

Many of these explanations have much to contribute to our understanding of banking crisis management policymaking. Here we attempt to combine important aspects of them into a parsimonious and general theory that predicts choices better than any previous one.

2.3.1 Signaling Game 1: Regulatory Robustness

Our argument is a direct extension of Satyanath's (2006) bureaucratic signaling approach to banking regulation.¹¹ In his signaling game a decision-maker has a preference, denoted x , for regulatory robustness.¹² In order to choose a capital reserve requirement p that she prefers, the decision-maker needs information about the true proportion of non-performing loans (NPL). This true value is denoted z . The policymaker's payoff function is found by $-(p - z)^2$.

To gather this information she relies on her financial bureaucracy, including the minister of finance (MoF) and the central bank governor (CBG). These actors' preferences can be different from the decision-maker's. For example, imagine the decision-maker has a moderate robustness preference where the capital adequacy requirement just covers a bank's non-performing loans, i.e. $x = p - z = 0$. This would be different from bureaucrats with crony capitalists ties who might prefer less robust regulation, $x = p < z$, since strong regulation involves greatly restricting leverage that could otherwise be used for profit-making activities. Other actors may either want reserve capital to equal non-performing loans or, if they were more risk averse, prefer banks hold more capital than they strictly need, $x = p > z$.

When the signaler has preferences different from the decision-maker's they have incentives to transmit vague or uninformative signals z^s . For example, if the MoF has a preference for lower capital requirements, he might understate the scale of NPLs ($z^s < z$) so that the decision-maker, using Bayesian updating, would poorly update her prior z^{-1} to an underestimated posterior belief z^{+1} .¹³ She might then set capital adequacy requirements too low to achieve her preferred robustness level. This strategy would hold if we now consider a second signaler with high robustness preferences. This signaler has incentives to overestimate the value of NPLs ($z^s > z$). The signalers' payoff is how much they can influence the ultimate policy. When the difference between the decision-maker's and signalers' preferences is denoted b then the signalers' payoffs are $-[p - (z - b)]^2$ (Satyanath, 2006, 30-31).¹⁴

¹¹It is also broadly similar to the model created by Jordana and Rosas (2011, 7-9).

¹²Regulatory robustness is how much reserve capital banks are required to hold to cover losses from non-performing loans relative to the size of those loans.

¹³This assumes that they at least partially believe the signaler.

¹⁴The problem is further exacerbated by a general downward bias in the prior distribution of the proportion of NPLs (perhaps

Satyanath's central argument is that even a relatively small difference of opinion between financial officials and the main decision-maker can lead the chief executive to "underestimate or overestimate the level of expected defaults" (2006, 39).

Satyanath also argues that the signaling game will be a more serious problem in emerging economies where publicly available financial information is poor or nonexistent and reliance on non-independent financial bureaucrats' private information is therefore higher. However, the 2008/09 crisis indicates we shouldn't constrict signaling games to emerging economies. Though the quality of financial information may vary across countries, even in countries with very advanced financial markets, such as the United States and United Kingdom, public financial information problems are still a major issue. Signaling games may therefore go on at all levels of economic development.

2.3.2 Signaling Game 2: Banking Crisis Management

We aim to expand Satyanath's approach to include banking crisis management with an extensive form signaling game that can be applied across a range of countries.

2.3.2.1 Information Problems: Which Banks are Insolvent?

A banking crisis is traditionally defined as a situation with widespread bank insolvencies in a country's banking system. Given the enormous potential costs of such situations, political actors rarely wait until the true number of bank insolvencies is known before acting. This raises the twin problems of how to determine if a bank is about to become insolvent and why. Insolvency is partially a function of a bank's proportion of non-performing assets to performing assets. Shocks to the financial system, such as a foreign banking crises or an asset bubble bursting, may make performing loans non-performing. Shocks also create short-term liquidity problems that can threaten even the solvency of banks with low proportions of non-performing assets (see Calomiris, Klingebiel and Laeven, 2004). A crucial question then is: which banks are becoming insolvent on the asset side, i.e. they made bad loans, or which ones are becoming insolvent because of a system-wide lack of market confidence that makes it difficult to raise short-term financing for their liabilities? This is an especially difficult question to answer because both reasons for insolvency are highly interrelated. Borrowers that doubt the solvency of a bank will stop lending to it. A lack of confidence can hasten or even cause a bank's demise. We assume that many policymakers have some sort of preference about how

[0, 0.15] rather than [0, 1]). Because of this there will be an overall tendency for decision-makers' posterior beliefs to be much less than the true value in a crisis. Also, if the sender's ideal point is very far away from the receiver they anticipate that the receiver will ignore them and have no incentive to provide any informative information (Satyanath, 2006, 11).

to address the “contagion of fear” (Friedman and Schwartz, 1963) that can cause lenders to stop lending to both banks that are insolvent regardless of a systemic crisis, simply hastening its demise, and banks that are made insolvent by a severe lack of confidence in the banking system generally, but would be healthy otherwise.

Though information needed to solve these problems may vary between countries, it is reasonable to assume that decision-makers’ in all countries must still rely on their financial bureaucrats’ information to be able to choose their preferred policies. We argue that international actors, such as the IMF, may also be important sources of information under certain conditions. Decision-makers rely on these actors for information to choose what guarantees to make in order to protect against insolvency and what to do with insolvent institutions.

Imagine that there is a true proportion of banks that will become insolvent because their assets do not meet their liabilities over an ideal medium-term, i.e. they would be insolvent regardless of systemic events that might impact their short-term access to liquidity. In this model we use z to denote the proportion of assets and liabilities at these truly insolvent banks relative to the total value of assets and liabilities in the banking system, which falls in the range $[0, 1]$.¹⁵ In normal non-crisis times, given adequate bureaucratic capacity and accurate publicly available financial information this may not be too difficult to estimate. However, if there is a shock to the banking system that leads to a general contraction of liquidity and drastic asset value changes z becomes much more difficult to approximate.

2.3.2.2 What Actors Want

We assume that decision-makers have preferences related to the containment and restructuring phases of banking crises: guarantee and ownership preferences respectively. First let’s consider the preferences of our baseline moderate actor. In the containment phase imagine that there is a true proportion g of assets and liabilities at normally solvent banks.¹⁶ A decision-maker with guarantee preferences x_g that are moderate would choose guarantees p_g to equal this true proportion, $x_g = p_g - g = 0$.¹⁷

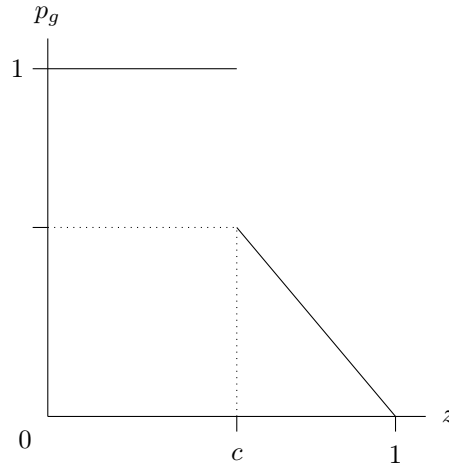
Now let’s consider a variation on moderate guarantee preferences. If a shock at time t_0 creates a small z , even moderate preference decision-makers may wish to take advantage of high guarantees to quickly reestablish market confidence. Confidence may stop short-term liquidity crisis and restore financial stability.

¹⁵Formally, if A is the total value of assets and liabilities in a country’s banking system and A_1 is the total value of assets and liabilities held by insolvent institutions (non-performing or otherwise) then $z = A_1/A$.

¹⁶These would be banks that are normally solvent, but facing short-term difficulty accessing liquidity to continue their operations. The total value of their assets and liabilities can be denoted A_2 and $g = A_2/A$. z and g are related to each other in that $z + g = 1$.

¹⁷For simplicity we are leaving aside the issue of how guarantees are targeted—indiscriminately, only at banks believed to be solvent, etc.

Figure 2.1: Guarantee Preference Function for *Moderate Proactive* Decision-maker at Time t_0



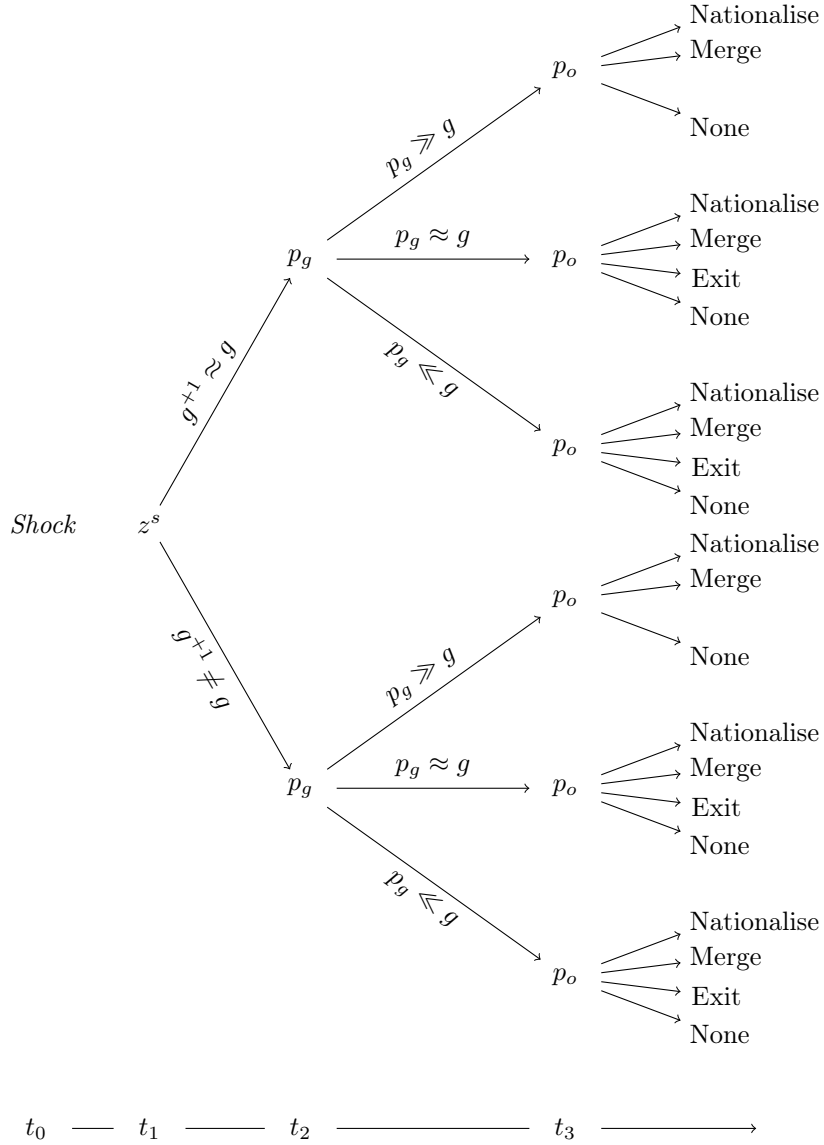
Though this may create huge contingent liabilities, the proportion that is likely to be realised is actually quite small relative to the benefit of a quick crisis resolution. There is a point c where the benefit of speedy crisis containment is less than the likely realised costs under a full guarantee scheme. At this point we would expect the decision-maker to revert to the preference $x_g = p_g - g = 0$. We call this type of decision-maker *moderate proactive* (see Figure 2.1).

Clearly not all actors have moderate or moderate proactive guarantee preferences. Some may want to provide generous guarantees that protect insolvent as well as solvent banks: $p_g > g$. Others may want to under guarantee banks ($p_g < g$), possibly causing solvent banks to take losses and even fail. Please note that this is not an exhaustive list of guarantee preference possibilities. It is a comprehensive list relevant for the Irish and Korean cases.

During the restructuring phase decision-makers have to decide what to do with insolvent institutions. They have some ideal preference ordering X_o that includes Nationalisation, Mergers, and allowing banks to Exit the market. Insolvent banks may also be artificially allowed to continue their operations through regulatory forbearance—the None of the above option.¹⁸

¹⁸These preferences have many roots. They may be a function of material closeness to the banking sector. Crony capitalists would particularly prefer guarantees to be greater than g and no ownership changes to occur. This is the same as saying that they want the government to support even banks that are insolvent for the long-term. Actors that face strong electoral incentives may have more moderate guarantee preferences. Preferences may be based in institutional norms. For example, central banks may have high guarantee preferences since they tend to privilege stability over costs (Honohan and Laeven, 2005, 10). On the ownership dimension, how decision-makers view the banking industry in terms of what they consider legitimate and possible ways of dealing with it may have historical roots. Zysman (1994, 244) argues that “interests and objectives [are] created in institutional contexts and [are] not separable from them” (see also Pierson, 2004, 39-40).

Figure 2.2: Banking Crisis Signalling Game Decision Tree



Note: Merge is non-viable if $z \approx 1$

2.3.2.3 The Extensive Form Signaling Game

We propose an extensive form signaling game to determine how actors try to realise their preferences (see Figure 2.2). At time t_0 there is some shock to the banking sector that increases z . At time t_1 the decision-maker tries to contain the crisis. First, she requests information about the new state of non-performing loans and insolvencies to update her prior g^{-1} . Signalers choose to give information about z . This signal

is denoted z^s . We assume that no actor has perfect information about z , though signalers have better information than the decision-maker. We make a further assumption that all signalers and decision-makers tend to underestimate the true value of z .

The decision-maker¹⁹ aggregates z^s to develop an updated posterior belief g^{+1} . We assume she does this in a Bayesian optimal fashion analogous to Satyanath (2006, Ch. 3). She now has a posterior that either closely approximates the true value of assets and liabilities that need to be guaranteed for otherwise solvent institutions to remain so ($g^{+1} \approx g$) or is very far away ($g^{+1} \neq g$). Regardless, the decision-maker now chooses the guarantee policy p_g in an attempt to achieve her guarantee preference x_g given this belief. At time t_3 , the beginning of the resolution phase, information about the true solvency of the banks including the impact of the guarantees becomes widely available to all players. The decision-maker chooses what ownership changes p_o to make to insolvent banks.

It is important to note the connection between signaling, guarantee choices, the true scale of the problem, and ownership change choices. If $p_g \approx g$ and z is not large then the decision-maker has the most flexibility when choosing p_o . She can choose any of Nationalise, Merge, Exit, None for insolvent institutions without threatening the solvency of otherwise healthy institutions. However, the choice of p_g can constrain viable p_o . For example, if $p_g \ll g$ then Exit is not a viable option—assuming the decision-maker did not want otherwise solvent institutions to fail—since it would worsen the systemic liquidity crisis.²⁰ Exit also becomes non-viable under full guarantees if z is very high. This would essentially require the government to assume the banking sector. It would in effect be nationalised. Note also that Merge can become non-viable based entirely on z . If z is very large, then there are not any solvent banks to merge insolvent ones with (see Figure 2.2 for a summary).

Using backwards induction, decision-makers can therefore choose guarantee levels that enable or purposefully constrain ownership policy choices to achieve their preferences. They must balance the short term gain of financial stability, with the long run risk of excessively guaranteeing. Signalers adjust the information they make available to influence this.

Up to this point we have assumed that signalers have an equal ability to influence the decision-maker's posterior, according to the Bayesian updating process laid out by Satyanath (2006). Though we assume this is true of domestic actors that are part of the policymaking process, we propose that influence of international

¹⁹For simplicity, we assume that there is effectively one decision-maker. At least during the early stages of a crisis, we feel this is a reasonable assumption.

²⁰This is close to the Lehman Brothers scenario. Though the United States Government did allow Lehman Brothers to fail, it quickly instituted high guarantees to deal with the calamity that resulted. From then on it tended to also use different ownership strategies. The Troubled Asset Relief Program was a package of guarantees to make these strategies viable.

actors' signals are further weighted according to how dependent a country is on their capital, denoted w .²¹

Before considering how the game applies to the Korean and Irish crises, it is important to make one more addition. The model assumes that the decision-maker is free to implement her preferred strategy, regardless of institutional or other political constraints. This may certainly be an unreasonable assumption in general. However, during acute crises decision-making may be delegated to a small group of actors, primarily the chief executive, to speed up the response.

The key hypothesis generated by this game is:

- *If decision-makers receive good enough signals to be able to develop posterior beliefs about the relative size of bank insolvencies that closely match reality, they will be able to choose guarantees and ownership change policies that they want. If they have strongly incorrect beliefs, then they make non-preferred guarantees, which constrain ownership choices. This is particularly a problem if guarantees are over extended.*

2.4 Analytic Narratives

We now turn to evaluating how well the model may explain banking crisis management in Korea and Ireland. We use an approach, analytic narrative, that has become an important method in rational choice for determining how well models explain social phenomenon (Bates et al., 1998, 2000*a,b*, Alexandrova, 2009). We use the five criteria developed by Bates et al. (1998) for using analytic narratives to assess the strength of a theory. These are spelled out by Alexandrova (2009):

1. Conclusions must be precise and follow deductively from the model.
2. Assumptions of the model must fit the facts. This includes actors' motives and beliefs as well as the background.
3. The model's prediction must fit the data
4. The explanation must do better than the alternatives.
5. It is desirable that the explanation be generalizable.

To meet these criteria in this section we first use our model to make predictions for our two cases using stylized facts from the cases. We then discuss these facts in detail and try to demonstrate that the policy predictions

²¹A more complex extension of this model could also be developed that weighted domestic signallers' information based on, for example, decision-makers' priors about them. Right-leaning presidents may have negative priors about left-leaning economists (and vice versa) and weight their signals accordingly.

from our model fit the facts better than important alternative explanations. Note that generalizability is difficult to demonstrate at this stage with only two cases. Also, though we have made propositions deductively based on our model, the model was developed iteratively by considering the facts of our cases (see Bates et al., 2000a, 694 who advocate this).²² We hope that by developing a model that can at least be applied to more than one case, we are avoiding the negative extremes of model fitting.

2.4.1 Predictions Deduced from the Model

Before discussing the detailed facts of the cases later in this section, the first step of our analytical narratives is to deductively predict outcomes using the model. We use stylized actors, preferences, and weights similar to those in Korea's in 1997 and Ireland's 2008 crises. Later in this section we consider how well the predictions from our model explain actual policy choices compared to alternative approaches.

In both scenarios z has become very large by time t_1 as a result of shocks. In Ireland z approaches 1. It is lower in Korea. Banks are assumed to have a high guarantee preference ($x_g = p_g \gg g$) and they most prefer that public measures be used to keep insolvent institutions open, $X_0 = \{\text{None} > \text{Merge} > \text{Nationalisation} > \text{Exit}\}$.

2.4.1.1 Korea-like Scenario

In a Korea 1997-like scenario, the decision-maker has a prior belief that the guarantees needed to actually keep solvent institutions running is much less than the true amount ($g^{-1} \ll g$) as a result of the shock. He has moderate proactive guarantee preferences and the following ownership restructuring preference ordering: Merge > Nationalise > Exit > None. The minister for finance's (MoF) ownership preference ordering is Merge > None > Nationalise > Exit and he has a high guarantee preference. The central bank governor (CBG) most prefers moderate proactive guarantees and mergers. External actors' signals, in this case from the IMF and the United States, receive a very high weighting because a currency crisis creates a need for their capital. Both have preferences for moderate to low guarantees and they prefer exit to mergers, but prefer both of these to nationalization or simply allowing insolvent banks to operate. In sum, the MoF and external actors have somewhat opposing preferences and the CBG and decision-maker are generally in the middle. What signals do we expect at time t_1 ?

The MoF and banks have incentives to under-signal z , making especially sure that it is below c . The signal should be above z^{-1} or else it would be very incredible and ignored and wouldn't prompt any change in guarantees. Therefore the MoF's and banks' signals z^{sd} should be $z^{-1} < z^{sd} < c$. This will help push

²²Conversely, see Green and Shapiro (1994, 34-35) for a critique of this general type of approach.

the decision-maker to institute a full guarantee. If full guarantees are given and z is actually very large, Exit, their least preferred option, will be non-viable. External actors, and to a lesser extent the CBG, have incentives to signal z^{se} that the proportion of NPLs is higher than c in order to push the decision-maker to choose guarantees $p_g = g$.

The decision-maker is therefore receiving conflicting signals and must decide what to infer from this uncertainty. Because of a currency crisis, the external actors' signals have a high weighting, the decision-makers is compelled to estimate that z is higher than what the MoF and banks indicate. However, he does not simply ignore the domestic signals. This results in a posterior belief that is higher than what the MoF and banks signaled, but not all the way to the external actors' ($z^{-1} < z^{sd} < c < z^{+1} < z^{se}$). Guarantees should then be set at $p_g = 1 - z^{+1} = g^{+1}$. Though the posterior is still smaller than the true value it is more accurate than if he only had domestic signals to rely on. This allows him to make his ideal ownership change choices.

2.4.1.2 Ireland-like Scenario

In an Irish scenario the decision-maker is moderate proactive and prefers Merge > Exit > Nationalise > None. The Financial Regulator (FR) prefers high guarantees and Merge to the other options. Unlike in the Korean case, multinational auditors and investment banks, primarily Merrill Lynch, are hired as information providers. They have preferences similar to generic banks. The European Central Bank (ECB) prefers the short-term stability of the system—they would like depositors and investors in other member states not to lose money. They prefer moderately high guarantees and least prefer Exit as it will likely impose the most costs on other member state depositors and investors. The IMF and other external actors are largely ignored since their capital necessity weighting is much lower than the ECB's. The ECB provides liquidity support to Irish banks. Being in the Eurozone protects Ireland from a Korean-style currency crisis.

The FR and banks signal $z^{-1} < z^{sFR} < c$. The ECB has similar preferences and does not provide contradictory information. The FR and banks' strategy works in that it results in the decision-maker having a posterior of $z^{-1} < z^{+1} < c$. The decision-maker chooses the guarantee policy $p_g \approx 1$. However, z turns out to actually be very large. Exit and Merge are non-viable alternatives at t_3 . The decision-maker's preferred viable ownership change strategy is therefore Nationalise.

2.4.2 Korea: 1997

We now turn to the more detailed facts of our two cases upon which the two scenarios are based and consider how well our model can explain them compared to major alternative approaches. Please note that for details about Korean policymakers's preferences and the information that was provided we relied heavily on Blustein (2003) and Satyanath (2006). This was largely because of the difficulty accessing primary sources. In particular, interviews would be particularly inappropriate since many of the main actors are either dead or have strong reasons to retrospectively shape their versions of events. For example, after the crisis Korean Minister of Finance Kang Kyung Shik²³ was legally charged with providing inadequate information. Though not an academic work, Blustein (2003) is based on extensive interviews made shortly after the crisis and as such is widely cited in research on the topic. Though Satyanath (2006) was concerned with regulatory capital requirements, his empirical research details Korean policymakers' preferences at the time and gives a thorough accounting of information that was provided to decision-makers. Our own research largely substantiates these works with only minor deviations which we include below. In the Irish case we have much better access to a wide range of primary documents and policymakers to interview.

Shock There were a number of key shocks to the Korean financial system in 1997 that significantly muddied information about bank's balance sheets. These included the bankruptcy of a number of the country's *chaebol*—industrial conglomerates—in early 1997. Many *chaebol* were highly indebted to the country's banks, which had “only superficially evaluated the soundness of [their] loans” (Kwack, 1998, 618). Also, in summer 1997 the Southeast Asian currency crisis began to spread to Korea. The *won* began to decline, with very large drops in late November. Foreign lenders started to call in loans they had made to Korean banks, which had previously been rolled over. This was a major problem for Korean banks since they had increasingly relied on short-term foreign currency denominated debt. These events added to the already difficult problem of assessing banks' true health given their extremely opaque accounting standards (Hahm and Mishkin, 2000) and the health of the *chaebol* that borrowed from them (Chang, Cho and Shin, 2007). Accounting practices used at the time suggest that the ratio of non-performing loans to all loans at Korean banks was around 6 in 1997 and 7.4 in 1998. The official numbers are almost certainly understatements. Though it is still difficult to get a completely accurate sense of NPLs during the period, Hahm and Mishkin (2000, 38) estimated that the NPL ratio could have been as high as 41.8 in 1997 and 50.3 in 1998.

The Korean Government largely began its crisis response with broad guarantees. In August 1997 all

²³All Korean names are written in the typical family name, given name order.

external liabilities were guaranteed and in mid-November all deposits were as well (Laeven and Valencia, 2008*b*). The central Bank of Korea provided broad liquidity injections without restructuring requirements (Hahm and Mishkin, 2000, 46). However, from December 1997 despite a worsening crisis, no further indiscriminate guarantees were extended. Instead the Government began to target recapitalisation and liquidity support at banks that agreed to immediate restructuring, including mergers and exit (Lindgren et al., 1999, 33-35). Five of 33 Korean banks were closed and nine merged by 2003. At least two banks were fully nationalised.²⁴ These measures almost halved the number of Korean banks. Only 19 of the countries previous 33 were operating by 2003. The government also closed or suspended 388 non-bank financial institutions and merged 144 (Oh, 2004).

Before December 1997 the Korean Government's response involved high guarantees extended liberally. Banks were generally allowed to continue operating as usual. However, from December policy choices shifted considerably to a more targeted restructuring approach. Why did this shift occur?

We argue that the pivotal event was a dramatic fall in the Bank of Korea's foreign reserves caused by a fall in the *won* that led foreign creditors to call in their loans. This necessitated the highly foreign trade dependent Korea to seek IMF assistance on 13 November 1997. An initial deal was reached on 3 December. A common narrative is that bank restructuring and limited guarantees were the result of IMF and especially United States²⁵ coercion. However, a close reading of events and actors' preferences suggests that the effect of IMF coercion was limited to specific policies, such as allowing increased foreign ownership and forcing banks to exit the market. In terms of the reorientation towards more precisely applied guarantees and forced bank mergers, *the IMF did not need to coerce*. It influenced policy by revealing more accurate information about the state of the economy. Korean decision-makers used the more accurate information to make guarantee and ownership choices that they preferred given the true state of the country's banks.

Preferences To make the case for our signaling argument we need to understand the key actors' preferences including those of the Korean ministers of finance, central bank governor (CBG), the presidents, the IMF, and the United States. For a summary see Table 2.1.

The Korean Ministry of Finance and Economy (MoFE) had a long post-war history of actively organising the industrial and banking sectors (Park, 1991). This often involved arranging mergers of failed corporations. Mergers were encouraged with government guarantees (for example see Kim, 2003, 59). Mergers allowed for restructuring strategies where losses were shared by the public and private sectors. By 1997 the MoFE had

²⁴Hanil bank and the Commercial Bank of Korea were also largely nationalised (Kirk, 1999, 138).

²⁵The United States was a major contributor to the package and heavily involved in loan negotiations (Blustein, 2003).

Table 2.1: Korean Crisis 1997: Key Actors' Main Preferences

Actor	Guarantee	Ownership Changes at Insolvent Inst.
MoF Kang Kyung Shik	Moderate Proactive to High	Merger > Exit (possibly)
MoF Lim Chang Yuel	High	No Change > Merger
CBG Lee Kyung Shik	Moderate Proactive	Merger (possibly)
Pres. Kim Young Sam	Moderate Proactive	Merger > No Change
Pres. Kim Dae Jung	Moderate Proactive	Exit > Merger
IMF	Moderate Proactive	Exit
United States Gov.	Moderate to Low	Exit (foreign takeover)

largely extracted itself from direct management of the banking industry as part of a push to join the OECD in 1996. However, the MoFE had a long-standing institutional preference for actively encouraging mergers of insolvent banks and moderate guarantees needed to make these mergers possible.

