Article

International Political Science Review
0(0) 1–21

DOI: 10.1177/0192512113485333
ips.sagepub.com

Competing risks and deposit insurance governance convergence

Christopher Gandrud

Abstract

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. This article fills this gap in the literature. I show how Fine and Gray's 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 an interaction between international recommendations and regional peers' choices, particularly in the European Union. However, convergence appears to slow under the particular conditions of a banking crisis, regardless of how well independence is 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.

Keywords

deposit insurance, event history analysis, financial policy, diffusion, banking crisis

Why do policies often converge across countries at the same time? Do the circumstances of individual countries just happen to incline policymakers to make the same choices or are countries influenced by common external experiences, such as trade relations, international organization recommendations, and so on? These questions have been addressed before on a range of policies, such as those pertaining to pensions (Brooks, 2005), stock exchanges (Weber et al., 2009), trade agreements (Elkins et al., 2006), and regulatory independence (Gilardi, 2005). All of these studies looked at 'either/or' choices made in isolation. But how can we determine the reasons for policy convergence when (1) there are multiple alternatives and (2) choices on different, but necessarily related issues are made simultaneously? The case of *de jure* deposit insurance (DI) governance illustrates the difficulty of understanding policy convergence.

Decision-makers creating DI schemes have many choices (see Demirgüç-Kunt et al., 2008). One important choice is who will officially govern the programme. There are at least three types of

Corresponding author:
Christopher Gandrud, Yonsei University, 1 Yonseidae-gil, Wonju, Gangwon-do, 220-710, Republic of Korea.
Email: gandrud@yonsei.ac.kr

bodies to choose from. The insurer can be run directly through the ministry of finance (MoF), the central bank,[1] or be delegated to a specialized independent agency.

Considering that there are multiple *de jure* governance options to choose from, how can we determine why countries nonetheless converged on independent governance from the mid-1990s? This is an especially thorny issue since governance choices were almost always part of decisions to create new DI. Such problems have not been addressed empirically in the political economy literature though they plague any attempt to examine the causes of new policy and institutional variation. In this article, I aim to push the methodological boundaries of policy-convergence research by examining DI governance choices.

The current boundaries are defined by the diffusion literature's event history analysis (EHA) 'toolkit' (see Brooks, 2005; Elkins et al., 2006; Gilardi, 2005; Lee and Strang, 2006; Shipan and Volden, 2008; Strang and Tuma, 1993; Weber et al., 2009). The toolkit is focused on single transitions: why a choice is made or not. Though successfully applied to many policy areas, it is inadequate when examining decisions that involve more than one mutually exclusive alternative, for example when DI governance choices are attached to decisions to create new insurers. Given the toolkit's limitations, how can we identify the reasons for choosing specific governance styles from those influencing decisions to create deposit insurance?[2]

Some initial work has tried to tackle situations with multiple choices made in isolation (see Brooks, 2007; Jones and Branton, 2005). In this article, I expand the toolkit by showing how the Fine and Gray Competing Risks Event History Analysis (FG-CREHA) can be used to examine complex choice environments (see Fine and Gray, 1999). It is already widely used in epidemiology (see Bakoyannis and Touloumi, 2011; Pintilie, 2007) and is easy to implement.[3]

Section 1 discusses convergence from the mid-1990s on independent DI in a dataset of 174 countries and territories from the 1930s to 2007. Section 2 lays out competing hypotheses for why countries adopted certain governance types for new insurers. The first subsection is domestically focused and assumes policymakers had full information about optimal governance types. The second subsection assumes that decision-makers relied on information provided by international actors in the form of 'best practice' recommendations. Section 3 demonstrates that the FG-CREHA is preferable for examining these hypotheses. Section 4 discusses the results. It finds evidence that an interaction between international recommendations and regional peers' choices influenced countries to create independent insurers, particularly in the European Union (EU). Convergence appears to slow during banking crises, regardless of how well independence is promoted. Due to electoral incentives, democracies seem to have been more likely to create independent insurers. Ultimately, I demonstrate how the FG-CREHA can advance research on policy choices, complementing methods previously applied in political economy.

1. Potential policy diffusion

For much of the 20th century explicit DI was adopted intermittently. The adoption rate, however, increased from the 1980s. Later *de jure* independent DI, separate from general DI, became the dominant international governance trend. This finding motivates my approach by indicating that diffusion may have played a significant role in causing individual countries to choose the same structures around the same time (see Simmons and Elkins, 2004).

The USA began one of the first explicit DI programmes in the early 1930s. The system was independent. From the 1930s to the present, though banks failed, no insured deposits were lost and there has never been a repeat of the bank runs seen in the 1930s (Grossman, 1992: 802). Despite this success, by 1980 only 17 countries had deposit insurance (Demirgüç-Kunt et al., 2005). There