Korea had two finance ministers between March 1997 and February 1998. The first, Kang Kyung Shik, was finance minister (and deputy prime minister) until mid-November. Though he had been at the finance ministry since 1961, he actively expressed preferences for less government involvement in dealing with insolvent institutions and supported limited bank ownership restructuring, at least in terms of changing the management of troubled institutions (Chang, 1998, *The Economist*, 1997, Blustein, 2003, 1901). There is considerable dispute about how sincere his reformist statements were (Chang, 1998, Satyanath, 2006, 71). A decade after the crisis he continued to express a preference for more market based solutions to corporate failure (Hong, 2010), though this was after a trial where he was accused of not providing enough information to warn the Government of the impending 1997 crisis. Upon calling in the IMF, Kang left office and was replaced by Lim Chang Yuel. Lim expressed a clear preference for the traditional MoFE style of addressing insolvency. He reportedly told IMF negotiators that, “no finance minister in Korean history has ever closed a financial institution” (Blustein, 2003, 141).

Not only did finance ministers and MoFE employees in general have a history of close relationships with banks they also had strong material incentives to keep banks open and obscure information that might lead decision-makers to reduce support for them. Many bank management positions were filled by former MoFE employees (Choi, 2002, 262-263).

The Bank of Korea generally functioned as a secondary institution and was not fully independent of the MoFE (Mo, 2001, 480). The Bank nonetheless had important financial information. Over the period of interest, Lee Kyung Shik was the governor. Satyanath (2006, 71-73) portrays Lee as having an arms length relationship with Korean corporations and banks.

There were effectively two Korean presidents over the period of interest. Kim Young Sam was the

president from 1992 until February 1998. Power really began to shift slightly earlier, however, following the mid-December election of Kim Dae Jung. Kim Young Sam's support base was split between close ties with status quo corporate Korea and democratic reformists who also wanted to reform the tight government-corporate relationships that had been a hallmark of previous military regimes. Satyanath (2006, 69) argues that this split power base led Kim Young Sam to have a moderate banking sector robustness preference. As a result, he split his appointments between a lax minister of finance and more stringent central bank governor. By implication this would have meant moderate support for ownership changes—mergers—and guarantees as well. Kim Dae Jung, a former pro-democracy activist who had been imprisoned and sentenced to death by the military government, had a strong preference for limited government support and ownership changes even if it meant closures (Blustein, 2003, 196-197). Both presidents seemed to have had a preference for moderately proactive government financial support. For example, in negotiations with the United States creditor banks in January 1998 aids to both presidents opposed issuing public bonds to cover most of the debt,²⁶ but instead proposed liability guarantees (Kirk, 1999, 127).

In general, the IMF had a collective preference for moderate proactive bank guarantees and a fairly strong desire for insolvent banks to close. In Korea (Lee, Rhee and Sung, 2006, 511) and in general at the time the IMF strongly encouraged countries to impose austere fiscal policy measures when they were in crisis (Rogoff, 2003, 40-41). It would be incorrect, however, to argue that the IMF was therefore completely opposed to guarantees and bank support, especially in conjunction with restructuring. In Thailand the previous summer they had supported the creation of a deposit guarantee scheme (Blustein, 2003, 108).²⁷ The IMF was in fact supportive of the Korean deposit guarantee to help stabilise the banking sector (Lane et al., 1999, 70). In terms of ownership changes, the IMF was generally in favour of market exit for insolvent institutions. During the November 1997 negotiations, the IMF expressed a desire to close a number of merchant banks, similar to what they had urged Thailand to do earlier in the year (Blustein, 2003, 141).

Finally, the IMF program was heavily supported by the United States Government.²⁸ The United States Treasury Department in particular was often adamant that Korea needed to restructure its banking industry. It felt foreign banks should be allowed to acquire Korean banks. They also wanted to remove government involvement from the financial sector generally (Blustein, 2003, 142-143).

²⁶This was a so-called 'bail-in'.

²⁷As with any large institution it is difficult to ascribe a definite preference. For example, a few months after supporting deposit guarantees in Thailand, IMF staff members opposed them in Indonesia. In an evaluation of the Indonesian program in 1999, this position was again reversed (Blustein, 2003, 108-109).

²⁸In the initial program the United States would provide \$5 billion. Though Japan would contribute \$10 billion. However, according to Blustein's account (2003, Ch. 5) the United States was much more involved in negotiations than Japan.

Information How did these preferences affect information and ultimately policy choices? Our signaling theory predicts that because the two ministers of finance had a preference for higher guarantees and, with some variation, little ownership changes they should have been more likely to give overly optimistic information. Positive information would trigger high guarantees and hopefully forestal restructuring since President Kim Young Sam seems to have had moderate proactive guarantee preferences. Satyanath (2006, Ch. 4) argues that the finance ministers did just this. Both ministers of finance repeatedly tried to downplay the severity of non-performing loans. This is in contrast to the central bank governor who informed both the MoFE (Choi, 2002, 264) and President Kim Young Sam of the banking sector's troubled state. These signals were ignored by the MoFE or actively obscured (Satyanath, 2006, 76-78). Until late November 1997 when the currency crisis came to a head, the MoFE was able to obscure the extent of NPLs. The result was a policy of broad guarantees and liquidity support.

The IMF had consistently given information about the troubled state of the Korean financial system. For example, a periodic monitoring report²⁹ from October 1997 highlighted the NPL problem. It noted that NPLs were much larger than officially estimated (Blustein, 2003, 117-118). Though the report underestimated the true proportion of NPLs, it was more accurate than the MoFE's public estimates. At this point, the information does not appear to have affected policy choices. However, after the currency crisis was in full swing in late-November and Korea was on the verge of default, the IMF's and the United State's information gained new weight. In general they signaled to President Kim Young Sam and Kim Dae Jung the severe nature of the crisis. Most notably, President Bill Clinton, having been informed by the IMF, called President Kim Young Sam in late-November to tell him how bad the situation had become (Satyanath, 2006, 78). Not only did the IMF provide more accurate information, but through negotiations with the MoFE and Bank of Korea they actually learned about the true scale of the problem. Due to IMF investigations, a more accurate picture of the scale of debts to overseas branches of Korean banks was found and made public (Blustein, 2003, 130).³⁰ These were the sorts of debts that should have been known about when the Government decided to guarantee foreign liabilities. After the IMF was called in, Korea began to pursue a much more targeted guarantee strategy and managed to quickly merge troubled banks. Decision-makers began to achieve their preferences much more consistently when they had better information.

²⁹This was an Article IV report.

³⁰In Blustein's account, partially based on an interview with Lee Kyung Shik, the Korean government didn't understand the implications of these overseas liabilities (2003, 130-131). Given that the interview was made after Kang Kyung Shik had been put on trial for not providing enough information about the health of the economy in the lead up to the crisis, perhaps we should be skeptical of these claims.

The Alternatives How well does the Korean narrative fit the signaling argument in relation to alternative explanations?

Can we explain the mixture of guarantees and ownership changes better with crony capitalism? In particular, were the early guarantees made because President Kim Young Sam had close ties with the banking sector? The MoFE did have close cronyistic ties with the banking sector, but did President Kim Young Sam share them? As we have discussed, President Kim had more complicated allegiances to both the traditional corporate support base and pro-democracy reformers. It would be difficult to argue that he was a simple crony capitalist. Especially since, once less conflicting information was made available to him he began to enact non-cronyistic policies.

It does not appear that the number of veto players influenced guarantee and ownership policies. The raw number of veto players did not change substantially over the period (see Keefer and Stasavage, 2003). The National Assembly failed to pass a number of regulatory reforms on 18 November. But, on the same day they did raise deposit limits and created a non-performing loan fund. The same legislature³¹ allowed the December bank restructuring program and Kim Dae Jung's reform agenda.

Korea did have competitive elections,³² but it is difficult to pinpoint exactly how elections affected policy choices. Though the elections did result in presidents with less cosy relationships with banks than their military regime predecessors. It is difficult to see how this fact can explain the changing policy choices in 1997.

It may be that the real problem wasn't intentional obfuscation, but a lack of bureaucratic capacity to gather the information. Satyanath (2006, 76) argues that a lack of capacity didn't prevent financial bureaucrats from being able to see the NPL problem, citing the Bank of Korea's warnings. Moreover, the extent to which bureaucrats could not gather information may be endogenous to the signaling game. In light of the the incentives mentioned above, the MoFE had an interest in maintaining a regulatory system that obscured information. Choi (2002) chronicles how the Korean financial bureaucracy created a regulatory structure that hobbled its ability to monitor the banks. They created a commitment to signaling overly optimistic information, i.e. the information banks made public, by limiting bureaucratic capacity to find bad news.

Finally, the strongest alternative theory is that the IMF and the United States coerced Korea to accept certain policies. This certainly seems plausible on the issue of bank closures and allowing mergers with

³¹Korean presidential and legislative elections are non-concurrent.

³²Though the 1997 presidential election was the first time that the ruling party had lost the executive, competitive legislative and presidential elections were held since the early 1990s (see Marshall and Jagers, 2009).

foreign banks. Almost no key Korean actor had a preference for these policies.³³ However, if somebody has a preference for moderate guarantees when there is a high proportion of insolvent banks—as both Kim Young Sam and Kim Dae Jung did—it is hard to argue that they were coerced to accept moderate guarantees when they became aware that there was a high proportion of insolvent banks. To better understand this point consider a trivial illustration. Imagine you have a preference to wear a raincoat when it is raining. When you wake up your spouse says two things (a) it is raining and (b) you have to wear a raincoat. When you leave the house you wear a raincoat. In this situation we would likely say that the first statement had more to do with you wearing the raincoat than the second even if your spouse has coercive abilities. You would have worn the raincoat regardless of her saying you had to. Likewise the new information that Korean decision-makers received is more causally related to the switch to moderate guarantees than direct IMF coercion. Similarly, Korean decision-makers had a preference for merging insolvent institutions. When policymakers did merged banks, rather than close or have them sold to foreign ones it was not because of coercion.

The IMF's information, weighted via financial necessity, rather than coercion seems to have been the causal mechanism by which Korean decision-makers choose the policies they wanted given economic realities.

2.4.3 Ireland: 2008

Shock Multiple national and international shocks from 2007 through 2008 considerably undermined policymakers' understanding of the Irish banking system's health. It became difficult for policymakers to distinguish whether bank funding problems were caused by the international credit crunch or were the result of fundamental problems with the Irish banking system. Was there simply a liquidity problem or were there underlying solvency issues also?

Irish banks were both heavily dependent on short-term external financing on the liabilities side and loans to the domestic property sector on the asset side. From the early 2000s Irish banks became increasingly reliant on external financing. In 2002 the six major Irish banks had a €26 billion domestic funding gap. By 2008 this had risen to €129 billion (Nyberg, 2011, 20). The gap was largely filled with easily accessed short-term wholesale borrowing made possible by European Monetary Union (EMU) (Honohan, 2010).³⁴ External funding fueled rapidly expanding domestic property lending. Between 2002 and 2008 domestic property lending grew by almost €200 billion. This was an 80 percent growth in credit (Nyberg, 2011, 14). The bank most exposed to construction and property lending was Anglo Irish. Its construction and property

³³Kim Dae Jung does appear to have genuinely supported closures of insolvent banks, but the process of doing this began before he was president and immediately followed the IMF agreement.

³⁴Honohan (2010) points out that average realised wholesale interest rates were negative following EMU.

loans represented approximately 75 percent of its total loans in 2006 (Regling and Watson, 2010, 32).³⁵ The rapid increase of Irish lending also contributed to a dramatic increase in house prices. New house prices rose from four times average annual earnings in 1995 to ten times by 2006 (Kelly, 2009).

Starting in March 2007 the Irish house price index began to decline for the first time in five years. The emergence of the subprime mortgage crises in the United States in mid-2007³⁶ resulted in a tightening of the market for short-term wholesale funding in August 2007. Events in the United States, particularly the collapse of Lehman Brothers investment bank in mid-September 2008, created a global credit crunch with major ripple effects for the Irish banking system. Irish banks found it increasingly difficult to roll over the debt they used to make property-based loans. Moreover, from the summer through the autumn of 2008 corporate depositors increasingly removed their money from Irish banks.

On September 20th the Irish Government began its response to the crisis by increasing the deposit guarantee scheme limit. It was initially raised from €20,000 to €100,000.³⁷ The Government issued a statement reaffirming its support for the banking system (Irish Department of Finance, 2008b). However these moves had little effect on slowing corporate deposit withdrawals.³⁸ By the end of September, a number of key Irish banks, such as Anglo, had exhausted their liquidity. They were unable to roll over the wholesale funds they had borrowed, i.e. they had to immediately pay them back. They continued to suffer from corporate deposit withdrawals and did not have enough collateral to refinance with the ECB.

On 30th September 2008, the Government announced a guarantee of all existing deposits and senior debt at the six main Irish banks (Irish Department of Finance, 2008a).³⁹ This amounted to €365 billion or 2.5 times Gross National Product (Honohan, 2010, 19). A few months later, Anglo was officially nationalised and over the next two years virtually all other major banks were effectively nationalised when the government recapitalised them and wiped out existing shareholders.⁴⁰ The exceptionally broad guarantee forced the government into nationalizing the banking sector. Merging insolvent banks to each other is not a solution to insolvency and allowing banks to fail while being fully guaranteed would instantly create huge public liabilities. In hindsight we can see that “although international pressures contributed to the timing, intensity and depth of the Irish banking crisis, the essential characteristics of the problem were domestic and classic”

³⁵This shows the concentration risks that was a feature of the Irish banking system, data excludes residential mortgages thus broadly represents banks exposure to commercial property (see Regling and Watson: 2010, 32).

³⁶12.84 percent of US sub-prime mortgages were delinquent for 30 days or more at the end of April 2007. This shot up rapidly over the following months reaching a peak of 45.78 percent at the end of February 2010 (Bloomberg, 2011).

³⁷The previous guarantee only covered 90 percent of an account under €20,000. The later guarantee covered 100 percent of the first €100,000.

³⁸See data from the Central Bank of Ireland (2011).

³⁹The guarantee covered Allied Irish Banks, Bank of Ireland, Irish Life and Permanent, Educational Building Society, Anglo, and Irish Nationwide Building Society.

⁴⁰Only Bank of Ireland was not nationalised due to a last minute foreign investment in July 2011.

(Honohan, 2010, 22). However, in 2008 the real nature of the problem was less clear to policymakers.

Preferences The key actors in the information signaling and decision-making process to implement full guarantees were the Irish prime minister (PM), the MoF, the civil service staff at the Department of Finance, the Financial Regulator,⁴¹ the ECB, and the banks. Furthermore, other private actors, namely the investment bank Merrill Lynch, were hired by the Government to provide information directly before the full guarantee decision was made. The actors' main preferences are summarised in Table 2.2.

The Irish prime minister from May 2008 was Brian Cowen. He became prime minister after serving as MoF from 2004 until 2008. A few months before Brian Cowen became PM the Department of Finance wrote a policy presentation stating that “open-ended/legally binding State guarantees which would expose the Exchequer to the risk of very significant costs are not regarded as part of the toolkit for successful crisis management and resolution” (House of the Oireachtas, 2008*a*, emphasis in the original). This position was qualified in the full scoping paper that the presentation was based on. It defined what were likely to be situations with a high “risk of very significant costs”. It noted that solvent, but illiquid institutions should be treated differently from illiquid and insolvent institutions. The former would likely be given guarantees early to avoid failure and avoid contagion (House of the Oireachtas, 2008*c*).⁴² Guarantees extended to these banks would be cheap in that they are unlikely to be paid out. Insolvent institutions, assuming they were not systemically important, were seen as ineligible for guarantees. Irish law in fact prohibited the CB from even giving liquidity assistance to an insolvent institution. Guarantees to insolvent institutions are very likely to become realised liabilities. Overall, this suggests that the DoF and future PM had a moderate proactive guarantee preference. In this document, “market based” restructuring was preferred for insolvent institutions, i.e. mergers and exit.

We assume that the MoF, Brian Lenihan, had similar preferences to the PM's. They were close political allies in the same governing party and Brian Lenihan succeeded Cowen as Minister for Finance in May 2008. Moreover, the Department for Finance was not an important information provider, since bank supervision was the responsibility of the independent Financial Regulator.

The Irish development model was heavily based on expanding financial services. The Financial Regulator played a key part in this model. The FR had a statutory role to promote the financial services industry. However, it also was responsible for supervision. These mandates created a time-inconstancy problem. “the

⁴¹From 2003 the FR was a quasi-independent part of the Central Bank of Ireland. It was solely in charge of micro-prudential supervision. Therefore we do not consider the CB to be an autonomously important information provider.

⁴²The document cites the Northern Rock experience, where a bank run was precipitated by the Bank of England giving the bank liquidity assistance. This quickly undermined confidence in the bank. The run ended when the UK Government guaranteed 100 percent of its deposits.

Table 2.2: Ireland Crisis 2008: Key Actors' Main Preferences

Actor	Guarantee	Ownership Changes at Insolvent Inst.
PM Brian Cowen & MoF Brian Lenihan	Moderate Proactive	Merger > Exit > Nationalise
DoF Civil Service Head David Doyle	Moderate Proactive	Merge > Exit > Nationalise
FR Pat Neary	High	Merger
Merrill Lynch	High	Merger (possibly)
ECB	High	Merger (possibly)

FR was in a difficult position as the possible adverse effects on discouraging inward investment . . . were more immediate and real than what were perceived as more distant concerns about financial stability” (Honohan, 2010, 109). So, the FR tended to focus on financial industry promotion over supervision. This led it to be “excessively deferential”, “diffident”, and “accommodating” to credit institutions (Honohan, 2010, 16, 44). The FR was aware that exceptions to banks’ lending policies were “very frequent”, that there were “serious deficiencies” in loan appraisal, and that there were “persistent breaches” of regulations (Honohan, 2010, 68, 58, 56). Even when these failings were reported to senior officials, the reports were “set aside” (Honohan, 2010, 73, footnote 43). Banks broke prudential credit limits with “tacit approval” of the FR (Nyberg, 2011, 64). In fact “no administrative sanction was taken by the FR against a bank until after the guarantee” (Nyberg, 2011, 31, 62).

We therefore argue that the FR shared the banks’ preferences. They had a preference for high guarantees, so that the banking system could continue to remain a key driver of growth in the Irish economy. We assume that the FR’s top ownership change preference was for mergers (see Honohan, 2010, 117).

Merrill Lynch was employed as advisor to the Government and presented a range of crisis management options. They were sympathetic to Irish banking interests, particularly the most troubled, Anglo. For example, they had been Anglo’s lead underwriter (Lewis, 2011), and had previously withdrawn a negative report on Anglo in March 2008 after protestations from the Anglo CEO (Carswell, 2011, 141).

The ECB had a clear preference for financial stability in the eurozone. In the wake of Lehman Brothers’ collapse they insisted to the Irish government that no bank should be allowed to fail.⁴³ In a 27 September telephone message ECB Governor Jean Claude Trichet reportedly told PM Brian Lenihan “you must save your banks at all costs” (RTÉ, 2010). We therefore assume that the ECB had a high guarantee preference.

Information The information policymakers received indicated that the crisis was primarily a short-term liquidity crisis caused by the broader global crisis. The Government’s statement announcing the full guarantees indicated only that they were in response to “international market turmoil” (Irish Department of

⁴³From author’s interviews 1b and 1c.

Finance, 2008*a*). The PM's speaking points on the topic also only cite international factors as the reason for the guarantees. Though the PM recognized that a high proportion of Irish bank's assets consisted of mortgages and that property values had declined recently, he concluded that "the asset quality in our financial institutions is good" (House of the Oireachtas, 2008*d*, 2). Given the PM's moderate proactive preferences, it is clear that if he believed that the the banking system was fundamentally sound and merely facing a short-term liquidity crisis that he should make full guarantees to quickly end the crisis. Post-crisis analysis of the loan books showed that a number of banks were "well on the road towards insolvency" prior to the failure of Lehman Brothers in September 2008 and "the weaknesses of Irish banks were not caused by the interruption in the flow of cheap money from abroad" (Honohan, 2010, 6-7). Why was the PM's posterior understanding of the situation so wrong?

Fortunately for researchers the Irish Government has made many documents, including internal correspondence, regarding the guarantee decision publicly available (see House of the Oireachtas, 2011). From these documents, at least for the PM and MoF there does genuinely seem to have been a belief that the Irish banks were fundamentally sound and only faced externally originating liquidity problems. This belief is clearly based on the information they received from the FR, the banks, and other private actors such as Merrill Lynch.

These actors assured the Government that Irish banks only faced an internationally based liquidity crisis. The FR took a very 'light touch' approach to supervision and largely deferred to the banks' own assessments of the situation (Honohan, 2010). These banks had a strong preference for high guarantees. In a meeting prior to the introduction of the guarantee, Allied Irish Banks and Bank of Ireland CEOs proposed a full guarantee of liabilities. Anglo made a presentation to the DoF on 18 September forecasting profits of €1.4 billion in 2008 and €1.1 billion in 2009 with NPLs of €100 million and €300 million respectively (House of the Oireachtas, 2008*f*). The government's lack of independent information was part of the reason outside actors, such as Merrill Lynch were hired. However, Merrill Lynch largely repeated the same information. Because of this inaccurate information, policymakers completely underestimated the likely costs of the guarantees.

On 25 September there was a meeting with all of the major policymakers and information providers. The DoF civil service head David Doyle warned "the potential loss exposures within Anglo and [Irish National Building Society]" could be in the region of €2 billion and €8.5 billion respectively (House of the Oireachtas, 2008*g*).⁴⁴ However, following a presentation by the auditor Price Waterhouse Coopers on Anglo's situation, the FR Patrick Neary concluded that "there is no evidence to suggest that Anglo is insolvent... it is simply

⁴⁴Though large, these are considerable underestimate of the problem, especially when we also consider the optimistic beliefs about the banks' assets.

unable to continue on the current basis from a liquidity point of view” (House of the Oireachtas, 2008*g*) Though Merrill Lynch recommended against a complete blanket guarantee in a 26 September meeting to policymakers (House of the Oireachtas, 2008*h*), they nonetheless stated that a guarantee of the six primary regulated Irish Banks⁴⁵ was the “best/most decisive/most impactful [option] from a market perspective” for dealing with the crisis (House of the Oireachtas, 2008*e*). They greatly emphasised the international illiquidity aspects of the crisis. In their summary slides Merrill Lynch only included graphs of US, UK, and other international facets of the crisis. The longer report presented by Merrill Lynch on 29 September—the day before the full guarantees were made—mentioned falling Irish property prices, but immediately followed this with the comment that:

... all of the Irish banks are profitable and well capitalised. However, liquidity for some could run out in days rather than weeks. (House of the Oireachtas, 2008*b*, 2)

A post-crisis Irish commission investigating the banking crisis in Ireland states that discussions surrounding the long-term risks of the guarantee were discarded and “instead, encouraged by the CB and the FR, who supported the assessments of the major banks, the attention of the Ministers became concentrated on how to avoid the short term risk of insufficient funding in the morning” (Nyberg, 2011, 79).

The Alternatives How well does the Irish narrative fit the signaling argument relative to alternative explanations?

Were Irish decision-makers simply crony capitalists? It does appear that the FR in particular was very sympathetic to the banks’ position, but the FR did not make the guarantee decision. The documents we have found do not indicate that the PM had a high guarantee preference or that he wanted insolvent institutions to continue operating. Our analytical narrative instead provides evidence that the mechanism through which actors with high guarantee preferences were able to achieve them was the provision of inaccurate information.

A key feature in the Irish financial system was a lack of bureaucratic capacity. The DoF did not see itself as being involved in issues of financial stability. The CB relied on the FR for micro-prudential supervision. The FR appears to have had very little capacity to actually gather its own information, relying instead on the banks’ assessments. It generally trusted the banks’ own risk management procedures and had little information on bank exposures. As Nyberg commented “this had profound implications for the decision actually taken” (2011, 90). Bureaucratic incapacity, as in the Korean case, was likely endogenous to the signaling game. The FR had very similar preferences to the banks and therefore took a light touch to

⁴⁵These banks received full guarantees on 30 September.

supervision in the belief that this would encourage financial sector growth.

It does not appear that the number of veto players influenced guarantee and ownership policies. The governing parliamentary coalition supported the PM's decisions. There seems to have been a general consensus that, as a senior opposition politician commented: "when the government comes to you with emergency legislation, you have a duty to support them".⁴⁶ In a sense this situation is similar to Rodrik's (1999) view that if veto players are arranged to manage conflict then responses will be quick. Though, it is probably better to describe it as a situation where veto players gave up their power in order to hasten decision-making.

Ireland had competitive elections, perhaps more so than Korea, but the outcomes were much more costly to the public. This is the opposite of Keefer's (2007) prediction.

We did not find evidence that the IMF or another external actor with low guarantee preferences was a relevant information provider or directly involved in the decision-making process. Ireland was not dependent on the IMF's capital at the time of the guarantee decision. Being in the Eurozone, Ireland's banking crisis was not accompanied by a currency crisis. In fact the ECB was a major source of Irish bank liquidity before the guarantees were implemented. The ECB had almost doubled its support for the Irish banking system a year earlier to €6 billion and Irish banks had increased their reliance on ECB refinancing operations to an average of €20 billion per month by September 2008 (Honohan, 2010, 117). Regardless, the ECB had a preference for high guarantees. Though the ECB got the policy that it wanted, this was not due to coercion. They did not have an incentive to intervene in a domestic information providing process that was resulting in their desired policy choice.

Discussion

Though our small sample size and difficulty finding full and detailed evidence in the Korean case greatly constrains our results' generalisability, the signaling game may have important implications for how policymakers should decide what public assistance they make available to banks during crises. Having as close to full information as possible about the proportion of insolvent banks in a country is crucial for policymakers to make decisions during a crisis that they prefer. This is an especially pressing issue as European countries begin restructuring their banking sectors in response to the ongoing sovereign debt crisis. Our two cases provide some initial indications of some ways that accurate information can be provided or obscured. This work should be viewed as an initial theory building exercise providing possible insights into crisis policymaking, but requiring further research to substantiate fully.

⁴⁶From interview 1b.

Giving operational independence to financial regulators, even in developed countries, may not ensure that they provide full enough information to policymakers for them to make the policy choices that they most prefer.⁴⁷ Especially in the Irish case, independence seems to have had little positive effect on information. The model and evidence presented here suggests that bureaucrats' preferences relative to each other and policymakers is crucial. Independence may help shield regulators from the most blatant crony capitalistic pressure that banks can exert on politicians. However, financial bureaucrats can be corrupted themselves or share bank preferences for a number of other ideological, cultural, institutional or educational reasons. For example, the Irish regulators' institutional mandate and prevailing regulatory ideas at the time emphasised that the financial system was largely self-stabilizing and actually grew more quickly if regulators took a "light touch" approach. These factors may have encouraged regulators to share the banks' preferences. Shared preferences, according to our signaling model, imply similar information provision. One avenue of future research is to use cross-country cross-time data to assess how much independence actually influences the accuracy of agents' information provision. Hopefully this will increase the generalisability of our results.

In fact, the signaling game and country case evidence suggests that bureaucrats with similar preferences to banks may actually have incentives to engage in behaviour or create institutional structures that inhibit the collection of accurate information. For example, looking beyond our two cases the United Kingdom's Financial Services Authority (FSA) Board Report on the failure of the Royal Bank of Scotland during the 2008/09 crisis cited a widespread light touch "philosophy" as being part of the reason why the FSA largely relied on the Bank's own largely positive information and assessment of its position in the years proceeding its failure (Financial Services Authority, 2011, 27). Bureaucratic capacity needed to gather information could be endogenous to the signaling game. All else equal, according to the signaling game if bureaucrats' preferences are aligned with banks', for whatever reason, then they have little interest in being able to gather information that banks are not already providing. In the absence of a capacity to investigate the true state of bank balance sheets, the banks' own information is all that bureaucrats can report. Not being *able* to know what is going on creates plausible deniability if bureaucrats are called to account for not providing accurate information. Our future research will examine this issue in greater detail.

⁴⁷This of course does not indicate whether or not independence will help moderate time-inconsistency problems (see Kydland and Prescott, 1977).

Chapter 3

Competing Risks Analysis and Deposit Insurance Governance Convergence

Abstract:¹ Why do policies often seem to converge across countries at the same time? This question has been studied extensively in the diffusion literature. However, past research has not examined complex choice environments, especially where there are many alternatives. My paper aims to fill this gap in the literature. I show how Fine and Gray Competing Risks Event History Analysis can be used to tease apart the causes of policy convergence. I apply the method to an examination of the reasons why, from the mid-1990s to 2007, many countries created independent deposit insurers. I find that an interaction between international recommendations and regional peers' choices, particularly in the European Union, had a positive effect on creating independent deposit insurance. However, convergence appears to slow under the particular conditions of a banking crisis, regardless of how well independence was promoted. Possibly due to electoral incentives democracies seem to have been more likely to create independent insurers. Ultimately, I demonstrate how competing risks analysis can help enable future research on policy choices, complementing methods previously applied in political economy.

Why do policies often seem to converge across countries at the same time? Do the circumstances of individ-

¹Thank you to the LSE PSPE seminar, Kristina Gandrud, Mark Hallerberg, Edward Kane, Jouni Kuha, Simon Hix, Charles Goodhardt, Cheryl Schonhardt-Bailey, and Kevin Young for your helpful comments. An earlier version of this paper was presented at the 2011 KPSA World Congress.

ual countries just happen to incline policymakers to make the same choices? Or are countries concurrently influenced by common external experiences, such as trade relations, the involvement of international organisations, and so on? These questions have been addressed empirically many times before on a range of policies such as pensions (Brooks, 2005), stock exchanges (Weber, Davis and Lounsbury, 2009), bilateral trade agreements (Elkins, Guzman and Simmons, 2006), and regulatory independence (Gilardi, 2005). All of these studies have looked at ‘either/or’ policy choices made in isolation. But how can we determine the reasons for policy convergence when (a) there are multiple policy alternatives to choose from and (b) choices on different, but necessarily related issues are made simultaneously? The case of deposit insurance (DI) illustrates the difficulty of understanding policy convergence: deposit insurers can be run by at least three types of actors—the ministry of finance (MoF), the central bank (CB), or an independent agency.²

Considering that governance choices were a factor in many countries’ initial decisions to adopt deposit insurance, how can we determine why countries nonetheless converged on independent governance beginning in the mid-1990s? This is an especially thorny issue since governance choices were almost always part of decisions to create deposit insurance for the first time. Such problems have not been addressed empirically in the political economy literature, especially diffusion research, though they plague any attempt to examine the causes of variations between new policies and institutions. In this paper I aim to push the methodological boundaries of current policy convergence research by examining DI governance choices.

The current boundaries are defined by the policy diffusion literature’s event history analysis (EHA) “toolkit” (see Brooks, 2005, Elkins, Guzman and Simmons, 2006, Gilardi, 2005, Lee and Strang, 2006, Shipan and Volden, 2008, Strang and Tuma, 1993, Weber, Davis and Lounsbury, 2009). The toolkit is focused on single transitions, i.e. why a choice is made or not, and is particularly strong for examining effects in cross-sectional time-series data (Box-Steffensmeier and Jones, 2004). Though successfully applied to many policy areas, some of which I cited above, it is inadequate when examining decisions that involve more than one mutually exclusive alternative, such as deposit insurance governance. Governance choices were also attached to decisions to create insurance in the first place. Given EHA’s limitations, how can we identify the reasons for choosing a specific governance style from those influencing decisions to create deposit insurance in general?³ Some initial work has tried to tackle situations with multiple choices made in isolation (see Brooks, 2007,

²I treat central bank control as distinct from the other two. It shares characteristics with both independent and MoF control. Generically, it can be independent from political decision-makers, but also tends to be a well established institution with significant financial resources like the ministry of finance. I do not examine central bank controlled deposit insurance in detail. I only treat it as a competing risk (see below). Results from estimation models with central bank governance as the choice of interest are available from the me upon request.

³Other authors, particularly Demirgüç-Kunt, Kane and Laeven (2008), have looked at why countries create explicit deposit insurance, with any type of governance using Single Transition EHA. In this paper I corroborate many of their findings. They also examined the reasons that DI was administered “officially” or “privately”. Some of their results, crisis for example, don’t directly match my findings. However, their coding of official administration differs significantly from mine.

Jones and Branton, 2005). In this paper I aim to expand the application of the EHA toolkit by showing how Fine and Gray (1999) Competing Risks Event History Analysis (FG-CREHA) can be used to examine complex choice environments. It is already widely used in epidemiology (see Pintilie, 2007, Bakoyannis and Touloumi, 2011) and is relatively easy to implement.⁴

In section 1 I show how from the mid-1990s countries converged on independent DI. I use a data set of 174 countries and territories from the 1930s to 2007.⁵ In section 2 I lay out competing hypotheses for why countries adopted certain actors to run their first explicit insurers. The first set of hypotheses focuses on domestic factors and assumes policymakers had fairly solid information about what type of DI governance would achieve their goals. The second set assumes that decision-makers rely on information provided by international actors in the form of “best practice” recommendations. Section 3 discusses how FG-CREHA is preferable for examining these hypotheses. Finally, in section 4 I discuss the results. I find an interaction between international recommendations and regional peers’ choices that influences a country’s chances of creating an independent insurer, particularly in the European Union. However, convergence appears to slow under the particular conditions of a banking crisis, regardless of how well independence was promoted. Possibly due to electoral incentives democracies seem to have been more likely to create independent insurers. Ultimately, I demonstrate how competing risks analysis can help enable future research on policy choices, complementing methods previously applied in political economy.

3.1 Identifying a Potential Diffusion Process

For much of the 20th century deposit insurance as an explicit program was adopted intermittently. The adoption rate, however, has increased over the past 30 years. In this section I establish the fact that independent deposit insurance, separate from explicit DI in general, went from being an intermittently adopted governance type to being the dominant international trend. The finding indicates that diffusion processes may have played a significant role in causing individual countries to choose the same governance structure around the same time (see Simmons and Elkins, 2004). As such, the finding motivates me to focus on a diffusion approach for understanding DI governance choices.

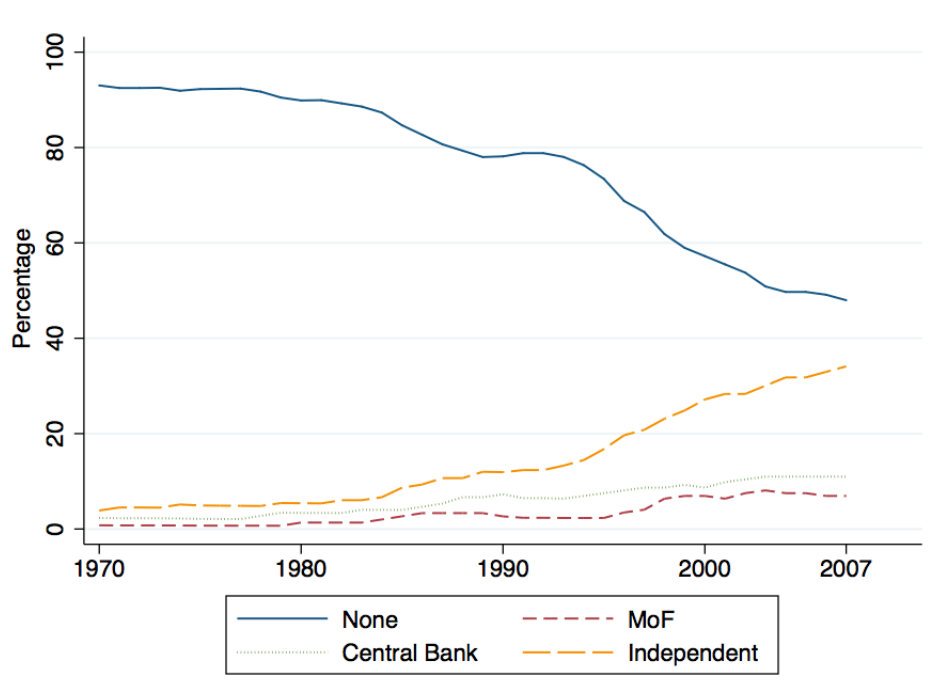
The United States began one of the first national systems of explicit DI in the early 1930s (Grossman, 1992, 801). The system was operationally independent,⁶ and from the 1930s it has worked fairly well.

⁴It can be implemented in Stata 11 or higher with the `stcrreg` command and R’s `timereg` package.

⁵Due to variable data availability I narrowed the sample to 70 countries observed between 1984 and the end of 2007 in the final analyses.

⁶Before the 1980s two organisations—the Federal Deposit Insurance Corporation (FDIC) and Federal Savings and Loan Insurance Corporation (FSLIC)—insured deposits. The latter was dismantled in 1989. The organisations were governed by

Figure 3.1: Prevalence of Explicit Deposit Insurance Governance Types in 174 Countries (1970-2007)



For a geographical visualisation of these trends over time see: http://christophergandrud.blogspot.com/2011_04_01_archive.html.
 The full and constricted (see below) samples of countries and their respective DI governance-type from 1970 used in this paper are available at: http://dl.dropbox.com/u/12581470/DI_Map/Deposit_Insur_2011%20copy.dta.

Though banks have failed, no insured deposits have been lost and there has never been a repeat of the mass deposit bank runs of the 1930s (Grossman, 1992, 802). Despite this success, by the end of 1979 only 17 countries had DI (Demirgüç-Kunt, Karacaovali and Laeven, 2005). There was considerable variety in governance among this group. Two systems were operationally independent (those of the United States and Norway). A number of the countries, such as Lebanon in 1967 and the Netherlands in 1978, created DI run or controlled by the central bank. The Dominican Republic created ministry of finance-controlled DI in the early 1980s. From approximately 1980 until the mid-1990s the prevalence of DI increased, but with each governance style's relative prevalence remaining proportionally constant. However, from the mid-1990s the proportion of countries with independent DI began to increase substantially, while the other types' relative prevalence remained constant (see Figure 3.1).⁷

It is important at this point to make a quick note about data. Between 1980 and the 2008/09 financial independent boards comprised of members from both major political parties who were appointed by the President with approval of the Senate

⁷Data is based on a sample of program descriptions in 166 countries by Demirgüç-Kunt, Karacaovali and Laeven (2005). The author coded the programs, expanded the sample to 174 countries, and extended it through 2007 using relevant national organisations' websites.

crisis, once a country established an explicit deposit insurer it tended not to alter the governance structure.⁸ Jurisdictions transitioned from one form of explicit governance to another only five times (about 6 percent of all transitions).⁹ So, I confine my theoretical arguments and empirical investigation to governance choices for jurisdictions' first explicit DI programs in order to achieve empirically meaningful results. My focus is on variation and convergence in *new* institutions, and does not include reforms to existing institutions.

3.2 Policy Diffusion or Not

In this section I present a number of possible explanations for convergence on independent DI, including non-diffusion domestic economic-political causes, as well as diffusion-based theories that largely assume policymakers gather information about the effects of governance choices from non-domestic actors and make decisions based on this information. In the following sections I test the theories' empirical validity against each other using FG-CREHA.

3.2.1 Domestic Causes

The first two approaches focus on domestic political economy causes of choosing one type of governance over the others. They implicitly assume that any multi-country convergence trends are largely coincidental.

3.2.1.1 Moral Hazard, Democracy, and Delegation

Independence may help deposit insurance systems maintain banking system stability while avoiding a number of problems—crises, high resolution costs—that can be caused by guaranteeing deposits. Policymakers in democracies may be more likely to delegate DI, because they have incentives to prevent crises and keep resolution costs low.

A major cause of banking crises is what Friedman and Schwartz (1963) called the “contagion of fear”. Individual bank failures can cause depositors at other banks to withdraw their money out of fear that their bank will also collapse soon. This leads to bank runs, which tend to spread extremely fast and have huge costs for a county's economy. Kaufman argues that bank failure contagion—defined as spillover “effects of shocks from one or more firms to others”—are faster, spread more broadly, and tend to result in larger losses in the banking sector as well as the macro-economy than contagion in other industries (1994, 124). Deposit

⁸With a few exceptions, some detailed below, this remains true to the present.

⁹For example, Argentina disbanded its central bank controlled system in 1991 in a major banking system overhaul as part of a transition to democracy. In 1995 it introduced an independently administered system (Demirgüç-Kunt, Karacaovali and Laeven, 2005, 57).

insurance can prevent this behaviour by separating the probability of deposit loss from bank solvency. Depositors don't need to run on their bank if they think it might fail, because their money is safe regardless. However, this separation creates moral hazard, (Diamond and Dybvig, 1983, Grossman, 1992) as depositors no longer have an incentive to make deposit decisions based on the likelihood of solvency.¹⁰ Banks may therefore increase the riskiness of their lending since they will not lose deposits when they make risky, high yield loans. Stability is actually undermined.

There are many ways to tailor an explicit DI program to minimise moral hazard while also gaining the positive public benefits of deposit insurance, including limiting coverage and closely regulating lending risks¹¹ (see Grossman, 1992, Demirgüç-Kunt and Detragiache, 2002). Governance type may play an important role in ensuring the effectiveness of these measures by changing how susceptible the insurer is to pressure from deposit banks.

Banks have an interest in DI with few limits, since this allows them to capture risk premiums without worrying about losing the deposits needed to make risky loans. They also have an interest in deposit insurance being directly linked to the public budget, e.g. ministry of finance control, rather than limited to a fund that they contribute towards. If a bank does fail it will be the public that pays rather than the banking sector. Put another way, moral hazard can be decreased if deposit guarantee payouts are linked directly to banks and are separated from the general public budget or even the central bank's funds. This creates a separation between bank failure and deposit loss, but not bank failure and banking sector loss due to risky lending. For deposit insurance to work in the public good, preventing bank runs and moral hazard, it must be able to credibly maintain long-term limits on risky lending despite private bank pressure to do otherwise.

A wide body of literature argues that delegated institutions are better able to make these credible commitments (see Kydland and Prescott, 1977, Thatcher, 2002). A number of International Monetary Fund (IMF) pieces, among others, argue that deposit insurers should be independent of politicians and the banking industry to avoid conflicts of interest (Garcia, 1996, 1997, 1999, 2000). Political actors and others with ties to the banking industry could be persuaded by the banking sector in a cronyistic fashion (see Rosas, 2006, Satyanath, 2006) to loosen measures that decrease moral hazard. Independent agencies may be less vulnerable to such pressure.¹²

Certain factors may incline a government to delegate and separate their DI in order to credibly minimise

¹⁰Though there is some evidence that depositors actually do discipline banks even in the presence of deposit insurance (Martinez Peria and Schmukler, 2001).

¹¹Many deposit insurers, such as the FDIC, also have regulatory powers.

¹²I generally do not make a distinction between independent public and private deposit insurance schemes, which may be a relevant distinction for this theory.

public costs at the expense of private gain. Rosas (2009) argues that democracies are more likely to institute measures that minimise the public costs of banking crises. Democratic politicians cannot rely on just the support of one group, such as the banking sector, but have to make policy in the interests of a wider proportion of the population to get re-elected. This leads to the hypothesis:

H_{Dem} Democracies are more likely than autocracies to create independent deposit insurers.

How can this theory explain the increase of independent deposit insurers from the mid-1990s? It could be that the number of democracies simply increased over this period following events such as the collapse of the Soviet Union.

3.2.1.2 The MoF and Credibility

There are reasons other than autocracy or crony capitalism why a government may retain direct control over an explicit deposit insurance program, regardless of external factors. Deposit guarantees are different from other economic policy areas where authority has been delegated, such as regulation or monetary policy. Insuring deposits in a time of uncertainty and fear, such as a rapidly growing banking crisis, involves more than simply demonstrating credible limits on moral hazard. In a crisis, guarantee payouts must be credible to prevent bank runs (Diamond and Dybvig, 1983, Laeven and Valencia, 2008*b*). Depositors need to believe that they will actually get their money back in a timely manner if a bank fails.¹³ Delegated insurers created before a banking crisis may have time to establish reserve funds that are large enough to reassure depositors and establish procedures for payouts. However, if such a fund has not been created by the start of a crisis, only national fiscal resources appear to be adequate and the MoF is likely to be able to make payouts more quickly than a newly established independent insurer. Credibly signaling the ability to use fiscal resources and make quick payouts would likely require control by the ministry of finance.

There are numerous examples of ministries of finance being turned to in banking crises to reassure depositors. During its 1997 crisis, the Indonesian Ministry of Finance established a deposit guarantee financed and controlled directly by the government. This preceded the establishment of an independent insurer in 2005. From 2006, Hong Kong had an independent deposit insurer, but as the 2008 financial crisis emerged the Financial Secretary and the Hong Kong Monetary Authority—the MoF and the central bank—introduced guarantees backed by the Exchange Fund (government reserves) for the full value of deposits, rather than just a portion of them. Though this was to be administered by the deposit insurer, the decision

¹³Depositors likely want to avoid the opportunity costs associated with waiting for deposit insurance payouts. Therefore if they have to wait a long time for payouts, they may withdraw their deposits even if the guarantee is credible.

and the funds to credibly commit to the new level came from outside.¹⁴ Despite having an independent insurer, the government appears to have believed that general fiscal resources were necessary to credibly reassure depositors during a potentially large banking crisis. In 2008, Sweden went a step further, asserting MoF control over its previously independent deposit insurer in the belief that credible deposit insurance with timely payouts during a crisis requires direct control by fiscal actors.¹⁵ This leads to the hypothesis that:

H_{Fiscal1} Countries in banking crises are more likely to establish MoF controlled deposit insurance, if they haven't already created a scheme by the beginning of the crisis.

A second hypothesis can also be used to test the theory more generally. The problem of establishing credibility in a new DI scheme is rooted in the potential cost of payouts if banks fail. This problem should be acute and present even in non-crisis times in countries whose banking sectors are very large relative to their overall economies. Thus, the second hypothesis:

H_{Fiscal2} Countries whose banking sectors are very large relative to the overall economy are more likely to govern new deposit insurance programs through the ministry of finance.

The two preceding hypotheses clearly cannot explain the independence trend, but may have instead mediated it.

3.2.2 Policy Diffusion

The hypotheses thus far have assumed that actors know which governance style is optimal. The following hypotheses assume that information about optimal governance policies is not fully known to all actors at all times. Instead, information and the incentives to incorporate it into policy are diffused through interactions between countries and with international actors.¹⁶ These processes are plausible for deposit insurance governance. Given that there are many deposit insurance design variations that may affect financial system stability and public costs, it is difficult to actually identify what role governance plays. How can actors identify which governance style is actually optimal (Powell and DiMaggio, 1991, March and Simon, 1993)? To date there is a very ambiguous empirical relationship between DI governance type as described here and banking

¹⁴This information is from an interview I conducted with Holly Tang of the Hong Kong Monetary Authority in March 2010.

¹⁵The reason given for this move was that "the [former deposit insurer], like other small authorities, was deemed too vulnerable in the event compensation had to be paid, and it was determined that its operations should therefore be managed by a larger authority" (Insättningsgarantin, 2010).

¹⁶A number of studies (for example Gilardi and Füglistler, 2008, Volden, 2006) have looked at how actors within countries can learn from sub-national jurisdictions. However, with the exception of the United States, which is not included in the following analysis, and a hand full of federal countries these processes seem implausible for deposit insurance in this paper's observation period given that it was generally a brand new policy.

crises. No systematic studies have been done on the issue to my knowledge¹⁷ and a summary examination of governance type and banking crises using data from this paper in 70 countries finds no correlation between the two. Though this is certainly not definitive, it is clear that countries in the 1990s and 2000s probably did not have complete information to suggest a particular DI governance choice was generally optimal.

Despite an accumulation of empirical evidence that DI delegation minimises moral hazard and prevents crises, in the mid-1990s and early 2000s prominent international organisations began to strongly recommend independence as best practice. Beginning in the mid-1990s IMF staff economists, particularly led by senior staff economist Gillian Garcia, began to recommend that insurers be operationally independent from banks, political actors, and the central bank as a way of preventing the “pitfalls” of guaranteeing deposits. These included agency problems and moral hazard (Garcia, 1996, 1997, 1999, 2000).¹⁸ The recommendation was adopted into the World Bank/IMF’s Financial Sector Assessment Program when it began in 1999. Eventually, the recommendation would become Principle 5 of the International Association of Deposit Insurers’ (IADI)¹⁹ 2009 Core Principles for Effective Deposit Insurance Systems. These recommendations are correlated in time with the emergence of independence as the predominant type of governance in the mid-1990s. What causal mechanisms might explain this relationship?

3.2.2.1 Regional Peer Diffusion

Policymakers may be influenced by their regional peers to adopt a given policy. This process can work through a variety of specific mechanisms (see Brooks, 2005, 280-281). One could be competition, discussed below. Another is a learning process where policymakers use the experience of their peers to help identifying optimal policies (Linos, 2011, Meseguer, 2005, Simmons and Elkins, 2004, Volden, Ting and Carpenter, 2008). Regional peers may provide a useful sample of similar countries’ experiences to learn from. The most simplistic observation we would expect to make is:

$H_{DRegion1}$ Countries are more likely to adopt a certain type of deposit insurance governance as the proportion of prior adopters in its region increases.

The hypothesis is fairly neutral in that any governance type could become more likely to be adopted in a region where more countries adopted it. It is indistinguishable from a pure emulation model (Simmons and

¹⁷The first systematic study of the effects of deposit insurance in general was only conducted in 2002 (Demirgüç-Kunt and Detragiache, 2002, Demirgüç-Kunt and Kane, 2002). These analyses did undertake a preliminary investigation comparing official to private management and found a positive relationship between official management and the incidence of crises. However, they did not distinguish between different forms of official management, particularly MoF and CB. Most other research up to that point had examined individual country experiences (for example Milhaupt, 1999).

¹⁸It is beyond the scope of this paper to determine why this recommendation was made. For research on ideational change in the IMF, for example, see Chwieroth (2010).

¹⁹The IADI was formed in 2002.

Elkins, 2004) and leaves open the question of why this learning or emulation process would start in the first place.

Perhaps an interaction between peers and best practice recommendations could explain these issues. The independence recommendation, may have acted as a frame (Tversky and Kahneman, 1981, 1986) that focused actors attention, especially since it was made by such prominent policy actors as IMF staff economists, and drew on the dominant contemporary economic governance independence paradigm (McNamara, 2002). However, unlike in the pure emulation model, decision-makers may have been hesitant to adopt independent DI before seeing how well it applied to their circumstances. Regional peers that adopted the best practice policy might have provided useful information on how well it worked. Policymakers may have been using an informal Bayesian process to learn from these two pieces of information. Best practice recommendations serve as policymakers' informative priors, which they update with the experience of regional peers. Policymakers may have electoral or credibility incentives to adopt best practice priors. They can claim that policies were "vetted" and negative consequences legitimately unforeseen (Linos, 2011, 681). Over short time horizons, the fact that a growing proportion of peers are adopting a policy without major discernible negative consequences²⁰ may be the best new information they can obtain, further bolstering both their understanding and legitimacy claims. As more peers adopt a policy, more actors may consider it to be successful. This leads to the hypothesis that:

$H_{DRegion2}$ Countries are more likely to adopt a certain type of deposit insurance governance as the proportion of adopters in its region increases *and* when it is promoted as best practice.

Beyond simple geographical groups, some formal regional organisations, such as the European Union, may be particularly good samples for decision-makers to draw on. In 1994 the European Union created the directive on deposit insurance. Though it did not have a governance requirement, Gilardi (2005) has argued that the EU can push specific ways of implementing a directive either by limiting policy choices or framing expectations about policy outcomes.

H_{DEU} From 1994 EU members and candidate countries are more likely to adopt independent deposit insurance.

²⁰This is a reasonable assumption for the time-period examined here since the number of banking crises globally actually fell substantially from the mid-1990s to 2007 (Reinhart and Rogoff, 2010, 21).

3.2.2.2 Competition

In open capital markets, depositors may choose which bank to place their deposits in based on the qualities of the jurisdiction where it resides. Countries can compete for depositors through deposit insurance. Depositors are probably most attracted by countries with high guarantees.²¹ This possibly explains the existence of explicit deposit insurance and the level of guarantees, but how might it affect governance choices?

The level of guarantees may not only influence depositors, but also the soundness of the banking system. Though guarantees are useful if a crisis occurs, it is reasonable to assume that depositors would prefer to avoid crises in the first place. There are a number of costs incurred by depositors during bank insolvencies, even if their money is eventually returned. Primarily, this involves the opportunity costs of illiquid deposits during bank restructuring and, for foreign depositors, the difficulty of making an insurance claim in another country. Therefore, deposits should flow to countries with a low perceived propensity for banking crises. One way for depositors to determine this probability is to look at the quality of a country's public financial institutions. As discussed above, delegated deposit insurance became best practice, i.e. perceived most likely to promote banking stability, from the mid-1990s. Therefore from this point, countries wishing to retain and gain deposits in an internationally competitive environment would adopt policies that depositors believed to prevent crises (see Brooks, 2005, for a general discussion):

H_{DComp} Countries with internationally open deposit banking sectors are more likely to adopt independent deposit insurance from the mid-1990s.

Clearly if investors had perfect information about the relationship between DI governance and crises, the relationship between competition and adoption would be constant overtime. The increasing prevalence of independence would simply be the result of the increasing prevalence of openness.

3.2.2.3 Crisis Diffusion

Decision-makers may be especially open to recommendations when policies have failed. If a country experiences a systemic banking crisis, the status quo policy has demonstrably failed to achieve economic stability. Most political actors would be uncertain about how to return to stability. Best practice recommendations help to overcome uncertainty by suggesting plausible ways to re-achieve economic stability. When such recommendations appear to be the best alternative, actors' preferences will converge around them, and they will be more likely to be adopted (Blyth, 2002, Windmaier, Blyth and Seabrooke, 2007). One possible example is

²¹For example, during the 2008/09 crisis many depositors in the United Kingdom shifted their funds to Irish banks after the government there created unlimited guarantees.

the rapid adoption of independent DI in Latin America in the 1990s. As reported by the Inter-American Development bank, countries (for example, Argentina suffering from the ‘Tequila Crisis’) designed their deposit insurers according to “international best practice” (IDB, 2004, 105), i.e. made them independent. So:

$H_{DCrisis}$ Countries experiencing banking crises will be more likely to create independent deposit insurers *after* it has been promoted as best practice, i.e. from the mid-1990s.

3.2.2.4 Coercion

As mentioned earlier, the IMF promoted independent deposit insurance. Did it go beyond general promotion to force or at least directly influence countries to create independent insurers? The IMF can directly influence deposit insurance policies with conditions on crisis loans (Vreeland, 2003). In the 1990s deposit insurance was a regular part of the IMF’s crisis-management advice (Demirgüç-Kunt, Kane and Laeven, 2008, 412). Conditions about changes to deposit insurance programs in general were often written into loan agreements. However, in these unstable circumstances, the IMF actually promoted ministry of finance control.

Though many of the relevant documents, such as stand-by agreements, are not widely available,²² some that are indicate that the IMF did not promote independent deposit insurance for unstable countries without prior deposit schemes. Instead, they seem to have supported MoF control during the actual crisis. For example, Thailand’s 14 August 1997 letter of intent for a stand-by agreement indicates that a guarantee program should be created through the MoF in order to restore depositor confidence. Thailand created its first DI program in 1997 and the MoF controlled it. Later, it was made independent. Building on such examples it is expected that:

$H_{DCoerce}$ Countries that sign IMF stand-by agreements are more likely to create new ministry of finance controlled deposit insurers.

3.3 Empirical Model

To test these hypotheses I chose an empirical model that could accommodate a number of issues. These include (a) covariate values that may vary over time, (b) countries that do not adopt any form of explicit deposit insurance by the end of the observation period, i.e. right censoring, and uniquely up to this point in the diffusion literature (c) the likelihood of adopting one form of deposit insurance governance given the existence of three choices and their co-incidence with a common choice. In this section I justify the model

²²Permission for electronic publication requires individual country agreement.

I chose—a Fine & Gray Competing Risks Event History Analysis—as the best able to address these issues. I also discuss the variables.

3.3.1 Traditional EHA in Policy Diffusion Studies

Many recent studies of policy diffusion have utilised EHA to test theories of why policy adoption rates change over time (see Brooks, 2005, Simmons and Elkins, 2004, Elkins, Guzman and Simmons, 2006, Weber, Davis and Lounsbury, 2009). In these studies, policy adoption choices are modeled as dichotomous responses. Unit i can choose to adopt policy k or continue without it. The diffusion literature is generally concerned with convergence at certain periods of time. EHA is used because it directly models time by focusing on the time it takes before a unit experiences an event,²³ such as the adoption of some policy k . This is modeled primarily through the hazard rate $h(t)$; the instantaneous rate of an event k occurring by time t conditional on both the event not occurring by time t and the values of a unit i 's covariates. Formally:

$$h(t|\mathbf{x}_i) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T_k \leq t + \Delta t | T_k \geq t, \mathbf{x}_i)}{\Delta t} \quad (3.1)$$

where T_k is the time that event k occurs during some time interval $[t, t + \Delta t]$ conditional on the values of a unit's covariates \mathbf{x}_i (Cleves et al., 2004, 7).

It is common in diffusion studies to use Cox's (1972) Proportional Hazards (PH) event history model. The Cox PH hazard rate for the i th unit at time t is given by:

$$h(t|\mathbf{x}_i) = h_0(t) \exp(\beta' \mathbf{x}_i) \quad (3.2)$$

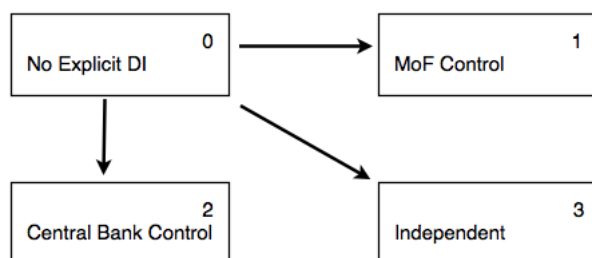
where $h_0(t)$ is the baseline hazard, i.e. the instantaneous rate of a transition at time t when all of the covariates are zero (Cleves et al., 2004). See Brooks (2005) and Golub (2008) for a further justification of the Cox PH model in diffusion research.

3.3.2 Competing Risks Models

What this method lacks is an ability to model the multiple choices that actors have and how the existence of these choices affects decisions. In many cases, only examining transitions to one policy produces biased estimates (Putter, Fiocco and Geskus, 2007). For example, it would be theoretically inappropriate to treat countries' propensities to give control of their deposit insurers to any one institution as independent of their

²³For a discussion of situations where events are not observed, i.e. censoring in EHA see Cleves et al. (2004, Ch. 4).

Figure 3.2: Competing Risks Model of First Deposit Insurance Scheme Governance Choices



other options. We require an event history model that is able to account for multiple policy alternatives. A single Cox PH model cannot, and would thus be inadequate to test my competing hypotheses.

Though there are a number of different ways to examine multiple choices (see Putter, Fiocco and Geskus, 2007), a competing risks approach is most appropriate for examining deposit insurance governance choices in the period of interest, as well as new institution variation in general. In theory, none of the governance types is *a priori* the final choice. Once a country creates a deposit scheme controlled by the central bank it could later make it independent or impose MoF control and then reestablish central bank control, etc. Despite the lack of theoretical justification for these *a priori* assumptions, data availability significantly influences the ultimate empirical research design decision. There were only five instances between 1970 and 2007 when a country changed governance types after insurers had been established. A convenient way to handle this data limitation is to constrict our research focus on governance decisions for *new* explicit deposit insurance schemes. This creates three final states as shown in Figure 3.2. In such situations, competing risks models with mutually exclusive non-repeated transitions are the most appropriate type of EHA (Pintilie, 2007).

There are two ways to approach competing risks (a) transition-specific hazards²⁴ and (b) hazards of the sub-distribution. However, for the purposes of diffusion analysis, the transition-specific hazard has the disadvantage of assuming that the competing risks do not exist (Pintilie, 2007), i.e. that the hazard of one risk occurring is independent of the others. This paper is more interested in assessing the changing impact of certain covariates on certain choices given the existence of alternatives. For such situations it is more appropriate to use the hazard of the sub-distribution. Additionally, transition-specific hazards are not suited to distinguishing the reasons for creating one type of deposit insurance compared to the others from the reasons for creating deposit insurance in general. Hazards of the sub-distribution competing risks deal with this issue in a much more straightforward manner (see Bakoyannis and Touloumi, 2011, for details).

²⁴Cause-specific hazard (for a discussion see Latouche, Beyersmann and Fine, 2007) is the common term from epidemiology. It is nonetheless an awkward term in the context of this research. “Transition-specific hazard” is more appropriate.

The hazard of the sub-distribution²⁵ at time t , $\gamma_k(t)$, for a transition of interest k is:

$$\gamma_k(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t < T \leq t + \Delta t, C = k | \{T > t \text{ or } (T \leq t \text{ and } C \neq k)\})}{\Delta t} \quad (3.3)$$

where T is the time of the observed transition C . If at time t no event is observed, then the observation is censored. The condition in the braces is one where an event k did not happen until after time t , as in standard EHA, or there is the possibility that the observations for a unit have ceased because it experienced a competing transition (Pintilie, 2007, 1363).

Fine and Gray (1999) developed a proportional hazards method, analogous to the Cox PH model, to estimate the hazard of the sub-distribution $\gamma_k(t)$ empirically given by:

$$\gamma_k(t|\mathbf{x}) = \gamma_{k,0}(t) \exp(\beta_k^T \mathbf{x}) \quad (3.4)$$

where $\gamma_{k,0}(t)$ is the baseline sub-hazard. FG-CREHA allows us to analyze independent variables on a policy choice of interest while accounting for the potential effects of the existence of other choices. Given that we are interested in governance choices among countries creating their first deposit insurer, we are looking for effects that differ across the models. Effects having equivalent magnitude, direction, and significance indicate common factors behind creating explicit deposit insurers in general (see Bakoyannis and Touloumi, 2011). These would therefore be ancillary to this paper's focus on governance choice.

3.3.3 Variables

My analyses are designed to find estimated effects that differ across the models for the following variables. See the Appendix for summary statistics for the analysis period 1984-2007, which I chose because of data availability. I constricted the sample of 174 countries to 70 countries, as this was the extent of the available banking crisis data from Reinhart and Rogoff (2010). For a full list of the countries in the sample and their DI governance-types, see http://dl.dropbox.com/u/12581470/DI_Map/Deposit_Insur_2011%20copy.dta. Separate analyses using imputed data²⁶ over a similar period for the full sample were also conducted as robustness checks. They produced roughly similar results and are not shown.

Democracy I operationalise democracy with *Unified Democracy Scores (UDS)* (Pemstein, Meserve and Melton, 2010). The scores were found through Bayesian latent variable analysis using 10 measures of democ-

²⁵Covariates are omitted for simplicity.

²⁶Created using the R package Amelia II by Honaker, King and Blackwell (2010).

racy, including Freedom House and Polity IV.²⁷ I also included a *new democracy* dummy variable to see if becoming a democracy had an effect on governance choice. The variable equalled one for the first five years that a country's Polity IV score (Marshall and Jaggers, 2009) was greater than 5.

Banking Crisis The second domestic and the crisis diffusion hypotheses both make predictions about the influence of crisis on deposit guarantee governance choices. I used banking crisis data from Reinhart and Rogoff (2010). *Banking crisis* is a dummy variable equalling one for every year that a country is in a banking crisis and zero otherwise.

Financial System Structure The structure of the banking sector may influence what type of governance is chosen. I examine the importance of deposit banking in general using a ratio of *deposit bank's assets to GDP* from Beck and Demirgüç-Kunt (2009). To make interpretation easier, I converted it into a percentage. Alternatively, I measured the importance of big versus small banks using their *concentration* variable: this is a country's three largest banks' assets as a ratio of total bank assets in a given year. Though concentration was included in preliminary analyses, I do not show the results here because of a very high number of missing values that would have considerably constricted the analysis period.

Peers According to the regional peer diffusion hypothesis, as more countries in a region adopt a specific form of deposit insurance governance, non-adopting countries will be more likely to create independent insurers. I capture this process with *regional peer independence* and *MoF* monadic spatial effect variables (Neumayer and Plümper, 2010a).²⁸ For any one country this is simply the percentage of other countries in their region that have independent or MoF-controlled DI in a given year (adapted from Strang and Tuma, 1993, Brooks, 2005). I use World Bank regional classifications. I used the full 174 country sample to find the variable values. All regions are represented in the analysis apart from North America, where every country had an explicit insurer before the observation period began.

I use a European Union dummy variable (*EU (from 1994)*) to control for whether or not a country was or, in the case of candidate countries, wanted to be under the jurisdiction of the EU's deposit insurance directive. It equals 1 for every year from 1994 that a country was either an EU member or candidate (as in Demirgüç-Kunt, Kane and Laeven, 2008).

²⁷Only posterior means are used in this paper.

²⁸The procedure I used to create the dyadic data sets used to find the spacial effects was from Gilardi and Fuglister (2008).

Competition Though the competition hypothesis is specifically concerned with depositors shifting their funds into or out of a country, there is unfortunately little data on deposit flows for the full sample. As a proxy, I use the *KAOPEN* index of capital account openness (Ito and Chinn, 2008). It measures *de jure* openness.

IMF Stand-by I created a dummy variable *IMF stand-by* equalling one during a year that a country signed a stand-by agreement with the IMF and the following year. It is zero otherwise. Data is from Dreher (2006, updated to 2008). It may have been useful to examine the actual texts of these agreements, limiting the variable to instances where an agreement required a specific governance type. This information is difficult to obtain, as few countries have allowed their agreements to be made available outside of the IMF’s Washington, DC archive.

Other Potential Factors I included the following variables in the models at some stage because, though they do not directly relate to one of the hypotheses, they might still be important and worth accounting for. I included a number of measures of bureaucratic and general country-level governance quality. These are taken from the International Country Risk Guide (2009). I included *gross domestic product per capita (GDP/Capita)* in thousands of current US dollars. It is taken from the World Bank’s World Development Indicators database (World Bank, 2011). I also considered *Central bank governor (CBG) tenure*. The variable is from Dreher, Strum and de Haan (2008, 2010).²⁹

3.4 Results

Tables 3.2 and 3.3 show results from two sets of FG-CREHA models.³⁰ The coefficients—which are interpreted in a similar way to coefficients in logistic regression—correspond to the primary governance types of interest—MoF and independent. Results from EHA with central bank controlled deposit insurance are not shown. I treated it as a competing event in both analyses. I include only countries that did not have a deposit insurer before 1984.³¹ Since my purpose is to compare reasons for different governance choices, estimated similarities and the differences in sign and significance between these two models are the focus of the discussion. I summarise them in Table 3.1.

²⁹Please contact me for information about minor modifications made to these variables.

³⁰The data file and Stata do-file needed to fully replicate this paper’s analyses and estimation tables 3.2, 3.3, and 3.6 as well as time-varying covariate graphs can be found at http://dl.dropbox.com/u/12581470/code/Replicability_code/DI_Replication/public_DI_replicable_tables.do. Please note that International Country Risk Indicators are made available for replication only. They should not be distributed.

³¹Of the 70 countries in the sample mentioned above 53 were at risk. Nine of these created MoF governance and 20 created independent governance.

Before discussing the results it is important to make a few notes about variations that were made as a result of numerous robustness checks. Ideally, I would have included in the analyses as many factors as possible that might help explain governance choice. However, as can be seen in Table 3.5 of the Appendix, many of the variables are highly correlated with one another. Problems associated with high multi-collinearity are well known (see Achen, 2002, Schrodtt, 2006), especially the tendency to create unreliable coefficient estimates. I did numerous regressions to determine which variables could be meaningfully included (den Poel and Larivière, 2004), only a subset of which I show. I used Schoenfeld-like residuals plotted against analysis time, along with locally-weighted regression-smoothed lines, to diagnose how well the models conformed to the proportional hazards assumption, i.e. whether covariates are multiplicatively associated with the hazard (see Fine and Gray, 1999, 503). I added linear time-varying coefficients for variables that violated this assumption (Golub, 2008, Stata Corp., 2009, 214-215). For these variables the estimated coefficients consist of both a time-invariant part β and a part $\beta_g(t)$ that varies linearly³² with analysis time. The estimated coefficients are given by $[\beta + \beta_g(t)]$.

Note that because the analysis time was standardised,³³ time specific events—e.g. best practice promotion—common to all units are largely captured in the baseline sub-hazard. The coefficients reported in Tables 3.2 and 3.3 are essentially average estimated effects over the analysis time (Hernán, 2010). Ideally, I would have plotted predicted probabilities of making a governance choice at each point in time to illustrate the interplay between the baseline sub-hazard and the variables. However, there is currently no straightforward way to make these plots in Stata or R for FG-CREHA models with time-varying coefficients. Hopefully, future versions will include this capability to make FG-CREHA easier to use in political economy. A temporary solution for identifying the impact of time-period specific best practice promotion is to compare FG-CREHA models with constricted time periods (see below).

3.4.1 Similarities: Creating Deposit Insurance

My purpose is not to determine why explicit deposit insurance is created in general.³⁴ However, the central bank governor tenure variable had a similar time-varying coefficient in both of the models indicating that it may be part of the process behind both of these two governance choices. In separate models where central bank DI was the event of interest, it seems to have had no effect (not shown). Across the main governance choices of interest in the mid-1980s central bank governor tenure is predicted to have a positive effect. The

³²Other functions were also tested, but did not substantially increase model fit.

³³For example, a country that was made independent in 1990 has the same analysis time in 1990 as those that entered earlier.

³⁴For reference, Table 3.6 in the Appendix shows estimated coefficients for Single Transition Cox Proportional Hazard models for creating a deposit insurer for the first time of any governance type with the same sample and variables as the present paper.

Table 3.1: Summary Comparison of Estimated Covariate Effects.

	None -> MoF	None -> Ind.
Democracy (UDS)		tvc (+ to -)
New Democracy	-	+
Banking Crisis	+	
Deposit Bank Assets/GDP	tvc (- to +) or +	
Peer Region, by type		+
Capital Openness (KAOPEN)	tvc (- to +)	
IMF Stand-by		
EU (from 1994)	-	+
GDP/Capita		+
CBG Tenure	tvc (+ to -)	tvc (+ to -)

Note: the direction (sign) of the effect is only shown if they were consistently significant at at least the 10% level.

tvc indicates a time-varying coefficient that switches sign over the course of the analysis. The order of the direction over time is shown in parentheses.

longer the central bank governor was in office, the more likely it was that explicit deposit insurance controlled either by the MoF or a independent entity would be created. However, beginning in the 1990s this reversed. The longer the tenure, the less likely it was that deposit insurance controlled by one of these entities would be created. It is initially unclear why this might be and is beyond the scope of my paper.

3.4.2 Differences: Governance Choice

Despite this similarity, most significant effects varied between the two models, suggesting that they influenced governance choice.

Democracy Democracy, as measured by the posterior mean of the Unified Democracy Score, seems to have had no effect on whether or not a country gave control to the ministry of finance. Its effect on creation of independent DI went from positive in the early part of the analysis period to weakly negative around the year 2000. New democracies were less likely to create MoF DI than older democracies and other regimes. The reverse effect was found for independent deposit insurance, in line with the hypothesis that democracies are more likely to delegate deposit insurance in an attempt to minimise moral hazard.

Democracy's time-varying coefficient seems to be driven largely by Australia and New Zealand, whose major banks are subsidiaries of Australian banks. These were the only two countries in the sample with UDS scores greater than 1.5 after 2002 that had not created some type of explicit DI.³⁵ Unobserved factors may have influenced their choices not to create explicit DI overall. Once I accounted for the 'Oceania effect', it seems that democracies generally did prefer delegating deposit insurance governance. For example, when

³⁵Australia introduced a temporary guarantee program in response to the recent global crisis. New Zealand created a voluntary program in 2008.

I limited the sample to the years 1984 to 2000, the time-varying coefficient was no longer significant.³⁶

³⁶Hernán (2010) refers to this issue as period-specific selection-bias.

Table 3.2: Fine & Gray Competing Risks Coefficients for Creating *MoF* Controlled 1st Deposit Insurer (others competing)

Variable	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Democracy (UDS)		0.227 (0.401)										
New Democracy			-21.167*** (0.620)								-15.177*** (0.875)	-19.197*** (1.157)
DB Assets/GDP				-0.016 (0.010)						-0.013 (0.014)	0.015** (0.007)	0.013** (0.005)
Crisis Dummy					1.645** (0.823)				1.537** (0.814)	1.597* (0.905)	3.134*** (0.775)	2.706*** (0.720)
Regional Peer SE (MoF)						0.096* (0.052)				0.042 (0.073)	0.046 (0.070)	0.046 (0.070)
Capital Openness (KAOPEN)							-7.091*** (2.546)				-8.434*** (2.623)	-8.173*** (2.997)
IMF Stand-by								1.226* (0.707)	1.048 (0.785)	1.283 (0.914)		
EU (from 1994)												
GDP/Capita												
CBG Tenure												
Time Interactions												
Capital Openness (KAOPEN)												
CBG Tenure												
DB Assets/GDP												
Countries at Risk	49	50	49	49	49	49	49	49	49	47	49	47
No. of MoF Created	9	9	9	9	9	9	9	9	9	9	9	9
Pseudo log-likelihood	-25.471	-26.263	-24.871	-23.882	-23.226	-24.409	-21.215	-24.043	-22.197	-19.342	-18.298	-14.764
chi2	197.365	228.187	1316.392	249.775	215.864	195.558	281.116	247.356	238.830	359.971	1146.172	1205.021
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Standard errors in parentheses. */**/*** at 10/5/1% significance levels. GDP/capita was dropped from models with Democracy (UDS) and Deposit Bank Assets/GDP due to high correlations (0.693 and 0.708 respectively). The governance quality indicators are not shown for the same reason. Only significant time interactions are shown.

Table 3.3: Fine & Gray Competing Risks Coefficients for Creating *Specialised & Independently* Controlled 1st Deposit Insurer (others competing)

Variable	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Democracy (UDS)		2.222*** (0.552)								1.270* (0.690)	2.335*** (0.746)
New Democracy			1.503** (0.617)							0.395 (0.599)	0.890* (0.530)
DB Assets/GDP				0.000 (0.006)							
Crisis Dummy					0.766 (0.513)				0.792 (0.499)		
Regional Peer SE (Ind.)						0.059*** (0.019)				0.046*** (0.017)	0.036* (0.019)
Capital Openness (KAOPEN)							-0.357 (0.248)				
IMF Stand-by								-0.687 (0.763)	-0.746 (0.761)		
EU (from 1994)	2.000** (0.805)	2.104** (0.818)	1.611** (0.734)	2.694*** (0.679)	1.835** (0.779)	1.764** (0.722)	1.916** (0.837)	2.009** (0.782)	1.831** (0.754)	1.001 (0.753)	1.648* (0.864)
GDP/Capita	0.072*** (0.027)		0.095*** (0.028)		0.086*** (0.028)		0.110*** (0.040)	0.064** (0.027)	0.078*** (0.028)		
CBG Tenure	0.157** (0.064)	0.173** (0.069)	0.179*** (0.068)	0.162** (0.072)	0.142** (0.063)	0.186*** (0.070)	0.144** (0.058)	0.155** (0.063)	0.139** (0.061)		0.189** (0.078)
Time Interactions											
Democracy (UDS)		-0.144*** (0.039)								-0.068 (0.045)	-0.144*** (0.050)
CBG Tenure	-0.024*** (0.009)	-0.026*** (0.010)	-0.028*** (0.010)	-0.026** (0.011)	-0.022** (0.009)	-0.029** (0.012)	-0.023*** (0.008)	-0.025*** (0.009)	-0.022*** (0.009)		-0.031** (0.013)
Countries at Risk	49 18	49 18	49 18	47 17	49 18	50 18	49 18	49 18	49 18	53 20	50 18
No. of MoF Created											
Pseudo log-likelihood	-55.156	-50.100	-53.021	-53.871	-54.103	-54.549	-53.892	-54.717	-53.586	-63.164	-48.846
chi2	27.660	35.067	26.533	19.818	33.760	27.381	31.179	31.949	44.616	27.083	32.830
p	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Standard errors in parentheses. */**/** at 10/5/1% significance levels. GDP/capita was dropped from models with Unified Democracy Score and Deposit Bank Assets/GDP due to high correlations (0.693 and 0.708 respectively). The governance quality indicators are not shown for the same reason. Only significant time interactions are shown.

Deposit Bank Assets/GDP The size of the banking sector relative to the economy appears to have had little impact on whether or not an independent insurer was created. Depending on the set of other covariates included in the model, the relative size of the deposit banking sector had a slight time-varying coefficient—almost negative to no effect in the first few observation years and then positive—or was simply positive, as in the ‘garbage can’ MoF model. This suggests some weak evidence for the hypothesis that, in order for guarantees to be credible in countries with large banking sectors, decision-makers choose to have them directly linked to the public budget.

Banking Crises Also in line with the related MoF governance credibility hypothesis, countries experiencing banking crises were more likely to create their first deposit insurer controlled by the ministry of finance. There appears to be no effect of crisis on delegating control, providing evidence against the idea that actors in crises reached for best practice governance ideas. The obviously high functional cost of guaranteeing deposits during a banking crisis may simply make recommendations for independence seem implausible in these circumstances, no matter how well they are promoted.

Peer Diffusion Though the results do not provide support for the crisis diffusion hypothesis, they do weakly suggest that regional peers can influence governance choices. First, though EU legislation did not require a specific governance type, (just that explicit DI be created,) being an EU member or candidate country seems to consistently have had both a positive effect on decisions to delegate governance and a negative effect on placing control in the MoF. Second, the proportion of regional peers with independent DI also had a positive effect on delegation choices, even when controlling for EU status. Conversely, the proportion of peers with MoF-controlled DI does not appear to have had an effect on that governance choice. I conducted separate analyses within the observation period 1984-1993 with the regional peer and general EU member/candidate country variables to make sure that the estimated effects were actually related to the mid-1990s recommendations, rather than a general effect based on some other process. In the pre-1994 analysis, the variables had no effect on governance choices. By examining the time-period specific “biases” in the sample (Hernán, 2010) rather than just average effects, I find that simple peer learning or emulation effects are insufficient explanations. Regional proximity and organisations appear to interact with recommendations to influence policy choices.

Competition The capital openness variable had no impact on delegation decisions, and had a time-varying coefficient in the model for creating MoF-controlled guarantees. It had a small negative effect until later in

the observation period, when it became positive. This provides some weak evidence against the competition hypothesis, and suggests that there may be no association between competition and governance choice in general. Note that these results are not conclusive given the incomplete operationalisation of the variable. Nonetheless, it does seem that having a more internationally open financial system, i.e. one more prone to international deposit banking competition, did not impact DI governance choices. This may be because countries simply compete for deposits on other factors. For example, Switzerland competes on taxation. Iceland before the 2008/09 crisis competed on interest rates.

IMF Coercion Though the IMF may have been important in promoting explicit DI and independence in general, there is little evidence from these models that it directly coerced countries to adopt a particular governance style, even the best practice style they promoted. This finding was especially strong when I included banking crises in the analysis.³⁷ It may have been that IMF stipulations in stand-by agreements were inconsequential, since MoF-controlled deposit insurance would have been created regardless. This result does not necessarily indicate that the IMF was not an important force in DI governance trends, just that this influence did not work through coercing countries during instability.

Discussion

In this paper I have tried to understand why countries converged on independently governed deposit insurance over the past 20 years. In order to do this, I have also made an important methodological contribution to policy diffusion studies by demonstrating how FG-CREHA can be used to understand decisions in complex choice environments.

FG-CREHA has allowed me to identify a number of possible reasons why countries converged on independent DI between the mid-1990s and at least 2007. I found some evidence that independence in new insurers was partially diffused through a regional peer learning process that interacted with best practice recommendations. FG-CREHA enabled the identification of a possible positive relationship between regional peer governance type adoption and best practice independence ideas. The more formalised EU peer group effect was consistently strong. It is fairly conclusive from this evidence that a simple emulation process did not drive DI governance adoption practices, otherwise the positive relationships would have been more consistently observed across the governance types. By pinpointing the time correlation between when independence recommendations were made and when peer adoption trends began in all regions besides North

³⁷Surprisingly, the two are not very highly correlated in the sample.

America, I can suggest that recommendations helped initiate the peer learning process. Recommendations seem to have acted as a catalyst for peer learning. This is also likely part of the explanation for why we observe countries converging on independent DI from the mid-1990s.

FG-CREHA enabled me to show how domestic functional factors affected convergence patterns. The increase in the number of democracies in the late 1980s and early 1990s may have helped cause the observed convergence, since democracies and especially new democracies, appear to be more likely to delegate than countries with other regime types. This is possibly due to electoral incentives to mitigate public costs, therefore mitigating moral hazard. These results are slightly puzzling in light of the regional peer findings. Is it that actors did objectively know that independent DI reduced moral hazard and helped prevent crises throughout the period? This seems doubtful, given the scarcity of non-ambiguous empirical evidence. The fact that I found some evidence for both hypotheses should not actually be that surprising. Both are based on exaggerated and unrealistic assumptions about actors' beliefs and knowledge. In reality, actors don't have perfect information about how deposit insurance governance will achieve electorally conditioned goals. Equally, they are also not totally ignorant of the effects of governance style in the absence of an IMF recommendation or peer evidence.

It is also probably unrealistic to ascribe the democracy findings entirely to Rosas' domestic functional concerns. Linos (2011) has shown how democratic electorates themselves can be influenced by recommendations and learn from regional peer and major country examples. This creates incentives for democratic decision-makers to adopt promoted policies and policies adopted by regional peers and prominent countries, such as the United State's independent FDIC.

Crisis seems to have dampened the spread of independence in new insurers. During a banking crisis the main problem for new insurance programs is demonstrating an ability to actually honour guarantees. Because honouring guarantees could potentially be very costly, new deposit insurance programs tend to be more credible if directly backed by the national budget via MoF control. Crises, rather than promoting the adoption of general best practice ideas, may actually inhibit them when high and immediate contingent liabilities are apparent. No matter how well delegation is promoted, the sheer cost of a new deposit insurance scheme makes any new independent program implausible during a crisis. This suggests we need to at least qualify claims that countries adopt policies for socially diffused reasons (see in particular McNamara, 2002) when high and obvious fiscal costs are involved.

It is important to note a major limitation of my research. Since only about six percent of countries had changed governance in existing insurers, governance and deposit insurance creation choices are effectively

tied together for empirical purposes. It is currently very difficult to separate out any complex interactions leading to both governance and insurance creation choices. I am limited to identifying explicitly different results across competing risks models. However, this would be a limitation of any research on variation in new institutional types. Nonetheless, I have made an important step in expanding our ability to examine policy choices in complex environments through FG-CREHA. Doing so will enable future researchers to examine convergence and variations in new policies and other institutions.

Chapter 3 Appendix

Table 3.4: Deposit Insurance Governance Choice Analysis Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Democracy (UDS)	0.634	0.912	-1.433	2.036	1680
New Democracy	0.085	0.278	0	1	1680
Crisis Dummy	0.202	0.401	0	1	1680
DB Assets/GDP	60.787	44.696	1.298	270.442	1510
Concentration	0.649	0.207	0.148	1	1148
Regional Peer SE (Ind.)	25.548	22.341	0	100	1680
Regional Peer SE (MoF)	6.335	6.350	0	24.138	1680
KAOPEN	0.454	1.636	-1.831	2.5	1619
IMF Stand-by	0.161	0.368	0	1	1680
Bur. Quality	2.53	1.204	0	4	1600
Socio. Risk	6.173	2.145	0.5	11	1600
EU (from 1994)	0.099	0.299	0	1	1680
GDP/Capita	9.506	12.203	0.19	76.2	1609
CBG Tenure	3.457	3.773	-1	29	1551
Prop. Deposits at Gov. Owned	0.184	0.233	0	0.91	1368
Prop. Assets at Gov. Owned	0.2	0.227	0	0.9	1235
Liquid Assets/Reserves	0.148	0.176	0	1.043	369
Capital/Assets	8.25	2.873	2.7	16.3	444
LIEC	6.423	1.431	1	7	1672
EIEC	6.225	1.643	2	7	1672

Table 3.5: Correlation Table For Variables Used in the Deposit Insurance Fine and Gray EHAs

Variables	UDS	New Dem	Crisis Dummy	DBA/GDP	Conc.	Reg. Indp.	Reg. MOF	KAOPEN	IMF	Bur. Qual.	Socio. Risk	eu1994	GDP/Capita	CBG
UDS	1.000													
New Dem5-0.044	0.060 (0.073)	1.000												
Banking crises	-0.122 (0.000)	0.060 (0.013)	1.000											
DB Assets/GDP	0.485 (0.000)	-0.171 (0.000)	-0.069 (0.007)	1.000										
Conc.	0.115 (0.000)	-0.013 (0.650)	-0.044 (0.135)	0.033 (0.283)	1.000									
Reg. Peer Indp.	0.541 (0.000)	-0.118 (0.000)	-0.137 (0.000)	0.407 (0.000)	-0.091 (0.002)	1.000								
Reg. Peer MoF	0.296 (0.000)	-0.008 (0.749)	-0.093 (0.000)	0.021 (0.410)	-0.141 (0.000)	0.322 (0.000)	1.000							
KAOPEN	0.575 (0.000)	-0.156 (0.000)	-0.179 (0.000)	0.553 (0.000)	-0.042 (0.163)	0.548 (0.000)	0.272 (0.000)	1.000						
IMF Stand-by	-0.158 (0.000)	0.117 (0.000)	0.118 (0.000)	-0.286 (0.000)	-0.040 (0.173)	-0.174 (0.000)	0.081 (0.001)	-0.214 (0.000)	1.000					
Bur. Qual.	0.644 (0.000)	-0.188 (0.000)	-0.045 (0.072)	0.616 (0.000)	0.136 (0.000)	0.461 (0.000)	-0.033 (0.187)	0.472 (0.000)	-0.254 (0.000)	1.000				
Socio. Econ. Risk	0.476 (0.000)	-0.155 (0.000)	-0.171 (0.000)	0.614 (0.000)	0.138 (0.000)	0.436 (0.000)	-0.003 (0.902)	0.486 (0.000)	-0.234 (0.000)	0.651 (0.000)	1.000			
EU1994	0.287 (0.000)	-0.044 (0.073)	-0.073 (0.003)	0.202 (0.000)	0.064 (0.031)	0.397 (0.000)	0.134 (0.000)	0.277 (0.000)	-0.070 (0.004)	0.216 (0.000)	0.202 (0.000)	1.000		
GDP/Capita	0.693 (0.000)	-0.190 (0.000)	-0.122 (0.000)	0.708 (0.000)	0.144 (0.000)	0.644 (0.000)	0.100 (0.000)	0.609 (0.000)	-0.273 (0.000)	0.702 (0.000)	0.642 (0.000)	0.292 (0.000)	1.000	
CBG Tenure	0.102 (0.000)	-0.105 (0.000)	-0.100 (0.000)	0.018 (0.495)	0.006 (0.838)	0.116 (0.000)	-0.040 (0.113)	0.062 (0.015)	-0.084 (0.001)	0.134 (0.000)	0.156 (0.000)	0.075 (0.003)	0.162 (0.000)	1.000

Note: The table does not include variables about Government Ownership, Electoral Competitiveness, and ratios of Capital to Assets and Liquid Assets to Assets. Please contact the author for the full table.

Table 3.6: Cox PH Coefficients for Creating Deposit Insurance

Variable	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Democracy (UDS)		0.327 (0.241)								0.355 (0.228)
New Democracy			0.260 (0.408)							
DB Assets/GDP				0.000 (0.005)						
Capital Openness (KAOPEN)										
EU (from 1994)	2.813*** (0.728)	2.764*** (0.741)	2.770*** (0.700)	2.772*** (0.715)	2.720*** (0.746)	2.411*** (0.736)	2.659*** (0.726)	-0.291** (0.135)	2.834*** (0.745)	-0.318** (0.157)
GDP/Capita	0.007 (0.024)	-0.012 (0.025)	0.010 (0.024)	0.002 (0.027)	0.035 (0.024)	-0.004 (0.023)	0.001 (0.023)	0.037 (0.028)	0.017 (0.024)	0.050* (0.028)
Time Interactions										
Crisis Dummy					0.103*** (0.031)					0.104*** (0.028)
Regional Peer SE (Ind.)						0.002** (0.001)				0.002*** (0.001)
Regional Peer SE (MoF)							0.004** (0.002)			
IMF Stand-by									0.066*** (0.025)	0.066** (0.028)
CBG Tenure	-0.016*** (0.005)	-0.016*** (0.005)	-0.016*** (0.005)	-0.016*** (0.005)	-0.014*** (0.005)	-0.015*** (0.006)	-0.015*** (0.006)	-0.017*** (0.005)	-0.015*** (0.005)	-0.012** (0.005)
Countries at Risk	49	49	49	46	49	49	49	49	49	49
No. of DI Created	36	36	36	34	36	36	36	36	36	36
Pseudo log-likelihood	-106.995	-106.205	-106.872	-101.224	-101.994	-104.810	-105.032	-104.998	-105.083	-95.894
chi2	30.759	29.956	30.820	31.120	33.195	34.647	34.938	53.963	30.068	43.849
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Standard errors in parentheses. */**/** at 10/5/1% significance levels. Many of the variables are time-varying in that the estimated coefficient increases or decreases over-time.

Chapter 4

Who is Watching?: A Multi-state Event History Analysis of Financial Supervision Governance Diffusion

Abstract:¹ Since the 1980s there have been at least two waves of thought about whether the ministry of finance, the central bank, a specialised regulator, or some combination thereof should supervise the financial services industry. These waves have been associated with convergence of actual practices. Did newly promoted supervisory ideas cause countries to reform their regulators? I use a new data set of 83 countries and jurisdictions between the 1980s and 2007 to examine the possible diffusion of supervisory ideas. In doing so I make two methodological innovations. First, I use Event History Analysis to study the potential causal role of “best practice” policy ideas relative to domestic political-economic factors. Second, to understand the complex choice environment policymakers face on this issue I expand the methodological scope of the international policy diffusion literature by using Multi-state Event History Analysis. My major finding is that the convergence after 1997 on a model of unified and specialised supervision was partially driven by countries adopting the idea in response to crisis, but only after it was widely promoted. Also, certain peer groups encouraged or discouraged the adoption of specific ideas.

¹Thank you to the LSE PSPE research seminar, Joseph Chekley, Kristina Gandrud, Simon Hix, Chris Jackson, Jouni Kuha, Eric Neumayer, Guillermo Rosas, Cheryl Schonhardt-Bailey, and Kevin Young for helpful comments and insights. Earlier versions of this paper were presented at the 2010 ECPR Regulation in the Age of Crisis conference and 2011 EPSA Annual Conference.

The multi-state structure of the analysis also sheds light on how institutional path dependence moderates policy diffusion in individual countries.

The 2008/09 financial crisis has caused policymakers and the public generally to re-examine both financial supervisory policies and the structure of supervisory governance. One facet of this is a re-examination of the actors that officially supervise financial institutions.² Notably, in June 2010 the United Kingdom's new Conservative-Liberal Government announced that it would abolish the previously unified and specialised Financial Services Authority (FSA) and reassign its functions to the central Bank of England by 2012. Considering that the FSA was held up as an exemplar of "best practice" just a few years before, the reform is a dramatic change.

This is not the first time we have reconsidered and reformed *de jure* supervisory governance. In fact, over just the two decades before the recent financial crisis there have been at least two major shifts in supervisory governance ideas and policy choices. The first was a convergence on a mixed style where the central bank and specialised regulators implement banking and securities supervision.³ I call this the SEC model after the United State's Securities and Exchange Commission (SEC). Along with the Federal Reserve and other specialised regulators, the SEC supervises the US financial industry. From 1997, countries began to completely separate their supervisors from other institutions and unify banking and securities regulation into one authority. I call this the FSA model. *What caused these convergence patterns?*

To answer this question I draw on two political economy literatures. The first is sociological constructivism. This is a broad group, but includes work such as Blyth (1997, 2002), Chwieroth (2010), Finnemore and Sikkink (1998, 2001), Jacobs (2008), McNamara (1998, 2002), Windmaier, Blyth and Seabrooke (2007), and Yee (1996). This literature generally argues that ideas may shape goal-oriented policymakers' understanding of how policy means affect desired ends. Ideas could change what policies actors are likely to prefer and implement. According to this approach, the promotion of the SEC or FSA models as "best practice" by international institutions makes these policies more likely to be adopted. The result of this process at the aggregate level is that we observe the two supervisory convergence trends.

²Given space constraints, I focus on changes to the *de jure* actors who supervise and look at the period up until the recent crisis. It is admittedly also important to look at *de facto* governance, regulatory changes, and the economic outcomes of supervision choices. Hopefully future studies will examine the degree to which my conclusions can be generalised to these areas. For recent work examining the economic consequences of financial supervisory governance see Barth, Caprio Jr. and Levine (2004, 2006), Eichengreen and Dincer (2011), Jordana and Rosas (2011), Masciandaro, Panisini and Quintyn (2011), Quintyn and Taylor (2003).

³Financial supervision broadly encompasses banking, securities, and insurance. However, for simplicity, this paper focuses on banking and securities both in its discussion and empirical analysis.

Simply observing that a specific policy idea was promoted and that it was followed by an increase in the proportion of countries with that policy is an important part of arguing that the idea caused the convergence. This is often referred to as the time-order criteria. However, by itself observing that the time-order criteria has been met is a very unsatisfying way of making a causal argument about ideas.⁴ Adding to the time-order criteria Yee's (1996) insistence that we study the mechanisms linking ideas to policy choices, I propose an *additional minimum criteria* that must be met for ideational theories to plausibly explain specific policy convergence trends. The criteria is: the observed relationship between possible ideational diffusion mechanisms and a given policy choice must increase significantly soon after a positive idea about the policy is promoted. If the relationships remain largely constant over time then we cannot argue that the promotion of the idea caused policymakers' choices. I refer to this as the time-order and Increasing Relationship (TOIR) criteria. Please note that I am not arguing that if this criteria is met we can say that an idea caused policy convergence. It is simply a minimum standard that a causal claim would have to meet. It is also a useful criteria for evaluating whether an ideational hypothesis has more explanatory power than one that is time-constant.

To empirically test this proposition we need a method that can robustly incorporate time. So, I draw on the methods of the growing policy diffusion literature (see Boehmke, 2009, Brooks, 2005, Elkins and Simmons, 2005, Elkins, Guzman and Simmons, 2006, Füglistner, 2011, Gilardi, 2005, Gilardi and Füglistner, 2008, Gilardi, Füglistner and Luyet, 2009, Gilardi, 2010, Jordana and Levi-Faur, 2005, Lee and Strang, 2006, Linos, 2011, Meseguer, 2006, Meseguer and Gilardi, 2009, Shipan and Volden, 2008, Simmons and Elkins, 2004, Simmons, Dobbin and Garrett, 2006, Strang and Tuma, 1993, Weyland, 2007). This body of work has made considerable progress in exploring the causes of cross-country policy convergence. Perhaps remarkably for a political science sub-discipline, it has itself also converged on a standard empirical method: Single Transition Event History Analysis (EHA), primarily the Cox Proportional Hazard model. This model has numerous advantages for examining cross-sectional time-series data (Box-Steffensmeier and Jones, 2004), particularly how a variable's effect changes over time. This quality is necessary for testing if the TOIR criteria is met.

Single Transition EHA nonetheless has difficulty incorporating the many initial conditions and choices that policymakers must consider when changing their financial supervisors. There are many institutional starting points and similarly many new institutions to choose from—the central bank (CB), ministry of finance (MoF), a specialised regulator (SR), or some combination. Given this complexity, I expand the diffusion

⁴See Blyth (1997, 236) and Yee (1996) for further details of this critique.

method by using Multi-State EHA (see Putter, Fiocco and Geskus, 2007). Multi-state EHA models are a natural extension of the diffusion methodology. They incorporate both changes over time and multiple starting and ending points.

I begin the paper with a description of the two *de jure* financial supervisory governance trends from the 1980s to 2007. In section 2, I discuss hypotheses about the ideational diffusion mechanisms and competing non-diffusion factors that may explain or condition these trends. Section 3 lays out the empirical strategy used to test these hypotheses and gives the results. I use a new data set of 83 countries and jurisdictions' financial supervisors from 1980 until 2007 for my analysis. I find that banking crisis and certain peer groups encouraged or discouraged the adoption of specific ideas. I also find that path dependence conditions ideational diffusion to individual countries.

4.1 Patterns of Supervisory Governance

4.1.1 Who Can Supervise?

Systems of financial supervisory governance are often characterised by their position in two dimensions: (a) the type of bodies that are in charge of inspecting financial institutions and (b) the number of supervisory bodies. Economists at academic and international institutions have at various points seen both of these dimensions as important factors in the functioning of financial regulation. Institutions that are involved in supervision can include the MoF, the CB,⁵ or a public body that is specialised to focus only on financial supervision. Supervision can be unified in one of these institutions or shared between a number of them. For example, the United States has numerous specialist supervisors, including the SEC and the Commodity Futures Trading Commission, among others. The Federal Reserve—the CB—also has supervisory powers. The United Kingdom created a single specialist supervisor in 1997.

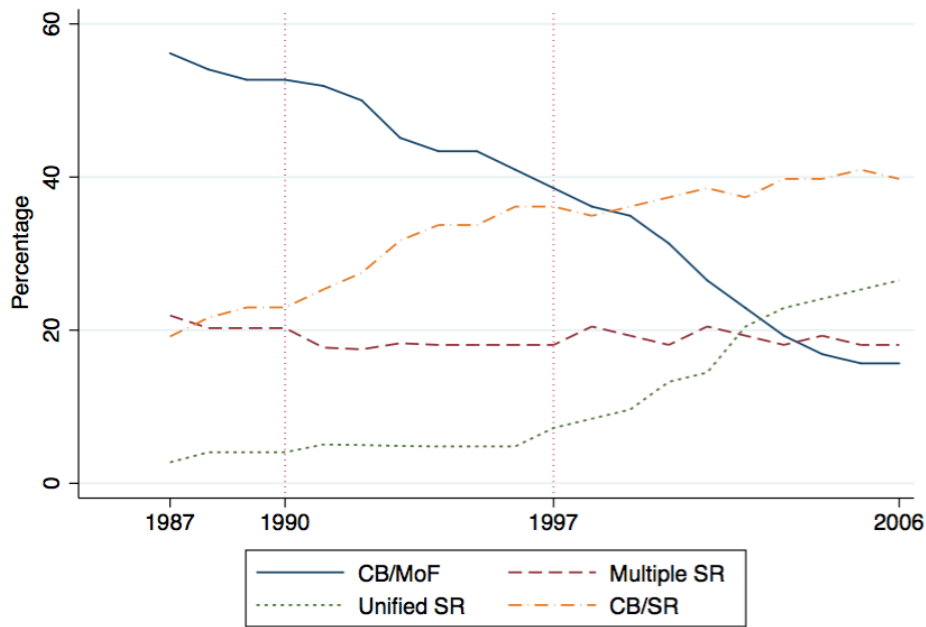
4.1.2 Financial Supervisory Reform Patterns & Ideas

Figure 4.1 shows the prevalence of certain combinations of institutions in banking and securities regulation from 1987 to 2007 in 83 jurisdictions.⁶ Please visit http://dl.dropbox.com/u/12581470/Fin_Map/

⁵The distinction between MoF and CB supervision may be superficial if the CB is not independent. However I focus on *de jure* supervision, because of the difficulty of measuring actual supervisory independence for the wide range of countries in my sample. A number of measures have been used for monetary policy independence (famously, Cukierman, Web and Neyapti, 1992), but equivalent measures are not widely available for financial supervision.

⁶Information was not widely available on supervisors earlier than this period. Data was gathered by the author using a variety of sources detailed in a data appendix available upon request. The author is indebted to Quintyn et al.'s (2007) work. In many ways the current sample is an expansion of their sample. An 'Other' category, that included up to six jurisdictions was collapsed into the CB/MoF category.

Figure 4.1: Percentage of 83 Countries with a Given Supervisory Style



Financial_Regulation_DVcopy.dta for a full list of countries in the sample and supervisor data used to create figures 4.1 and 4.2. In Figure 4.1 we can see two governance adoption trends. These patterns are preceded in time by the promotion of international financial supervisory governance best practice ideas; the SEC and FSA models.

4.1.2.1 The SEC Trend (1990 to 1996)

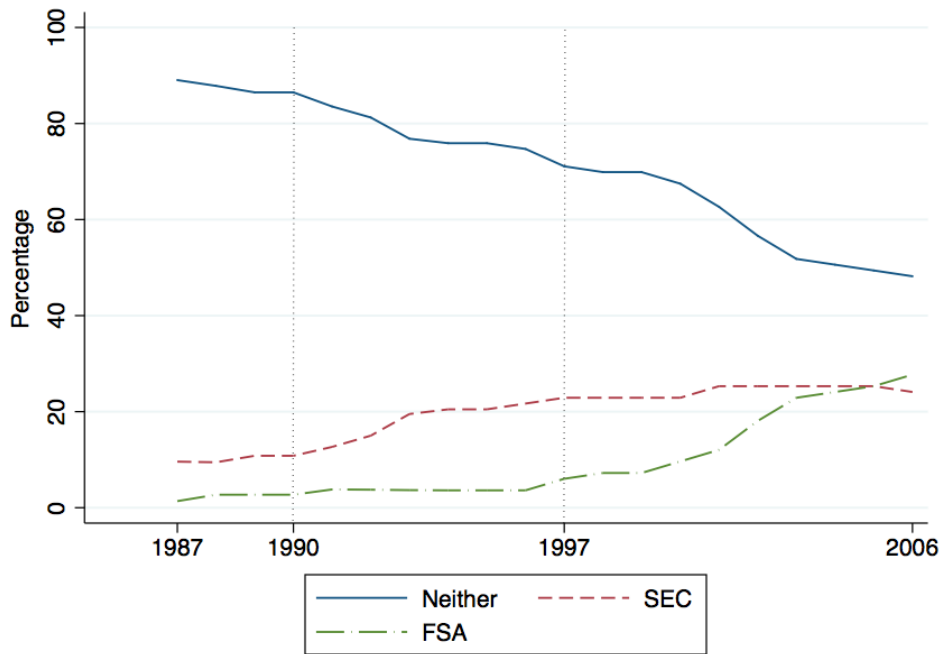
In the period before 1990 some combination of CB-only and CB/MoF⁷ supervision was clearly the dominant mode of supervision. From just after 1990 this began to change. CB/MoF supervision decreased in relative prevalence. At first, much of the shift was to systems with some combination of the CB and a SR that usually focused on securities supervision: the SEC model. By 1996 just under 40 percent of countries in the sample had SEC-like regulators, almost overtaking CB/MoF supervision in relative prevalence. Notably, unified supervision by a specialised regulator (the FSA model) was almost non-existent.

The SEC reform trend is further indicated by the changing prevalence of the official English-language names given to securities regulators.⁸ Figure 4.2 shows the naming patterns. In the late 1980s approximately

⁷Due to a limited number of CB only countries and the difficulty of separating CBs from MoFs when the CB is not clearly independent, these two categories are combined throughout the paper.

⁸Focusing on official English names clearly ignores non-English name convergence. Spanish speaking countries, for example rarely give official English names to their financial supervisors (or have English language version websites). This would certainly be an interesting area of further study.

Figure 4.2: Percentage of Securities Supervisor English Language Names in 83 jurisdictions



A geographic visualisation of these trends is available at: http://christophergandrud.blogspot.com/2011_04_01_archive.html.

90 percent of securities regulators with official English-language names did not have at least two words similar to or forming the same acronym as either “Securities and Exchange Commission” or “Financial Services Authority”.⁹ In the early to mid-1990s there was an increase in countries with SEC-similar names (for example, the Hong Kong Securities and Futures Commission created in 1989).

A complex version of the SEC model originated in and has been used for a number of decades in a country with very prominent financial markets, the United States. The model’s prominence increased in the 1980s with the establishment of an international institution that could promote it as best practice. In 1983 the International Organization of Securities Commissioners (IOSCO) was created out of an inter-American predecessor organisation. Around 1990 IOSCO actively promoted the creation of “independent”¹⁰ securities regulation (for example see, Development Committee Of IOSCO, 1990, 5).

⁹Coding done by the author.

¹⁰Much of the literature and documents from government and international organisations on financial supervision uses the term “independence” (see Goodhart and Schoenmaker, 1997, Masciandaro, Quintyn and Taylor, 2008). This can be a confusing term since the authors are often referring to making the supervisor independent of a possibly already independent CB. To avoid confusion, I use the term “specialised” instead. See below for a further discussion.

4.1.2.2 The FSA Trend (1997 until at least 2007)

In Figure 4.1 we can see that from a little after 1997 adoption of SEC-like supervision and supervisors being given the SEC name leveled off. From that point unified and specialised supervision—the FSA model—began to take off. This trend is mirrored in Figure 4.2. Before 1997 almost no countries had a securities supervisor with a name similar to “FSA.” However from 1997 the percentage of securities supervisors with FSA-like names increased substantially. By 2007 around 35 percent of jurisdictions had FSA-like names (for example, Japan’s Financial Services Agency created in 2000).

This adoption trend was closely preceded by heavy promotion of the FSA model as best practice. From 1997 the IMF, the Basel Committee, members of the United Kingdom’s government, elite academia, and the business press promoted the FSA model.¹¹ The United Kingdom, a prominent global financial centre, began this trend by creating the FSA in 1997 (Masciandaro, Panisini and Quintyn, 2011, 4). UK policymakers such as Chancellor of the Exchequer Gordon Brown actively promoted it as part of new international best practice standards from 1997 (Walter, 2008, 23-24). Around this time, many authors in academia and at the IMF began researching and/or promoting some sort of supervisory unification and “independence” (for examples see Goodhart and Schoenmaker, 1997, Goodhart, 2002, Quintyn, Ramirez and Taylor, 2007, Masciandaro, 2006, Masciandaro, Quintyn and Taylor, 2008). Usually this meant a regulator separate from elected officials, private interests, and even the CB (Goodhart and Schoenmaker, 1997, Quintyn and Taylor, 2003).¹² The FSA model was actively promoted by a number of international financial institutions as part of a major push in the late 1990s and early 2000s to reform financial governance according to new international best practice standards (see Walter, 2008, Ch. 1). The Basel Committee for Banking Supervision included the independence idea as the *first* of its Core Principles for Effective Banking Supervision (1997). The idea of unified supervision was also advocated. Principle 20 states that supervisors should regulate banks “on a consolidated basis,” i.e. across securities and deposit banking. The IMF and World Bank endorsed the Core Principles in October 1997. From 1999 these two organisations also regularly ran Financial Sector Assessment Programs that included evaluations of compliance with the Basel Committee’s Core Principles. The Core Principles were subsequently adopted by the International Association of Insurance Supervisors

¹¹Despite the previous moderate SEC model adoption trend, it was so minor that Quintyn, Ramirez and Taylor could argue in 2007 that the attention given to supervisory governance over the past decade was new:

The discussion about independence, accountability, and more broadly, governance of financial sector regulatory and supervisory agencies... is still relatively new... Previously, the organisational structure of supervision had been widely viewed as a relatively unimportant issue, both in theory and in practice, but this perception changed dramatically about a decade ago. (2007, 3)

¹²Note, Goodhart and Schoenmaker (1997) discussed both the potential positive and negative consequences of specialised supervision. However, this piece is often quoted in later research as advocating unified SR.

and even IOSCO.

The popularity of the FSA model is captured by a quote from a former official at the People’s Bank of China. He commented that Chinese policymakers, when considering reforming financial supervision, looked to the “international fashion” leader at the time: the United Kingdom’s FSA.¹³

4.2 Why Were Supervisors Changed?

So far we have established an association between when financial supervisory governance best practice ideas were promoted and when countries began converging on these governance styles. But how causally related are these events? Anecdotally, individual supervisors have mentioned diffusion as one of the reasons they were created. The Taiwan Financial Supervisory Commission (a unified SR), for example, lists the “Global Trend” as one of the main reasons that it was created (TFSC, 2010). Nonetheless, we have only met one basic criteria for establishing plausible causal relationships: time-order.

To make a sturdier causal case, in this section I lay out theoretical arguments for how these particular best practice ideas could have caused observed convergence trends. I focus on possible causal mechanisms that can be empirically tested against the Time-Order and Increasing Relationship criteria with Event History Analysis: crisis diffusion and peer influence. I also discuss competing, non-ideational and non-diffusion factors that could explain policy change and even convergence trends. These include financial sector consolidation and institutional path dependence.

4.2.1 Policy Convergence Through Ideational Diffusion

I first lay out the general theoretical case for why the SEC and FSA models may have been important causes of the convergence trends we saw in the previous section. However, I do not want to dwell too much on the general theory of how ideas may shape actors’ goal oriented behaviour. Instead I want to establish a number of empirically testable hypotheses about the mechanisms through which these ideas could be important factors causing supervisory governance choices.

4.2.1.1 Ideas as Causal Models

A large, literature has established theoretical arguments for how ideas are important causes of policy changes (see Blyth, 2002, 2003, Chwioroth, 2010, Finnemore and Sikkink, 2001, Jacobs, 2008, McNamara, 1998, 2002, Yee, 1996, Finnemore and Sikkink, 1998, Windmaier, Blyth and Seabrooke, 2007). Briefly, ideas can shape

¹³From an interview conducted by the author in Beijing with Zhixiang Zhang on 11 March 2010.

policymakers' goal-oriented behaviour by resolving the means-ends uncertainty they have about what policy choices are likely to result in their preferred goals. Ideas are essentially causal models that link means to ends and suggest what policies actors should choose.

There has been considerable means-ends uncertainty in the area of financial regulatory governance, even when the FSA model was being heavily promoted (Masciandaro, Panisini and Quintyn, 2011, 22). There is still considerable uncertainty about what outcomes supervisory styles produce and how policymakers should choose between them. Eichengreen and Dincer (2011) recently found that supervisors that were separated from the central bank were associated with lower non-performing loan ratios. This may be because they are better able to overcome the electoral time-inconsistency problems that elected officials face (Gilardi, 2006, Kydland and Prescott, 1977) or the conflicting objectives that central banks face when supervising financial institutions and making monetary policy (see Goodhart and Schoenmaker, 1997, for a discussion). Meanwhile, Masciandaro, Panisini and Quintyn (2011) found that consolidation and separation are negatively correlated with a banking sector's resilience after a crisis. Whether or not a particular governance style is optimal is clearly still an open question. It is also clear that policymakers could not have had full information about what governance type is optimal during either the SEC or FSA convergence periods.

Nonetheless promotion of best practice ideas could have helped actors believe they were overcoming this uncertainty. Best practice ideas may work as frames (Tversky and Kahneman, 1981, 1986) that focus policymakers' on particular ways of understanding uncertainty problems about how supervisory governance works and what outcomes are likely to result. Choosing to believe one model over another in turn shapes what choices policymakers take. Nonetheless, not all ideas are adopted and positively influence policy change. Why might the SEC and FSA recommendations have been more influential than others?

Finnemore and Sikkink argue that "the most important ideational factors are widely shared 'intersubjective' beliefs" (2001, 393). Both the SEC and FSA ideas were relatively easy for policymakers to accept, because they explicitly tied into the broader and already widely accepted "independence" policy paradigm (see Hall, 1993) that had dominated monetary policy governance since the 1980s (see McNamara, 2002).¹⁴ These links were made despite the relative inapplicability of the term independence for describing the suggested SEC and FSA reforms. Independence awkward for describing SRs, especially compared to the term's use in the general political economy literature. In political economy it refers to independence from political principals. For financial supervision it often means separation from an already independent CB. The term furthermore seems inadequate since the CB and SR often need to work together to share information

¹⁴The recommendations' timing furthermore closely corresponded to the increasing *de jure* prevalence of central bank and regulatory independence in other areas (see McNamara, 2002, Jordana and Levi-Faur, 2005).

(Goodhart and Schoenmaker, 1997)¹⁵ and may have significant staff overlap.¹⁶ Nonetheless the term may have added plausibility to the causal claim that separating supervision would result in successful supervision (see Quintyn, Ramirez and Taylor, 2007, for an explicit discussion of this connection).

4.2.1.2 Mechanisms

Level of Promotion Despite their appeal to the same independence paradigm, there was qualitatively less support for the SEC model even at its peak in the early 1990s. It appears to have been largely developed and promoted only by IOSCO. Conversely, the FSA model was very highly promoted by many international organisations and policymakers in countries with prominent financial markets. Using Finnemore and Sikkink’s (1998) terminology, the SEC idea was promoted from a much smaller “organisational platform.”¹⁷ An idea’s level of promotion is important for its adoption, so we should observe a weaker diffusion effect for the SEC model compared to the FSA model. This leads to the first hypothesis:

H_{d1} Ideational diffusion mechanisms, discussed below, should have a stronger effect for adoption of specialised and unified supervision than CB and specialised supervision.

Crisis Diffusion As mentioned earlier, a number of authors (Blyth, 2002, 2003, McNamara, 1998, 2002, Windmaier, Blyth and Seabrooke, 2007) argue that ideas help actors overcome means-ends uncertainty and ultimately shape their policy choices. Being in a crisis heightens uncertainty and may make heavily promoted ideas more potent. During a crisis it can be very difficult to determine how much the supervisory structure contributed to the crisis and how it should be changed. This is where prominent best practice ideas may come in. They help actors interpret what is wrong and suggest solutions to the problem. Walter (2008, Ch. 1) argues that best practice independent supervision was specifically promoted as a way of understanding the 1997 Asian financial crisis—i.e. as a crisis caused by overly close relationships between regulators and financial institutions—and suggested a solution—*de jure* regulatory independence.

This leads to the hypothesis that:

H_{d2} Jurisdictions in crisis are likely to adopt a supervisory model *when it is heavily promoted*.

¹⁵Goodhart and Schoenmaker actually discussed considerable scepticism about the term independence’s appropriateness for financial regulation. However, in many later works, particularly by IMF staff writers, their 1997 piece is referenced as being a founding document of the supervisory independence idea (for example Quintyn, Ramirez and Taylor, 2007).

¹⁶This is especially true in Northeast Asia. Staff sharing through secondments and agency revolving doors (with both the CB and MoF) was a common theme in interviews conducted by the author with policymakers and experts in China, South Korea, and Japan in March 2010.

¹⁷Clearly a number of questions could be explored stemming from this discussion. Primarily, why did the FSA model gain such wide support and usurp the SEC model? This might be a fruitful issue for further study.

Note that this hypothesis contrasts with Simmons and Elkins (2004) treatment of crisis in their diffusion research. In their study of capital account liberalisation, they propose that crisis is not an diffusion mechanism, but has an economically functional effect on opening (or closing) capital markets. They hypothesise, that countries with similar experiences with economic shocks will choose the same policy solution of curbing capital outflows. In their study they propose that having a crisis should hinder the adoption of the heavily promoted capital openness policy. Their evidence points in the other direction, however. Crisis actually decreased the likelihood of maintaining restrictive capital controls. Given my propositions, and counter to the conclusions of Simmons and Elkins (2004), these results are largely in line with the hypothesis that crisis is an ideational diffusion mechanism.

Beyond the direction of the effect, in the analyses below I also use the TOIR criteria to determine if crisis is having a functional or ideational influence on supervisory governance choices.

Peers A number of theories have been put forward for why policies spread within a region or between peers groups conceptualised more broadly.¹⁸ Formal peer groups can be organisational platforms that actively promote or discourage certain best practice ideas. Furthermore, counties may be learning from the experiences of peers who have adopted a given policy. Peers' adoption of a best practice idea may allow policymakers to examine claims that a supervisory governance means is at least associated with a policy end in countries with relatively similar economic conditions. The more peers adopt a supervisory model, the more opportunity there is to learn about a promoted policy. Despite the abundance of other peer hypotheses (see Brooks, 2005, 280-281), we can use the TOIR criteria to determine if peer effects are an ideational diffusion mechanism. Their effects should change when an idea is promoted.

The peer ideational diffusion hypothesis proposes that a jurisdiction is more likely to adopt a supervisory model as a larger proportion of their peers adopt it and it is promoted.

H_{d3} The probability of creating an SEC or FSA-like supervisor increases as the proportion of peers who adopt these institutions increases *and* following the models' promotion.

4.2.2 Non-Diffusion Convergence

Financial Industry Cross-sector Consolidation One of the primary functional arguments for unified supervision was that as financial companies expanded across sectors supervisors should or are likely to do

¹⁸It is common in diffusion studies to include numerous historical, linguistic, and cultural variables. Not only do these, usually highly correlated variables tend to produce meaningless coefficients (Schrodt, 2006) and suffer from validity issues (how do you dichotomously code 'the religion' of a society that is almost evenly split between Christians and Muslims, for example), but exploratory descriptive analysis also indicates that these won't be strong predictors.

the same (Čihák and Podpiera, 2007, Lastra, 2003, Masciandaro, 2006).¹⁹ Returning to the example of the Taiwanese Financial Supervisory Commission, they also highlight financial market consolidation as a reason for creation. Holding aside the endogeneity issue of whether or not the trend towards consolidation was also the product of ideational diffusion, i.e. the idea that successful financial institutions needed to diversify across sectors leading to regulatory changes, supervisory consolidation may be a functional response to changing economic circumstances. This leads to the hypothesis that:

H_{n1} Jurisdictions with more consolidated financial sectors are more likely to adopt unified supervision.

Institutional Path Dependence Institutional path dependence may be conditioning some of our observed convergence (for a diffusion research example see Jordana and Levi-Faur, 2005). The assertion here is that institutions change gradually and new institutions are added to already existing ones, i.e. layering. Streamlining, e.g. unification of multiple supervisors, is not expected (Thatcher and Coen, 2008). SRs are predicted to be created alongside existing institutions. Masciandaro (2006) also identified a path dependent effect specific to this policy area. He noticed that countries with central banks involved in financial supervision were less likely to create a consolidated SR. This finding is despite the argument made in the context of the FSA's creation that financial supervision should be taken away from the unelected central bank as it gained more monetary policy independence.²⁰ If central banks are able to retain control of supervision, despite reforms this is evidence for layering. If the central bank is consistently removed from supervision then we would have evidence that policymakers cared about and were able to confine the powers of increasingly independent central banks, in contrast to an institutional path dependent approach.

H_{n2} Jurisdictions will be more likely to add actors to supervision, but not remove them, especially when the CB is involved.

H_{n3} New supervisors will be more likely to look similar to old ones rather than radically different.

An example of the latter hypothesis would be a regulatory system with multiple SR consolidating into one specialised regulator rather than into the central bank.

¹⁹Initially the regulatory capture literature (Stigler, 1971) seems a natural place to look for theories concerning financial supervision. Private sector capture was certainly a concern of those proposing supervisory separation from political actors (see Quintyn and Taylor, 2003). However, this doesn't appear to be likely to explain governance reform choices. If regulatory policy was already captured by the financial sector, why would they lobby to have it changed? Financial sector structure variables are included in the models partially to account for potential changes in the power of the sector which might lead them to have more or less influence over governance choices.

²⁰From Charles Goodhart, February 2012.

4.3 Hypotheses Testing

Because of the structure and limitations of the data, I use a multi-pronged analysis. First, I use a pattern finding approach with a simple non-homogenous piecewise constant Multi-state Markov Event History Analysis (MSM-EHA), to examine the plausibility of the path dependent hypotheses. The MSM-EHA also allows me to identify more finely tuned analyses which I can use to test the other hypotheses. These include, a Cox Proportional Hazard (PH) EHA of transitions from multiple SRs to unified ones and a Fine and Grey (1999) Competing Risks EHA (FG-CREHA)²¹ of transitions from CB/MoF supervision.

4.3.1 Step 1: Path Dependence

Policymakers rarely make decisions in the context of two choices, such as change/don't change. Instead, they are presented with a number of options—change to unified SR, CB/SR supervision, etc. The existence of competing choices may influence which option is taken. Choices may furthermore be affected by the status quo policy. Examining how status quo policies condition subsequent choices allows us to test the two path dependent hypotheses.

The analysis indicates that rather than being a cause of supervisory change, *path dependence seems to mediate the adoption of diffusing models*. It actually appears to meet the TOIR criteria. We can see this more clearly in Figure 4.3 which shows the predicted probabilities of transitioning from one type of governance to another in specific time periods. The periods corresponded to the times when the SEC and FSA models were promoted. Transition probabilities were calculated using a piecewise constant MSM-EHA (see Pèrez-Ocón, Ruiz-Castro and Gámiz-Pèrez, 2001, Jackson, 2011)²² where the first period was 1990-1996 and the second was 1997-2006.²³

Breaking down the transitions by time period reveals a number of interesting patterns. By the end of the SEC period in 1996 the highest probability of transitioning from CB/MoF supervision is to the SEC model: CB combined with a SR. There is in fact a very low probability of them making any other transition. This is

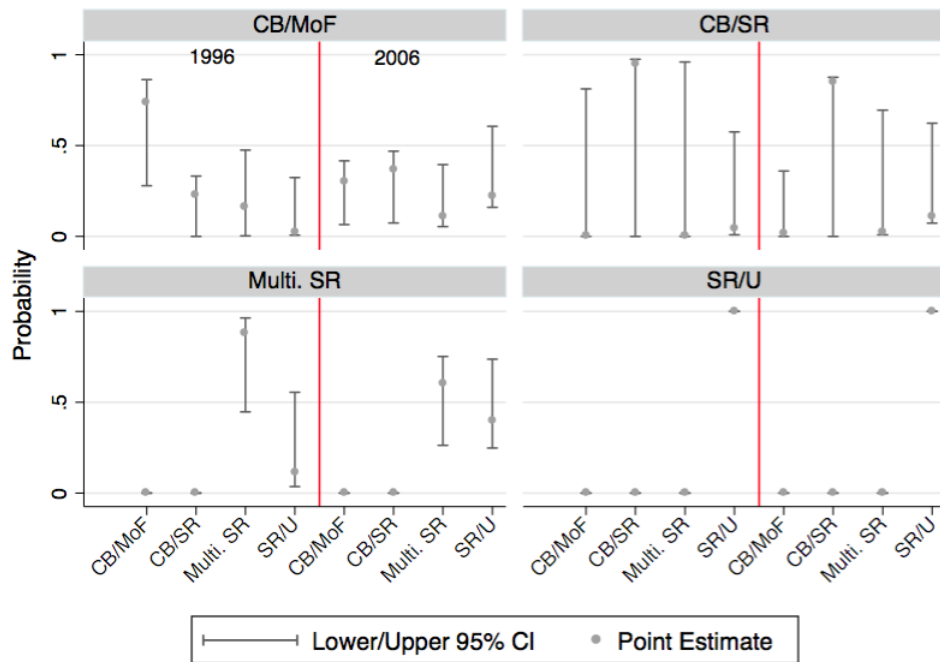
²¹Competing risks are a subset of multi-state models (Pintilie, 2007).

²²The first order Markov process used here has transition probabilities λ_{ik} of moving from one governance type, or state, i to some state k . Transitions are conditional only on being in a state i at a time t . Formally: $\lambda_{ij} = \lim_{\Delta t \rightarrow 0} \frac{\Pr\{\text{transition } i \rightarrow k \text{ in } [t, (t+\Delta t)] | \text{in state } i \text{ at } t\}}{\Delta t}$ for $i, k \in K$ (adopted from Pan et al., 2007).

²³These were found using the R package `msm`. The probability $p_{ik}(t, t + \Delta t)$ of moving from state i to $k \neq i$ by time $t + \Delta t$ if state at time t is i is found in the transition probability matrix $P(t, t + \Delta t) = P(t)$. The equations to find $P(t)$ are solved by `msm` with the matrix exponential $P(t) = \text{Exp}(tQ)$ assuming that the transition intensities are constant over the two periods. Q is the transition intensity matrix with crude initial values taken from observed data (Jackson, 2011). The piecewise constant model is justified by the clear time period convergence patterns discussed earlier and validated by comparing observed vs. predicted prevalence from piecewise and non-piecewise constant models where the latter vastly outperformed the former.

The `msm` model and Figure 4.3 can be replicated using R and Stata code found at http://dl.dropbox.com/u/12581470/code/Replicability_code/Financial_Supervision_Governance_Replication/public_fin_trans_MSM.R.

Figure 4.3: Predicted Reform Probabilities from 1990 through 1996 and 1997 through 2006.



The graphs are arranged by the originating supervisory type. For example, the upper leftmost point estimated is the predicted probability of creating a unified specialized regulator (the FSA model) between 1997 and the end of 2006 if supervision at the beginning of this period was done by the central bank and a specialized regulator (the SEC model).

despite generally increasing central bank independence which may have inclined policymakers worried about concentrating too much power in an unelected central bank to remove it financial supervision. Multiple SR systems are predicted to make almost no reforms by 1996. They aren't adopting the SEC model, which would involve including the CB. By 2006, near the end of the observed FSA period, systems with multiple specialist supervisors have an increased probability of consolidating. CB/MoF systems are again more likely to add specialist supervisors while removing the MoF. Though not the FSA model, this is more FSA-like. The probability of these systems completely removing the central bank and creating an FSA-type regulator also went up. But it is striking how limited this was compared to the continued ability for the central bank to retain some control in an SEC-type arrangement even after reforms. The two trends, on the other hand, are very stable over the period, with the SEC model becoming slightly less so as it is succeeded by the FSA. No unified SR was predicted or observed to change in either period.

Institutional history appears to be conditioning if and how a model is adopted. New institutional configurations are more likely to be adopted if they are similar to previous ones. Central banks seem capable of retaining influence despite highly promoted supervisory ideas. Conversely, systems without CB involvement seem capable of preventing an increased role for the CB and were more open to the FSA model after it was promoted. Layering (anti-streamlining) is more prevalent if the CB is involved. Nonetheless the prominent supervisory ideas seemed to encourage streamlining.

4.3.2 Step 2: Examining Covariates

My data's basic structure suggests that further patterns could be explored through piecewise constant MSM-EHA. Unfortunately, with relatively few observed transitions compared to the number of governance types and parameters,²⁴ especially for transitions from combined CB/SR supervision, it would be difficult to meaningfully study the effects of more than one or two covariates. It is more appropriate to separate the MSM-EHA into a number of EHA for transitions that have sufficient observations to produce meaningful results.

The statistical methods—Cox PH and FG-CREHA—are discussed first. Variable descriptions and results follow.

²⁴In a piecewise constant model for every plausible transition there are $j - 1$ time dummies, where j is the number of time periods.

4.3.2.1 The Unification of Multiple SRs

A Single Transition Cox-PH analysis was appropriate for transitions where multiple SRs were unified. Since the only observed supervisory reforms of multiple SR were of this type, any more complicated competing risks models would simply collapse into a single transition model. Single Transition EHA is advantageous for studying diffusion because it takes the history of the units of analysis into consideration, primarily through the hazard rate: $h(t)$.²⁵ The hazard rate is the rate of an event happening, such as adopting a certain institutional form, over a very small change in time, conditional on the units' covariates. I estimate covariate effects on the hazard rate of transitions between multiple SRs and a unified SR using a common Cox (1972) PH model (see also Box-Steffensmeier and Jones, 2004, Golub, 2008).²⁶

4.3.2.2 Removing the MoF and Possibly the CB from Supervision

Single Transition EHA is confined to questions regarding one event type, e.g. whether or not a country liberalises its pension system (Brooks, 2005) or a country dyad creates a bilateral investment treaty (Elkins, Guzman and Simmons, 2006). Given that there are relatively many observations on the three transitions away from CB/MoF controlled supervision, we are able to use multi-state models to examine them. The possible reform choices are not independent of each other. So, the most appropriate way to examine the covariate effects is to find the hazard of the sub-distribution (Pintilie, 2007). The hazard of the sub-distribution²⁷ for transition k at time t ($\gamma_k(t)$) is given by:

$$\gamma_k(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t < T \leq t + \Delta t, C = k | \{T > t \text{ or } (T \leq t \text{ and } C \neq k)\})}{\Delta t} \quad (4.2)$$

where T is the time of the observed transition C .

Fine and Gray (1999) developed a Cox PH analogue to empirically model the effect of covariates on the hazard of the sub-distribution given by:

$$\gamma_k(t|\mathbf{x}) = \gamma_{k,0}(t) \exp(\beta_k^T \mathbf{x}) \quad (4.3)$$

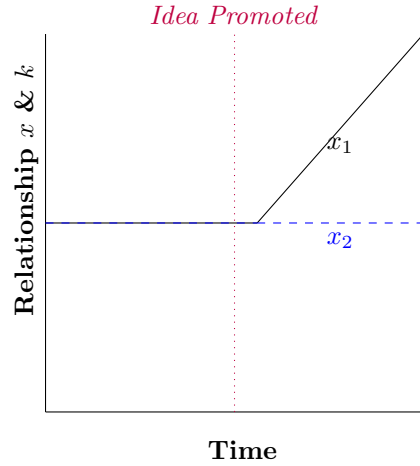
²⁵I.e. the instantaneous rate of an event k occurring by time t conditional on both the event not occurring by time t and the values of a unit i 's covariates. Formally:

$$h(t|\mathbf{x}_i) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t \leq T_k \leq t + \Delta t | T_k \geq t, \mathbf{x}_i)}{\Delta t} \quad (4.1)$$

²⁶The basic Cox proportional hazard rate for the i th unit at time t is given by: $h(t|\mathbf{x}_i) = h_0(t) \exp(\beta^T \mathbf{x}_i)$. $h_0(t)$ is the baseline hazard at time t , i.e. the hazard rate when all of the covariates \mathbf{x} are 0.

²⁷Covariates are omitted for simplicity.

Figure 4.4: Stylised Example of the TOIR Criteria



$\gamma_{k,0}(t)$ is the baseline sub-hazard analogous to $h_0(t)$ from a standard Cox PH hazard model. FG-CREHA allows us to assess the impact of covariates on choices to reform CB/MoF supervision, given that they have multiple reforms to choose from.

4.3.2.3 Examining the TOIR Criteria in Cox PH and FG-CREHA

Through the baseline hazard in Cox PH or sub-hazard in FG-CREHA, which changes at each observation year, the models capture time-specific events common to all countries. We can use them to model the *interaction* between time-specific best practice promotion and the other variables.²⁸ This is especially important for testing whether or not the diffusion mechanisms meet the TOCR criteria. To do this it is crucial to focus not just on the point estimate tables where coefficients are averaged over the observation period, but also carefully examine how the quantities of interest—predicted hazard rates²⁹ for the Cox PH model and cumulative incidence functions for the FG-CREHA models—change over time.³⁰ Figure 4.4 shows two stylised relationships between variables x_1 , x_2 , and a given policy choice k . x_1 meets the TOIR criteria. x_2 does not.

²⁸Time period dummies could not be used because country-times were standardised at the same reference point. For example, at the end of 2006 country would be in time 19, regardless of when they entered the risk set. Time period dummies would therefore not vary across countries in a given year and would produce meaningless results.

²⁹Sometimes also referred to as hazard functions.

³⁰Cumulative incidence functions are the probability of observing the event of interest before a given time, if it hasn't already happened given certain values of the covariates. Formally: $CIF(t|x) = \Pr(T \leq t \text{ and event type of interest} | x)$ (modified from Stata Corp., 2009, 532).

4.3.3 Variables

Crisis I gathered data from Laeven and Valencia (2008a) on the universe of banking crises over the period of interest. A number of different transformations of this dummy variable were tested to determine the functional form of the relationship. Results using two versions of the crisis variable are shown in the following section. The first is simply a one year *crisis dummy* where 1 is the first year of a banking crisis and 0 otherwise. The second was a logarithmic transformation of the variable, $crisis(log)$, that captures a decaying effect over 6 years.³¹ This was inspired by Mosakowski (1997) who used a similar decay function. Because of the way it is constructed, low values of $crisis(log)$ indicate high levels of the effect.

The duration and impact of crises admittedly vary between incidents. Using multiple variables is a convenient way to examine the form of the crisis effect. As such, the variables have different substantive interpretations. The first models the crisis effect on policy change as very immediate and disappearing quickly. The second models an initially large effect that decreases over time. Though these variables are largely created for convenience, examining them together is better than simply using a crisis dummy capturing the first year of a crisis.

Peers One way to test peer effects is through the proportion of other countries in a geographical region that have adopted the SEC or FSA model, respectively, in the previous year. Unfortunately, though the sample of 83 countries is wide ranging, it is not exhaustive. A regional proportion of adopters variable would therefore not actually capture the true regional proportion, resulting in a biased indicator. Instead variables are based on adopter proportions in select *formal* and *informal* peer groups that I have exhaustive data on and where peer effects are plausibly related for supervisory reforms.³² An *East Asian* peer group,³³ which had low levels of formal peer organisation, but saw widespread supervisory reforms in my observation period was examined. Formal peer groups included the *Basel Committee*, the *European Union*, and the *Council of the Baltic Sea States* (CBSS).³⁴ The last group, founded in 1992, regularly pushed for financial supervisory reforms from the mid-1990s.³⁵

Monadic row-standardised spatial effects were created for each group (see Neumayer and Plümer,

³¹The specific logarithmic base 10 transformation of the impact of crisis from the first crisis year t_{c0} to some year t_c was found by:

$$\begin{cases} \log(t_c - t_{c0} + 0.1) - 0.78533 & \text{if crisis observed} \\ \log(6.1) - 0.78533 & \text{if no crisis observed} \end{cases}$$

where $t_c \leq t_{c0+5}$. The variable was standardised so that 0 signifies no crisis. Because of this, the crisis variable at $t_{c0} = -1.78533$.

³²Plausibility was determined by examining descriptive statistics and peer organisations' documents.

³³China, Hong Kong, Japan, South Korea, and Taiwan

³⁴Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, and Sweden.

³⁵A prime example is found in the communiqué from their 1997 meeting (Council of the Baltic Sea States, 1997).

2010*a,b*).³⁶ These are equivalent to variables of the proportion of peer adopters in the previous year. I rescaled the variables to be between 0 and 100 to ease interpretation. Note it would be a mistake to assume that the peer diffusion process would work in the same way across this heterogeneous set of peer groups. Instead, the purpose of these variables is to identify what types of peer groups may have been important for causing particular reform choices.

Financial Industry Cross-sector Consolidation Firms' cross-sector financial activity is measured using the *asset diversity* variable from Laeven and Levine (2007). Asset diversity for firms with assets of at least US\$100 million is calculated by

$$1 - \left| \frac{(\text{Net loans} - \text{Other earning assets})}{\text{Total earning assets}} \right|$$

Laeven and Levine then created countrywide unweighted averages of this variable. The measure ranges from 0 to 1. Higher values indicate higher levels of cross-sector activity. Unfortunately, data was only available from 1998 to 2002 and for 43 countries of the sample.³⁷ I use their consolidated measure of asset diversity averaged within a country over this time period. A number of robustness checks were completed taking into consideration the potentially limited applicability of such a measure across the sample. However, they did not substantively alter the results.³⁸

I also examined other indicators of banking system structure, including *deposit bank assets to GDP* (*Deposit Bank Assets/GDP*) and *bank concentration* (Beck and Demirgüç-Kunt, 2009).

Other Variables A number of other economic and political variables were added to the analyses. These included *GDP/capita* in thousands of US dollars (UN, 2009) and *CB governor (CBG) tenure* in years (Dreher, Strum and de Haan, 2008, 2010). The latter was modified so that the first year of tenure was coded as 0.5. It was coded -1 if there was no CBG. *Bureaucratic Quality* and other International Country Risk Indicators (2009) were also included as well as various other measures of veto players (Keefer and Stasavage, 2003) and democracy as measured by *Unified Democracy Scores* (UDS) (Pemstein, Meserve and Melton, 2010). Only results for bureaucratic quality are discussed because the others were highly insignificant. *IMF stand-by agreements* from Dreher (2006, updated to 2008) were also used. It was a dummy variable equalling one the year an agreement was signed and the following year, zero otherwise. Please refer to the Appendix for

³⁶The procedure I used to create the dyadic data sets for finding the spacial effects was from Gilardi and Füglistler (2008).

³⁷Pakistan and Venezuela, included in Laeven and Levine (2007) were not included in the analysis due to unavailable data on their financial supervisors.

³⁸This included constricting the sample and the time period from 1998 through 2002.

Table 4.1: Cox Proportional Hazard Coefficients For Unifying Multiple SRs (FSA Model), 1988 - 2006

Variable	A1	A2	A3	A4	A5	A6	A7
Crisis(Log)			-1.569*** (0.477)	-1.216** (0.543)		-1.529** (0.676)	-1.572** (0.776)
IMF Stand-by				2.032 (1.853)		2.101 (1.681)	0.706 (1.227)
CBSS SE (SR/U)					0.020 (0.041)	0.033 (0.049)	0.052*** (0.016)
EU SE (SR/U)					0.038 (0.034)	0.052 (0.036)	0.014 (0.026)
Basel SE (SR/U)					0.013 (0.042)	0.012 (0.057)	-0.002 (0.032)
Asset Diversity		0.781 (3.170)					
CBG Tenure	0.189 (0.170)	0.189 (0.175)	0.151 (0.176)	0.230 (0.144)	0.159 (0.168)	0.184 (0.136)	
Concentration	0.809 (1.432)	1.085 (2.190)	1.027 (1.411)	0.604 (2.142)	-0.462 (3.780)	-1.595 (4.748)	
DB Assets/GDP	-4.407*** (1.128)	-4.521*** (1.189)	-4.375*** (1.125)	-4.234*** (1.144)	-5.445*** (1.571)	-5.442*** (1.915)	
Bureaucratic Quality	2.096*** (0.389)	2.209*** (0.765)	2.072*** (0.314)	2.820*** (0.990)	2.119*** (0.557)	2.790*** (0.850)	
Countries at Risk	21	21	21	21	21	21	21
No. of Transitions	7	7	7	7	7	7	7
F	7.980	5.658	12.988	11.513	5.826	8.367	2.984
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.011

Standard errors are in parentheses. */**/** at 10/5/1% significance levels. A number of other model specifications were tested that included variables such as the number of veto players (see Keefer and Stasavage, 2003) suggested by Gilardi and Füglistler (2008). Democracy (UDS) and GDP/Captia were excluded because they were highly correlated with Bureaucratic Quality (0.413 and 0.734, respectively) and had very unstable coefficients. Bureaucratic Quality was kept in this analysis because it produced the strongest and most stable results. The spatial effect for East Asia was not included because none of the East Asian countries were in the risk set apart from China in 2005-2006. Results for models with the Crisis Dummy are not shown because when included the maximum likelihood estimation failed to converge. Stata's `estat phtest` was used to test the proportional hazard's assumption.

further details.

4.3.4 EHA Results

Time averaged EHA estimated coefficients are shown in tables 4.1, 4.2, and 4.3.³⁹ I entered the variables sequentially into the models to ascertain possible multicollinearity and identify unstable coefficients (den Poel and Larivière, 2004). Results shown are only from full models with highly correlated variables omitted for simplicity. All models used robust variance estimates (Cleves et al., 2010, 135) with country-level clusters. Missing data were imputed using Amelia II by Honaker, King and Blackwell (2010) and results shown are from five imputed data sets using Stata's `mi estimate` command with `stcox` or `stcrreg` commands

³⁹The data file and Stata do-file needed to fully replicate the analyses and tables 4.1, 4.2, and 4.3 can be found at http://dl.dropbox.com/u/12581470/code/Replicability_code/Financial_Supervision_Governance_Replication/public_fin_trans_reproducible_tables.do. Please note that International Country Risk Indicators are made available for replication only. They should not be distributed.

Table 4.2: Fine & Gray Competing Risks Coefficients for Reforms from CB/MoF to CB/SR Supervision (SEC Model), others competing, 1988 - 2006

Variable	B1	B2	B3	B4	B5	B6	B7
Crisis Dummy				-17.356*** (2.732)		-19.147*** (2.352)	-16.639*** (0.565)
IMF Stand-by			0.298 (0.660)	0.241 (0.670)		0.536 (0.773)	0.747 (0.671)
CBSS SE (CB/SR)					-0.034 (0.037)	-0.047 (0.047)	-0.052 (0.042)
EU SE (CB/SR)					0.000 (0.034)	0.002 (0.035)	-0.020 (0.033)
Basel SE (CB/SR)					-0.543*** (0.100)	-0.559*** (0.092)	-0.547*** (0.050)
EA SE (CB/SR)					-0.737*** (0.107)	-0.748*** (0.095)	-0.646*** (0.027)
Asset Diversity		-3.225 (2.706)					
CBG Tenure	0.052 (0.057)	0.047 (0.059)	0.049 (0.058)	0.052 (0.058)	0.035 (0.060)	0.040 (0.064)	
Concentration	-0.580 (1.318)	-0.221 (1.374)	-0.873 (1.334)	-0.764 (1.361)	-1.241 (1.600)	-1.211 (1.592)	
Crisis(Log)			1.741 (1.140)				
DB Assets/GDP	-0.497 (0.717)	-0.811 (0.829)	-0.495 (0.733)	-0.468 (0.712)	-0.173 (0.884)	-0.201 (0.912)	
GDP/Capita	-0.062** (0.030)	-0.064** (0.029)	-0.063** (0.029)	-0.061** (0.029)	-0.055* (0.031)	-0.054* (0.032)	
Countries at Risk	45	45	45	45	45	45	45
No. of Transitions	18	18	18	18	18	18	18
F	1.891	1.529	1.987	32.789	35.323	51.291	252.482
p	0.110	0.179	0.064	<0.001	<0.001	<0.001	0

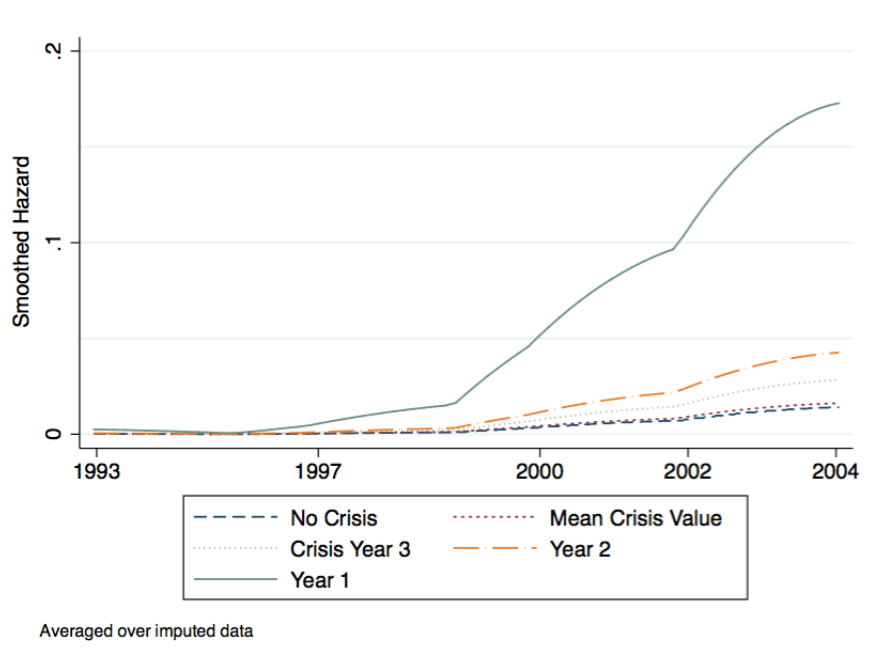
Standard errors are in parentheses. ***/*** at 10/5/1% significance levels. All models were compared to similar models over the time period 1997 - 2007 to determine if the asset diversity variable produced different results. Diagnostic tests using Schoenfeld-Type residuals (see Fine and Gray, 1999) and time interactions (Stata Corp., 2009, 214-215) were used to test the proportional hazards assumption. Bureaucratic Quality and Democracy (UDS) were excluded due to high insignificance and high correlation with GDP/Capita.

Table 4.3: Fine & Gray Competing Risks Coefficients for Reforms from CB/MoF to Unified SR Supervision (FSA Model) others competing, 1988 - 2006

Variable	C1	C2	C3	C4	C5	C6	C7
Crisis Dummy				1.613*		2.442**	2.344**
				(0.898)		(1.127)	(0.912)
IMF Stand-by			1.703**	1.688**		1.789	0.261
			(0.827)	(0.828)		(1.447)	(0.831)
CBSS SE (SR/U)					0.136***	0.120***	0.079**
					(0.028)	(0.028)	(0.038)
EU SE (SR/U)					-0.059	-0.033	-0.009
					(0.058)	(0.058)	(0.065)
Basel SE (SR/U)					-0.107	-0.128	0.053
					(0.072)	(0.086)	(0.070)
EA SE (SR/U)					-0.014	0.005	0.051***
					(0.025)	(0.029)	(0.019)
Asset Diversity		-1.151					
		(3.636)					
CBG Tenure	-0.054	-0.057	-0.055	-0.062	-0.094	-0.101	
	(0.077)	(0.071)	(0.095)	(0.097)	(0.109)	(0.134)	
Concentration	-1.350	-1.230	-0.547	-0.640	-5.000***	-3.841**	
	(1.880)	(1.941)	(1.765)	(1.723)	(1.799)	(1.819)	
Crisis(Log)			-0.805				
			(0.607)				
DB Assets/GDP	0.847	0.790	1.093	1.132	1.905*	2.052	
	(0.727)	(0.786)	(0.765)	(0.775)	(1.043)	(1.388)	
GDP/Capita	0.020	0.021	0.037*	0.035	0.050	0.075**	
	(0.023)	(0.022)	(0.022)	(0.022)	(0.036)	(0.035)	
Countries at Risk	45	45	45	45	45	45	45
No. of Transitions	9	9	9	9	9	9	9
F	2.469	1.952	3.379	3.732	5.405	5.509	5.113
p	0.044	0.086	0.003	0.001	<0.001	<0.001	<0.001

Standard errors are in parentheses. */**/** at 10/5/1% significance levels. All models were compared to similar models over the time period 1997 - 2007 to determine if the asset diversity variable produced different results. Diagnostic tests using Schoenfeld-Type residuals (see Fine and Gray, 1999) and time interactions (Stata Corp., 2009, 214-215) were used to test the proportional hazards assumption. Bureaucratic Quality and Democracy (UDS) were excluded due to high insignificance and high correlation with GDP/Capita.

Figure 4.5: Smoothed Hazards for Unification of Multiple SRs: Crisis(log) (Model A7)



depending on whether it was a Cox PH model or FG-CREHA, respectively.⁴⁰ Results for transitions from CB/MoF supervision to only multiple SRs are not shown because there were few (6) observed transitions in this direction. This transition type is nonetheless taken into consideration as a competing risk.

4.3.4.1 Unification of Multiple Specialist Supervisors: the FSA Model 1

As the crisis diffusion hypothesis predicted, crisis(log) has a positive effect on multiple supervisors being unified. Note that the coefficient is negative, but this indicates a positive effect due to the variable's scale. Please see earlier discussion of the variable's operationalisation for details. The crisis variable meets the TOIR criteria. We can see in Figure 4.5 that the crisis effect increases considerably *after* the FSA model is promoted in 1997. Asset diversity does not appear to have an effect on decisions to unify multiple supervisors. The prevalence of the FSA model among in the CBSS, EU, or Basel Committee also does not appear to have affected unification choices.

4.3.4.2 Removing the MoF and Replacing it with SEC-like Supervision

Almost all of the coefficients significant at the 10% level in the second set of models (Table 4.2) are negative, i.e. they indicate factors that reduce the hazard of removing the MoF from combined CB/MoF supervision

⁴⁰Please contact the author for further details on the imputation model and related diagnostic tests.

and replacing it with a SR. This indicates that East Asian countries and Basel Committee members were less likely to choose this style. Initially this seems to contradict the peer hypothesis discussed above. However, for the Basel Committee there is a relatively straightforward explanation: the Basel Committee did not actively promote the SEC model. In fact, the Basel Committee and IOSCO, the SEC model's main proponent, had relatively conflictual relations at this time.⁴¹ In many ways, they were best practice competitors. Overtime, the proportion of Basel Committee members with the SEC model decreased. As such, the Basel Committee may actually have acted as an organisational platform for arguments that discouraged SEC adoption. Further case study research is needed to confirm this.

Interestingly, the crisis dummy also had a negative effect. However, when we calculate the predicted cumulative incidence function, i.e. the predicted probability of observing the event before a certain time if it hasn't already happened and given certain values of the covariates,⁴² the magnitude of the crisis dummy is very small (despite the seemingly large coefficient). Countries were less likely to adopt the SEC model if they had CB/MoF supervision in the same year as a crisis. Because of its low level of promotion, perhaps most policymakers did not consider the SEC model to be a plausible way of calming a crisis. Overall, we do not appear to have found any ideational diffusion mechanisms positively associated with SEC adoption. None of them meet the TOIR criteria. This finding conforms to the promotion hypothesis. The SEC model received little promotion by international organizations and prominent countries. So, we would expect ideational diffusion mechanisms to have a weak effect on adoption. Some unobserved factors likely led to SEC model convergence.

4.3.4.3 Unifying CB/MoF Supervision into a SR: the FSA Model 2

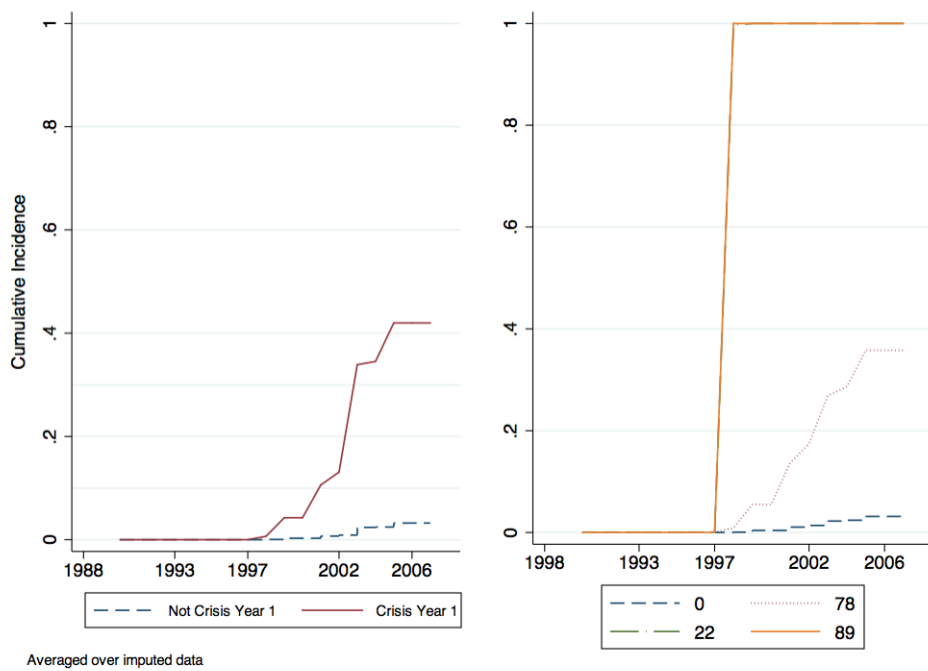
As the promotion and crisis diffusion hypotheses predicted and contrary to the results in the previous model, having a banking crisis increased the likelihood of creating an FSA-like regulator if previous supervision had been done by the CB/MoF and the model was being promoted (see Table 4.3). We can see this in Figure 4.6's predicted crisis cumulative incidence curves. For countries in crises the probability of adopting the FSA model is large and increases, but only after 1997 when the idea began to be heavily promoted. This fits the TOCR criteria.

The CBSS spatial effect is positive and very strong from 1997, when the CBSS promoted the FSA model; also meeting the TOIR criteria. The predicted cumulative incidence function shown in Figure 4.6 seems comically strong. However, it is largely depicting empirical reality. Only two—Denmark and Sweden—out

⁴¹From a discussion with Charles Goodhart conducted 5 October 2010.

⁴²Not shown.

Figure 4.6: Crisis Dummy and CBSS Spatial Effect Cumulative Incidences for Creation of Unified Supervision from CB/MoF Control Using a Representative Range of Values (Model C6)



of ten CBSS countries had a unified SR before 1997. After 1997 only two CBSS countries—Lithuania and Poland—did not have one. These two had adopted SEC-type supervision in the early 1990s and were therefore not included in this analysis of reforms made to CB/MoF systems. The reason that the model predicts that all CBSS members with CB/MoF supervision would choose FSA reforms is that six of them all of them actually did. Though this group had no formal power to impose supervisory governance reforms, their recommendations appear to have been a very influential channel for diffusing the FSA idea. The CBSS promoted the FSA idea and appears to have been a very effective organizational platform. The other peer groups, however, were not associated with FSA adoption. We should not be too surprised about this result for the East Asian peer group as it was not a formal organization. The EU did not actively promote the FSA model. The Basel Committee did promote the FSA model in the Core Principles, but the results indicate that it did not play much of a role in actual adoption by member countries.

Data (un)availability constrains our ability to fully examine the financial sector consolidation hypothesis. Nonetheless, I find no evidence that countries with more consolidated banking sectors were more likely to consolidate their supervisors. We should not simply dismiss these findings since we do have data on consolidation for approximately the time period when most of the FSA reforms were made. Five of the

nine reforms of CB/MoF supervisors to the FSA model where between 1998 and 2002, the period we have consolidation data for.

Also, it is unclear how many of these types of reforms were the result of policymakers being concerned with an over concentration of power in increasingly independent and unelected central banks. The results most closely related to this hypothesis are from the central bank governor tenure variable. However, we find no relationship between tenure and reform decisions. Admittedly, we cannot draw firm conclusions from this finding because it is a poor way to operationalize changes in central bank power. The analyses here do provide another point of empirical leverage which suggests that supervisory ideas may have been more important. The increase in actual central bank independence began in the early 1990s, about 7 years before the move to FSA-type supervision (see McNamara, 2002). If policymakers concern with the power of independent central banks was driving reforms that removed central banks from supervision we would expect to see an increase in FSA-type supervision from the early 1990s. However, as discussed in section 4.3.1, this was not the case. Reforms in the early to mid-1990s tended to remove the MoF, but not the central bank. Even when countries began to remove central banks from supervision after 1997, many central banks retained some role in supervision as discussed in section 4.3.1. Nonetheless, further research is needed to fully separate the effect of institutional power and ideational causes of CB/MoF supervisory reforms.

Discussion

In this paper I have shown how the Time Order and Increasing Relationship criteria can be used as a minimum benchmark for assessing whether or not ideational diffusion affected *de jure* financial supervisory governance convergence trends. I have also expanded the diffusion literature's methodological toolkit by demonstrating how Multi-state EHA can be used to examine policymaking in complex choice environments.

Banking crises, times of particular means-ends uncertainty, appear to not have a uniform effect on reforms over time, even when controlling for a number of financial sector structure factors. According to the TOIR criteria, this finding is evidence against a purely functional approach to understanding the impact of crisis on reforms. Crises are associated with reforms in the direction of the strongly promoted FSA idea at the same time that the model was promoted. From this evidence, I conclude that in banking crises actors may be more likely to adopt highly promoted and time specific best practice ideas. The recommendations may actually be functionally optimal. But even if this was true, and the evidence so far is mixed, clearly all policymakers do not know this at all times. I also find some evidence for the peer diffusion effect, specifically in formal groups. More research is needed to understand why the CBSS was much more successful than the

Basel Committee at promoting the FSA model.

By considering the multiple governance states that institutions can ‘start’ and ‘finish’ in, I have added to the evidence for institutional path dependence generally. Examining status quo institutions and their mediating role on future adoptions has so far not received much attention in the diffusion literature. Path dependent hypotheses are rarely examined explicitly using large-n quantitative analysis. My results indicate that path dependent hypotheses should be taken seriously in quantitative empirical policy diffusion studies and can be better operationalised in large-n studies by historical institutionalists. Both of these goals might be achieved through multi-state modeling. Considering multiple transitions over time helps to disaggregate the role of policy diffusion mechanisms from simple path dependence. Using the TOIR criteria it seems that institutional history may condition ideational diffusion, making certain status quo regulators more open to specific ideas than others.

Though I found evidence that some ideational diffusion mechanisms met the minimal TOIR criteria, I was only partially able to examine purely functional causes of supervisory governance reforms—in particular cross-sector financial industry consolidation—due to limited data. However, considering that most transitions to the FSA model were during the period when data was available and results for just this period were largely the same as the entire time span, it seems reasonable to tentatively conclude that this explanation, consistently discussed in the financial supervision literature, is not the main driver of supervisory governance consolidation in this period.

Chapter 4 Appendix

Table 4.4: Financial Supervisory Governance Change Analyses Summary Statistics (1987 - 2007)

Variable	Prop. Missing	Observed			Avg. 5 Imputed			
		Mean	Min	Max	Mean	Min	Max	
Crisis(Log)	0	-0.1	-1.785	0	-0.1	-1.785	0	
Crisis Dummy	0	0.028	0	1	0.028	0	1	
IMF Stand-by	0	0.132	0	1	0.132	0	1	
CBSS SE	CB/SR	0	2.4	0	33.3	2.4	0	33.3
	SR/U	0	3.5	0	88.9	3.5	0	88.9
Basel SE	CB/SR	0	4.3	0	36.4	4.3	0	36.4
	SR/U	0	2.4	0	41.7	2.4	0	41.7
EU SE	CB/SR	0	6.1	0	45.5	6.1	0	45.5
	SR/U	0	4	0	45.8	4	0	45.8
East Asia SE	CB/SR	0	1.1	0	25	1.1	0	25
	SR/U	0	1.1	0	75	1.1	0	75
GDP/capita	0.05	15.504	0.510	70.762	15.645	0.510	70.762	
DB Assets/GDP	0.13	0.67	0.164	2.7	0.682	0.023	2.71	
Concentration	0.22	0.672	0.196	1	0.685	0.196	1	
CBG Tenure	0.06	3.46	-1	29	3.5	-1	29	
Bureaucratic Qual.	0.07	2.735	0	4	2.721	0	4	
Asset Diversity	0.5	0.613	0.164	0.826	0.65	0.164	1	

Chapter 5

Concluding Remarks: Findings, Contributions, & Future Research

The three papers in this thesis have identified a number of empirical relationships that are suggestive of how policymakers act in financial market uncertainty. In order to make these findings I built on established Event History Analysis methods in political economy with Multi-state EHA. I also demonstrated how these methods could be used to better operationalise theories of ideational diffusion and institutional path dependence. Finally, the findings in my thesis suggest a number of future research projects that have the potential to help us better understand financial policymaking in uncertainty and hopefully will indicate ways of improving financial market governance.

5.1 Empirical Findings

My thesis has contributed to our understanding of how financial policy is made by uncovering the following empirical relationships.

5.1.1 Preferences, Signals, & Information on Data

Research for the first paper's analytical narratives has provided one of the first in-depth political economy analyses of policy responses to the Irish 2008/09 crisis (see Honohan, 2010, Nyberg, 2011, for public enquires into the crisis). Our examination of numerous documents detailing the information that was provided to Irish decision-makers in the lead up to their 2008 full guarantee decision indicate that policymakers developed

a deeply flawed understanding of the problem they faced. Almost all of the relevant information providers indicated that the crisis was primarily caused by an international credit crunch, rather than very high proportions of non-performing loans at Irish banks. This inaccurate information shaped Irish policymaker's understanding of the likely consequences of their policy choices. They vastly underestimated the probable realised costs of extending full guarantees to six major banks. Moreover, they incorrectly judged how full guarantees would constrain their subsequent bank ownership restructuring choices.

Our signaling theory, a close reading of secondary sources, and a comparison with the Irish case also led to a more measured understanding of events in the 1997 Korean crisis than has often been popularly articulated.¹ In particular, our analysis shows that, although the IMF and the United States Government appear to have coerced the Korean Government into making many policy choices that they did not prefer—certainly in terms of bank closures and foreign ownership rules—it would be incorrect to conclude that coercion explains everything. For guarantees and mergers of insolvent institutions, the IMF's and United States' impact on policy was primarily through accurate information provision—at least more accurate than what domestic bureaucrats were giving. With this information, Korean presidents were better able to make choices that they preferred.

5.1.2 *De Jure* Independence & Information Provision

Though this paper's very small sample makes it difficult to come to generalisable conclusions, it is clear that *de jure* independence from political principals does not seem to have been a major factor influencing how accurate financial bureaucrats' information was in Ireland or Korea. Ireland's operationally independent Financial Regulator understated and obscured information about the banking system's ill health, as did the dependent Korean Ministry of Finance and Economy. Both of their preferences seemed to have played a more important role in their signaling choices than *de jure* governance structures.

5.1.3 Identifying Financial Policy Independence Trends

Nonetheless, there has been a major shift towards independent economic policy governance over at least the past 30 years. Other researchers have found global convergence on independent governance in the areas of monetary and general regulatory policy, especially from the early 1990s (see, among others, McNamara, 2002, Gilardi, 2006, Jordana and Levi-Faur, 2005). I contributed to the description and study of these trends primarily by creating global data sets of *de jure* deposit insurance and financial supervisory governance.

¹The fact that Korean's often refer to the crisis as the "IMF crisis" is indicative how the IMF's actions during the Korean crisis are popularly viewed.

I used these data sets to date specifically when certain governance trends began in these policy areas. Countries started to converge on independent deposit insurance in the early 1990s. Interestingly, my examination of financial supervisory governance revealed two sub-trends within the general push for more autonomy. There was a short SEC-like (central bank plus specialised supervision) trend in supervision that started around 1990 and preceded the 1997 move towards consolidated specialised regulation, the FSA model. This finding challenges frequent claims in the regulation literature that before the move towards consolidated supervision there was no consensus or even interest in how regulation was governed (for example Quintyn, Ramirez and Taylor, 2007).

Dating the emergence of specific cross-country convergence trends allowed me to examine the associations between policy adoption choices and specific best practice recommendations. In all of the cases described above, recommendations by globally prominent institutions and policymakers preceded actual policy choices. These findings about the time-order of recommendations and choices suggests that recommendations may have played a part in causing policy choices. After making these findings I went on to examine possible mechanisms that might have linked best practice recommendations to policy choices.

5.1.4 The Mechanisms of Best Practice Adoption

I used a number of different types of Multi-state Event History Analyses to further examine whether these specific relationships were causal or just associational. Blyth critiques research that simply identifies a critical junction where policy choices begin to change and then inferring that “(relatively constant) material factors alone were insufficient causes and that ideas must have been involved” (1997, 236). He argues that this type of approach is self-referential and *post hoc*. At the minimum it would require a strong counterfactual (see Fearon, 1991). Would the sudden rise in independent deposit insurers or specialised and unified financial supervisors not have happened at these points in time if the IMF, Basel Committee, and others did not promote them as best practice? Blyth is correct in describing this as an empirically difficult question to answer.

The fact that not all countries “at risk” of adopting these policies did so provides us with some causal leverage. Because of this we can identify likely pathways through which recommendations are adopted and then see if countries with these pathways adopted ideas while those without them did not. This helps us build a stronger case for the causal role of ideas than simply identifying the broad time-period association between them and rapid change in adoption. As such, my theoretical and empirical focus has been to identify the pathways or mechanisms that are associated with the adoption of promoted policies (see Yee, 1996).

Building on the time-order criteria for establishing causation, I proposed that if we were going to argue that a specific ideational mechanism was causally related to a given policy choice then we would *at the very least* need to meet the Time-Order and Increasing Relationship criteria: the observed relationship between a possible ideational diffusion mechanism and a given policy choice must increase significantly soon after a positive idea about the policy is promoted

Crisis Contrasting the results from the papers in Chapters 3 and 4 we can see that banking crises were associated with the adoption of prominent governance ideas if there was considerable underlying uncertainty about a given policy choice. What seemed to have mattered was not just that a crisis occurred, but its combination with underlying uncertainty about what new policy to adopt in response to the crisis. For new deposit insurers, banking crises were associated with the non-promoted policy, ministry of finance control. For supervisory governance, crises were associated with the heavily promoted FSA model. These results initially seem contradictory. However, there is considerably less uncertainty about how governance choice will affect outcomes during a crisis for a new deposit insurer than a financial supervisor. In a banking crisis, a new deposit insurer clearly needs to credibly demonstrate that they have direct access to a government's financial resources so that they can actually cover deposits at failed institutions. In general, ministries of finance who controlled a new DI would have the easiest time demonstrating this. It is much less clear how financial supervisor governance choices will affect crisis outcomes. This may explain why countries in crisis were more likely to reach for the FSA idea after it was promoted as a best practice idea.

It should also be noted that this relationship cannot be explained with a purely functional approach, i.e. that policymakers know that specialised and unified supervisors are the best response to a crisis and so create them. Apart from the fact that there is not much empirical evidence to support the claim that this type of supervision is optimal in crises (Masciandaro, Panisini and Quintyn, 2011), if this were true we would expect to see a constant relationship between crises and reform choices over time. Instead, the association between crises and reform choices changes considerably over time in a way consistent with the TOIR criteria. These changes are closely associated with the emergence of specific best practice recommendations. It certainly could be, and hopefully is the case that best practice recommendations are closely related to functionally optimal policies. However, it is clear that even if this was the case, not all actors have this information at the same time. The social processes behind information gathering could be an important way that this is revealed to policymakers.

No evidence was found that this process was at work for the SEC model. The SEC model of supervision was much less heavily promoted than the FSA model. This may actually lend support to the argument

that ideas played an important role in supervisory governance choices in the 1990s. We would expect to see relationships between possible ideational mechanisms and governance choices increase with increasing levels of ideational promotion.

Peers Importantly, peers' choices were also fairly strongly associated with governance reforms. Given that peer effects also changed at specific points in time that were associated with the promotion of specific best practice ideas, we can rule out simple peer learning or emulation processes. Instead there is evidence for an interactive process between peer learning and best practice promotion. Policymakers may be more receptive to an idea that is promoted by their peers and better able to evaluate its effectiveness by examining its success in these similar countries that have adopted it.

The peer effect was far from constant across peer groups. Overall formal peer groups—especially the European Union for deposit insurance governance and the Council of the Baltic Sea States for financial supervisory governance—were found to have a stronger association with policy choices than generic regional groups. This should not be too surprising. Countries choose to join these groups, indicating that they have a lot in common with other members. What is somewhat surprising is the finding that the same peer groups, especially the EU, can have very different effects on different policy choices. The reasons behind these findings need further study.

It was interesting that though some formal groups that promoted a given idea—especially CBSS in the case of specialised and unified financial supervision—were very strongly associated with policy choices, others were not. Specifically, the Basel Committee seems to have had no effect on its members' adoption of the FSA model, despite actively promoting it. Being a Basel Committee member was nonetheless negatively associated with adopting the SEC model; a model promoted by its sometimes best practice competitor IOSCO. Clearly more research is needed to make generalisable conclusions about what types of peer groups are more effective at promoting policy changes.

IMF Influence Weak evidence for direct IMF policy influence—as operationalised by the existence of an IMF stand-by agreement—was found. In the case of deposit insurance, the IMF does not seem to have prompted independent governance for new schemes during crises. Instead it promoted MoF control. This is in line with the idea that MoF control can be more easily identified as optimal during these situations. The association between having an IMF stand-by agreement and creating a unified and specialised supervisor was moderately positive and significant for most models, if the status quo was central bank and/or MoF supervision. Though this was not true in the 'garbage can' (Achen, 2002) model. It makes sense that there

are stronger results in this policy area, since we can identify cases where the IMF included requirements to create FSA-like regulators in stand-by agreements.² Though other research has also looked at how IMF influence works (see Dreher, 2005), we should dig still deeper to be able to identify exactly how the IMF influences policy. Is it coercion? Alternatively, are IMF requirements actually reforms that domestic policymakers in crisis stricken countries want to adopt? The latter scenario is plausible given that national policymakers choose to sign IMF agreements and clearly have information about what the IMF requires (Meseguer, 2006, 171-172). Perhaps in-depth analytical narratives like those in this thesis' first paper could supplement previous large-n analyses to help disentangle these issues.

5.1.5 Domestic Factors Behind Governance Choices

Banking System Structure An important finding from the analyses was that banking system structural factors that have often been cited in the finance literature as key causes of deposit insurance and financial supervisory governance choices, were usually not found to be strongly associated with policy reforms. Though there was some difficulty finding complete data on a number of important variables—particularly asset diversity—it is striking how much more regularly political factors were associated with financial policy change.

Democracy Democracy, especially being a new democracy, was fairly strongly associated with the adoption of independence for new deposit insurers, but not financial supervisors. Unfortunately this contrasting result cannot be easily explained by the thesis' overarching theoretical framework. This shortcoming is not unique to this thesis, but is a general problem in the policy diffusion literature. Only recently has much effort been made to examine the relationships and causal mechanisms between broad political regime type and specific policy convergence trends (see Linos, 2011, for a rare recent example).

Veto Players That being said, a striking finding in all three papers³ was a lack of evidence that the generic number of veto players or their polarisation affected policy decisions. Perhaps this is not too surprising since proponents of veto player theory make conflicting predictions about the role of veto players during crises (see the discussion in the first paper). But given the prominence of veto player theory over the past decade for explaining policy choices (for only a small sample of the total see Ha, 2007, Hallerberg, 2002, 2010, Mansfield, Milner and Pevenhouse, 2007, Tsebelis, 2002, Tsebelis and Chang, 2004) it is surprising how

²For example, the requirement was included in Korea's 1997 agreement.

³Despite being included in the empirical analysis in the final two papers, the results were omitted as they were consistently insignificant when alongside other basic political and economic controls.

little explanatory power veto players variables had across the three cases. Perhaps issues such as deposit insurance and financial regulation are either not salient for many veto players and/or during crises there is a general trend for most veto players, apart from the executive, to relinquish their power in order to speed up decision-making. Future research should examine how crises impact the effective number of veto players.

5.2 Contributions to the Theory of Financial Policymaking

The evidence across the three papers supports key predictions from the thesis' theoretical framework. When Korean and Irish policymakers faced data uncertainty about how to guarantee and restructure their banking sectors they appear to have gathered new information about fundamentals, subject to the constraints of signaling games. The information they gathered greatly influenced their policy choices. When I examined policies where causal information was more uncertain, particularly financial supervisory governance, there is some evidence that policymakers relied on different socially generated information, primarily best practice ideas. They also appear to have updated this information by observing peers' experiences.

5.2.1 The Theory of Financial Policymaking in Uncertainty

Moreover, the findings in this thesis contribute to an improved understanding of uncertainty that has been lacking from both rational choice and social constructivist-type approaches. A common critique among constructivists is that rational choice theories have not addressed or can not address what actors do in uncertainty where there are unknown outcome probabilities. Constructivists have argued this is where their approaches are most useful since actors use social processes and ideas to construct understandings of the world that overcome uncertainty (Abdelal, 2009, 73). If we understand uncertainty as having different causes, we realise this critique is too strong. Rational choice theory has developed ways—particularly signaling games—of understanding how actors overcome uncertainty when it is caused by a lack of information about economic fundamentals. Signaling games are in effect social processes for constructing the stable realities that enable policymaking in data uncertainty. These games are a strong analytical tool for understanding these processes. By distinguishing between data and causal uncertainty my framework presents a coherent way of predicting when rational choice and sociological constructivist tools will be most useful for researchers to employ.

In a related vein, previous work in the sociological constructivist literature has tended to largely focus on crises as the sources of policy uncertainty. The findings in this thesis indicate that a much more nuanced view

is needed to be able to make testable predictions about the likelihood of ideational adoption. Crisis, in the common usage, should be viewed as one of many sources of uncertainty. In fact, crises may not even create uncertainty problems if actors feel they know how to respond to them, as in the case of deposit insurance governance. Also, crises may sometimes reveal new information and actually create certainty (Callander, 2011, 657).

A major conclusion derived from my framework and the evidence I found is that the information policymakers manage to gather and how they use it to build an understanding of a given issue is shaped by the type of uncertainty they perceive. The uncertainty policymakers perceive moreover has a strong impact on the choices they make. Even if higher-order preferences are constant, policymakers can end up making different choices depending on what information they gather.

This is certainly not a new point. The logic is indicated in the common remark: ‘if I had known that at the time I would have done something different’. Other works in political science and economics have proposed various ways to explain decision-making in uncertainty and have used slightly different terminology (see Calvert, 1985, Goldstein and Keohane, 1993, Lupia and McCubbins, 1998, Tversky and Kahneman, 1986, among others).⁴ In general they are not major alternative theories to my framework, but fine-grained analyses of its parts. The novel innovation of the my framework is providing a systematic way of determining when each is most likely to be useful for studying financial policymakers’ behaviour.

5.2.2 The Theory of Bureaucratic Independence and Outcomes

The evidence in my thesis contributes to a refinement of our understanding of a much lauded economic policy hypothesis: bureaucratic “independence” has a positive relationship with accurate information provision and macroeconomic outcomes. My empirical papers revealed two problems with the focus on independence. First, the concept is often stretched (see Collier and Mahon, 1993, Sartori, 1970) beyond usefulness. Second, independence is no guarantee that economic policy agents will provide the accurate information that is a necessary, though not sufficient condition for consistently making optimal public policy.⁵

The independence paradigm has been very successful in monetary policy as a way to overcome political principals’ time-inconsistency problems. Time-inconsistency threatens price stability and produces subop-

⁴For example, Lupia and McCubbins (1998) make a distinction between information and knowledge, whereas this thesis uses information more broadly to encompass both.

⁵Accurate information does not mean that decision-makers have preferences to make policies that maximise the public good. However, if they do have these preferences, perhaps induced by electoral incentives (Rosas, 2009), then they need accurate information to implement public goods enhancing policies. Accurate information is a necessary, but insufficient condition for public good maximisation.

timal outcomes (Kydland and Prescott, 1977, Barro and Gordon, 1983, Rogoff, 1985). As such, central bankers have been granted some form of independence in a wide range of countries over the past two decades (Cukierman, 2008, McNamara, 2002).

The concept has gained traction in many other economic policy areas, including deposit insurance and financial supervision. This has coincided with considerable concept stretching. My third paper shows how despite the frequent use of “independence” in discussions of and recommendations about financial supervision it is unclear what the term means in this context and what the implications are. Is an independent central bank with supervisory authority an independent supervisor? Is it even feasible for a regulator to be independent from the central bank, given their considerable functional overlap? My third paper argues that specialisation–independence *and* having only one function—is a more useful term for theoretically and empirically examining economic policy institution delegation. This term reorients political economists⁶ to pay attention to both the structure of agent-agent relationships as well as the principal-agent interactions that have traditionally been the focus of the independence literature.

Concept stretching might be part of the reason that the empirical evidence for the positive effects of independence on macroeconomic outcomes has been fairly ambiguous. For research in monetary policy where the focus has been on the narrow relationship between central bank independence and inflation, and thus the concept has been least stretched, see Alesina and Summers (1993), de Haan and Kooi (2000), Hayo and Hefeker (2002), Jácome and Vázquez (2005), Watson (2002).⁷ In the 2008/09 crisis, many of the countries with the biggest falls—Iceland, Ireland, the UK, and the United States—had independent “best practice” economic governance institutions. Why was independence inadequate for protecting these countries?

Many pieces of research have explored how the outcomes of independence are conditional on broader political structures and policy choices (Hallerberg, Strauch and von Hagen, 2009, Hallerberg, 2010, Hix, Høyland and Vivyan, 2010). Beyond mentioning the need to give more attention to agent-agent interactions, my findings in this thesis contribute to this discussion by demonstrating that independence is not sufficient to ensure that financial bureaucrats will provide full information or at least adequate information to allow policymakers to make preferred choices. In the course of implementing policy, agents gather information about the state of the economy. Financial supervision especially involves gathering information. As my framework indicates, policymakers need accurate information to choose effective policies, especially during crises. Previously it had often been assumed that independent agents would provide accurate information.⁸

⁶Note: some recent research has looked at a related part of this issue, the “multitask agency problem” (see Copelovitch and Singer, 2008, Dewatripont, Jewitt and Tirole, 2000).

⁷Likewise Meseguer (2006) finds no evidence that countries adopted central bank independence in the period between 1960 to 1990 based on learning about its objective success.

⁸Satyanath (2006), for example, argued his signaling model would likely be inapplicable in developed countries since they

However, in the Korean and Irish cases cited here there was not much of a difference in the overall accuracy of the information provided by the independent Irish financial supervisor and the dependent Korean one. Our signaling game led us to argue that this similarity, despite considerable variation in *de jure* independence, was due to the regulators' similar guarantee preferences.

Our finding indicates that we should return to an earlier phase in the independence literature when agents' preferences were acknowledged to be just as important as the *de jure* independence that they enjoyed. Hayo and Hefeker (2002) argue that, at least for central banking, "conservative" preferences⁹ and independence were originally treated as distinct concepts, but that overtime the latter became considerably confused with the former. Prominently, Rogoff (1985) argued that central bank governors should have strong preferences for inflation-rate stabilisation and if they held a preference for this optimal policy they should be allowed to act with discretion. Independence in this earlier understanding was a moderating factor, while actors' preferences were the ultimate cause of policy choices and outcomes. Hayo and Hefeker argue that nothing about actors being independent rules out them "pursuing a political agenda" of any sort (2002, 658). For independent economic policy agents pursuing a political agenda could possibly entail shaping the information they provide.

It would be interesting to investigate why preferences became downplayed in the political economy literature and in policy recommendations, while independence became central to model economic governance. I suspect that *de jure* independence is simply easier to measure, institute, and promote. Requiring financial bureaucrats to have a certain preference profile would be politically difficult to ensure overtime. Regardless, the shift may have done little to guarantee the smooth functioning of a given domestic financial industry or the international financial system as a whole.

Some proposals have been put forward to create institutions that ensure agents have preferences for effective public goods promoting policymaking. Besley (2007) focuses on how institutions, primarily elections, can be designed to select political leaders with "good" preferences. Though, as he concedes (2007, 232) much of his discussion is not directly applicable to bureaucratic agents' selection. Nonetheless his theoretical approach may meaningfully contribute to future research on the issue. Persson and Tabellini (1993) suggest a solution to the preference problem for agents who are already in office. They argue that central bankers can be induced to have anti-inflationary preferences by holding central bankers accountable for achieving specific inflation targets.¹⁰ Though generally a sensible idea, it is quite difficult in practice for many economic

would create independent institutions that would provide accurate information.

⁹They are conservative in the sense that central bankers prefer price stability.

¹⁰For example, the 1998 Bank of England Act requires the Bank to meet an inflation target of two percent plus or minus one percent. This is in contrast to Rogoff's approach. Because Rogoff assumed agents had conservative preferences, there was no

policy areas, including monetary policy (Persson and Tabellini, 1993, 77). It can be difficult to determine the relevant goal. It is also hard to hold agents accountable for meeting goals if there is uncertainty about how much the agents' actions contributed to the outcomes. Moreover, the findings in my thesis indicate that agents' may control much of the information about outcomes and have incentives to obscure this information.

5.3 Methodological Contributions

In the thesis' later two papers I made a number of important methodological contributions to examining policy choices in complex choice environments.

5.3.1 Multi-state Event History Analysis for Political Economy

The first contribution was to demonstrate why and how political economy researchers can benefit from Competing Risks and other Multi-State Event History Analyses. This is an extension of the work that Bradford Jones, Janet Box-Steffensmeier, and coauthors have done on trying to bring event history analysis to political science (Box-Steffensmeier and Jones, 1997, Box-Steffensmeier and Zorn, 2001, Box-Steffensmeier and Jones, 2004, Box-Steffensmeier and De Boef, 2006, Jones and Branton, 2005). Multi-state methods have been regularly used in other disciplines, such as epidemiology (Bakoyannis and Touloumi, 2011, Putter, Fiocco and Geskus, 2007) and even in the study of cabinet survival (Diermeier and Stevenson, 1999, Gordon, 2002). However, when previous research in political economy has used EHA it has focused on single transitions, usually with Cox Proportional Hazard models (for examples see Brooks, 2005, Elkins, Guzman and Simmons, 2006, Gilardi, 2005, Weber, Davis and Lounsbury, 2009). This has limited researchers to examining situations where policymakers have only two choices: change a given policy or do not. However, it is rarely the case that policymakers have such a limited set of policy options. Instead they may have a number of competing alternatives. For example, new democracies deciding on an electoral system can choose from a number of different types: open list proportional representation, closed list proportional representation, alternative vote, and so on. Electoral system researchers interested in this topic need an empirical method that can help determine why one type is chosen rather than the others. In Chapter 3 I demonstrated why a Fine and Gray (1999) Competing Risks EHA would be useful in these types of situations.

In that work I also showed how to use Fine and Gray Competing Risks EHA to empirically separate the causes of creating a new policy, from causes of choosing a specific variant of that policy when the choices happen simultaneously. I did this by observing if coefficients dramatically changed magnitude or sign across need to set a target for them, i.e. they should have both goal and instrument independence.

FG-CREHA analyses. In the electoral system example this would be equivalent to empirically separating the causes of creating an electoral system at all and the specific type chosen.

Many policy decisions are made in even more complex choices environments. Not only are there many policies to choose from, but there are also many status quo policies to change. For example, all established democracies already have electoral systems. The status quo may influence electoral reform choices. For example, countries with single member district plurality systems may be more likely to change to alternative vote than open-list proportional representation. The final paper (Chapter 4) demonstrated how Multi-state Markov Chain EHA (Jackson, 2011, Pan et al., 2007, Pèrez-Ocón, Ruiz-Castro and Gámiz-Pèrez, 2001) would be an ideal method for examining these situations.¹¹ In particular, my third paper showed how it could be useful for examining path dependence. However, cross-country cross-time data rarely includes enough observations to be able to examine very complicated Markov transition models. My paper showed how this problem could be partially circumvented. It demonstrated how Multi-State Markov Chain EHA could be combined with other types of EHA to examine highly complex choice environments with limited data. In particular, this enabled the finding that status quo financial regulatory institutions have a large influence on countries' reform choices. Though this type of path dependent claim is frequently made in political science (see Pierson, 2004), it is rarely tested with large-n data.

5.3.2 EHA & Operationalising Common Time-Specific Events

EHA also allows political scientists to examine time-specific factors more thoroughly than many other methods common in political economy, such as logistic or probit regression (Jones and Branton, 2005). Outside of the diffusion literature and historical institutionalist approaches,¹² when political economy researchers have incorporated time into their empirical analyses they have usually done so in a fairly superficial manner. The emphasis has generally been on 'controlling' for time. This seems to be the result of a bias towards investigating time-invariant hypotheses. As such, political economy research has tended to be (a) based on an a fairly narrow view of causality and so (b) does not use available statistical models to their fullest to examine more complex time-specific event interactions. Estimated effects are typically averaged over time

¹¹Beck et al. (2002) did make an unpublished attempt to describe how transition models using the 1st-order Markov assumption could be used to study state failure. However, this was fairly limited and the ability to estimate complex Markov models in standard social science statistical software has improved considerably since then, making these methods more accessible to researchers.

¹²Previous applications of these approaches tend to focus on generic duration effects (for example Elkins, Guzman and Simmons, 2006, Golub and Steunenberg, 2007) or path dependence, sequencing, and slower-moving processes of change (Pierson, 2004). Both of these approaches are valuable. This thesis highlights another social implication of time that these approaches often do not fully appreciate, time-specific events that interact with other social phenomenon.

and presented in static regression tables with little or no mention of how these effects vary over time.¹³ This is a major problem because it reinforces a focus on hypotheses that can be easily operationalised as regression variables in a narrow sense. Researchers have come to ignore how shared cross-country and cross-unit events—especially the promotion of best practice ideas—at specific points in time might interact with more traditional variables. Ironically, ignoring these types of events has likely inhibited the identification of many general causal processes, such as those proposed by this thesis’ framework.

My latter two papers addressed these issues by recognising that the data they used are from specific periods of time. I explored relationships with this in mind. Instead of averaging away time-varying associations, I began simply by looking at policy adoption over time and across countries to see if there are any points at which the rate of making a given choice changes substantially.¹⁴ For deposit insurance independence this was in the early to mid-1990s. For financial regulation two change points were identified, one around 1990 with an increase in the adoption of SEC-like supervision and, more dramatically, from 1997 when the FSA model was adopted rapidly. These points provided a hint that common events may have been affecting policy choices. These findings inspired searches for what those events might be. In these cases, specific policy ideas were promoted by prominent actors—international institutions and policymakers in countries with global financial centres—coincided with the start of these turning points. I developed a minimum criteria–Time-Order and Increasing Relationship—for assessing whether or not the ideas had influenced observed policy convergences.¹⁵ I then made a more thorough exploration of EHA results than is typical to see how well various potential mechanisms met the TOIR criteria.¹⁶ This involved a number of different strategies that placed the findings in their particular historical contexts: predicted transition probabilities from non-homogenous piecewise constant Multi-state Markov Chain EHA, hazard and cumulative incidents curves, and exploring observation period biases by comparing constricted analysis periods. The last option is the least preferable, especially when hazard and cumulative incidents curves could provide a more straightforward way of presenting results. However, it is the best that can be easily implemented at present in commonly used statistical packages such as Stata or R when there are time-varying coefficients.¹⁷

¹³For a critique of a similar problem in medical research, even when researchers use event history models, see Hernán (2010).

¹⁴Examining policy adoption distributions over time is fairly common in diffusion research (for examples see Brooks, 2005, Jordana and Levi-Faur, 2005, Simmons, Dobbin and Garrett, 2006) since finding policy convergence motivates the search for the causes of convergence (Elkins and Simmons, 2005, 34). However, it is rare in other parts of political economy.

¹⁵Please note that this criteria was also used implicitly in the paper in Chapter 3.

¹⁶Beyond focusing on static regression estimate tables, traditionally important ways of understanding how effects change over time—particularly hazard curves and survival functions—are either not presented (for example Brooks, 2007) or are usually given in terms of generic analysis years (for example Elkins, Guzman and Simmons, 2006). These approaches do not take advantage of the fact that we do know what specific years are being examined. Though they incorporate time into their analyses these researchers are nonetheless perpetuating a biased empirical search for general time-invariant causal effects.

¹⁷See the second paper for a discussion of the distinction between time-varying coefficients and effects that vary over time in the general sense that I have been using it here.

Hopefully, future researchers using cross-time cross-jurisdiction data will take similar care to explore how their results are related to and change over the time period the data was gathered from. If the research in this thesis is any indication of future findings, such care will help identify deeper relationships and interactions between cross-jurisdiction events and jurisdiction-specific variables.

5.4 Implications for Future Research

My thesis' framework and findings suggest avenues of future research. In this final section I focus on a few of these topics for which further research may contribute to our understanding of how financial policymaking institutions can be designed and governed better.

5.4.1 Financial Governance Data Sets

The data sets of *de jure* deposit insurance and financial supervisory governance at global scales and across fairly extended periods of time created for this thesis could be used to further examine weakly supported claims about the relationship between governance styles and policy outcomes. As discussed earlier, frequently made recommendations for independent economic governance have often not been backed up by strong empirical evidence that they promote more successful financial markets or prevent and contain crises better than other arrangements. Some recent political economy work has been attempted on the relationship between supervisory independence and outcomes (see Eichengreen and Dincer, 2011, Jordana and Rosas, 2011, Masciandaro, Panisini and Quintyn, 2011), however future research is clearly needed, especially for independent deposit insurance. The deposit insurance governance data set created for this thesis could be used to do this. A stronger empirical understanding of how economic governance choices impact policy outcomes should enable better policy recommendations.

5.4.2 Getting Accurate Information

Beyond simply creating data sets that could be used for future research, the thesis has pointed to understudied mechanisms that may be important for mediating the relationships between governance designs and outcomes. The overarching finding of this thesis is that how policymakers try to overcome financial market uncertainty influences the choices they make. To make preferred choices policymakers need accurate information about the health of financial markets and well-researched information about what policies will cause certain outcomes given this level of health. Therefore, institutions need to be created that can credibly

gather information and truthfully convey it to policymakers. Institutions need to be able to constantly reassess the evidence behind these recommendations. This may sound like a trivial conclusion. Who wants to make decisions based on incomplete or inaccurate information? Who wants to design institutions that may provide them with inaccurate information? As I have already discussed, major policy recommendations from prominent international organisations—like ‘deposit insurers should be independent’—are often based on weak empirical evidence. Moreover, the research in this thesis has demonstrated that in many countries, even countries like Ireland that have well regarded financial policy institutions,¹⁸ truthful information provision and a good understanding of how policy means relate to ends is scarcer than we would like.

If we consider the experience of medical best practices we can see the underlying difficulty of creating good information, let alone making sure that it is communicated accurately. Systematic reviews of the effectiveness of medical practices—i.e. meta-analyses of medical research with the aim of determining clinical best practices—are common in medicine. These are generally based on research involving large sample sizes and randomized trials, both research methods that are uncommon and difficult in macro-political economy. A study by Shojania et al. (2007) of medical reviews found that, despite these advantages, seven percent were contradicted by significant new evidence by the time they were published. Within two years of publication new evidence that contradicted best practice recommendations had been found for 23 percent. Luckily for medicine there is constantly updated information being generated by researchers able to conduct research with large randomised trials. In general, information providers have incentives to be truthful and share information receivers’—doctors and their patients—preferences. Building effective systems for updating information in this field is relatively easy compared to economic policy, where high quality new evidence is relatively scarce,¹⁹ information providers’ preferences often diverge from policymakers’, and providers have incentives to be untruthful. Considerable further research is needed to understand how effective systems for information provision may be designed and managed.

To do this we first need to overcome a major empirical hurdle: finding good indicators of bureaucratic actors’ preferences. The first paper in this thesis largely determined actors’ preferences through a close reading of primary and secondary documents on a case-by-case basis. This approach is slow and difficult to implement on the larger scale that is needed to find generalisations. Recent research using text analysis and item response models (see Bailey and Schonhardt-Bailey, 2008, Hix, Høyland and Vivyan, 2010, respectively) has demonstrated effective ways of measuring economic policy agents’ preferences on a broader basis. Future

¹⁸The IMF’s 2006 Financial Sector Assessment Program report generally praised the structure of the Irish Financial Services Regulatory Authority (IMF, 2006). They do also suggest that the regulator needed to improve its capacity to monitor financial institutions.

¹⁹Whether or not we are in Blythian type-three world, there is certainly a lack of comparable previous experiences on any given economic policy to study and draw inferences from.

research should incorporate these measures of agents' preferences into cross-case investigations of what information bureaucrats provide and the policy choices that result. This would form the basis of any attempt to find generalisable conclusions about what structures encourage accurate information provision. Estimating information providers' preferences on a large scale is really just the start of an effective empirical program for better understanding the reasons that good information is provided, or not.

Knowing these preferences will allow us to study specific potential obstacles to designing systems for accurate information provision. One potential obstacle that was hinted at by the findings in this thesis involves bureaucratic information gathering capacity. Bureaucratic capacity for gathering new information may be partially endogenous to the information gathering game. The theory and findings in the first paper in this thesis indicated that bureaucrats with similar preferences to banks may want to provide the same information that banks do. In other words, they do not want to reveal information that banks themselves do not already give. Perhaps an effective way to limit the exposure of new information is to not know any other information to begin with. In these situations bureaucrats may create institutions that *credibly commit to bad information*.

These actors have an incentive to create institutions that are incapable of robust information gathering. Not being able to know provides them with plausible deniability if they are called to account. Moreover, by credibly diminishing their capacity to supervise, regulators can prevent private sector actors from changing their behaviour in response to new, stricter regulations. For example, if a regulator wants to prevent the tightening of credit provision in response to higher lending standards set by legislators, they can visibly decrease their supervisory capacity. This creates a credible commitment to not know whether or not banks are following these standards.²⁰ Banks therefore have less need to alter their lending behaviour in response to the new standards. My thesis only hints at these potential processes. Future research that accurately estimates actors' preferences across many cases is certainly needed to determine if bad information credible commitments actually exist, how widespread they are, and what can be done to discourage them. These types of findings may help us make better governance design institutions in the future.

5.4.3 Peer Influence

Finally, if these better institutional designs are found, future research building on evidence from this thesis may contribute to their dissemination through international-level best practice policy recommendations. Recommendations appear to have a greater impact when (a) they are promoted by a range of institutions, (b)

²⁰Once again this may seem like a trivial point, however it remains a real problem. For example, United States supervisors seem to currently be purposefully weakening their investigatory powers to ensure loose regulation (Morgenson and Story, 2011).

they directly address policymakers' uncertainty, (c) they are compatible with broad pre-existing paradigms, and (d) are more potent for jurisdictions when their peers adopt them. However, the findings in my thesis suggest that much more research is needed before we can come to a generalisable understanding of what peer groups are likely to influence the adoption of best practice recommendations.

A not too surprising finding was that formal peer groups, which countries actively choose to belong to, are often more closely associated with best practice adoption than disparate and informal regional peer groups. However, the result was not consistent across formal groups, even across groups that actively promoted a specific idea, and policy areas. In particular, virtually all CBSS members adopted the FSA model following its promotion. However, being a Basel Committee member was not associated with FSA model adoption, though the idea was promoted as part of the Basel Committee's Core Principles for Effective Banking Supervision. Being an EU member or candidate country was strongly associated with creating a new independent deposit insurer, but not reforming financial supervisory governance. Further research is needed to understand the specific mechanisms that make certain peer groups conduits for best practice recommendations. Knowing how these processes work will help international-level reformers better understand how to influence domestic policy choices. Finding out what governance structures work best is interesting, but ultimately we want to know how to use this information to positively impact domestic policy reforms.²¹

My thesis has made a number of significant contributions to understanding how financial policy is made in uncertainty. However, the findings in this thesis form just the beginning of a series of longer-term research programs that hopefully will make significant contributions to our understanding of how to create robust financial policy institutions. Hopefully, these institutions will help policymakers be able to more effectively respond to future uncertainty.

²¹Of course this assumes away an issue that was not addressed in this thesis: what factors influence international-level recommenders to gather and provide accurate information. Lessons from future domestic-level research, like that described above, could be helpful for knowing this.

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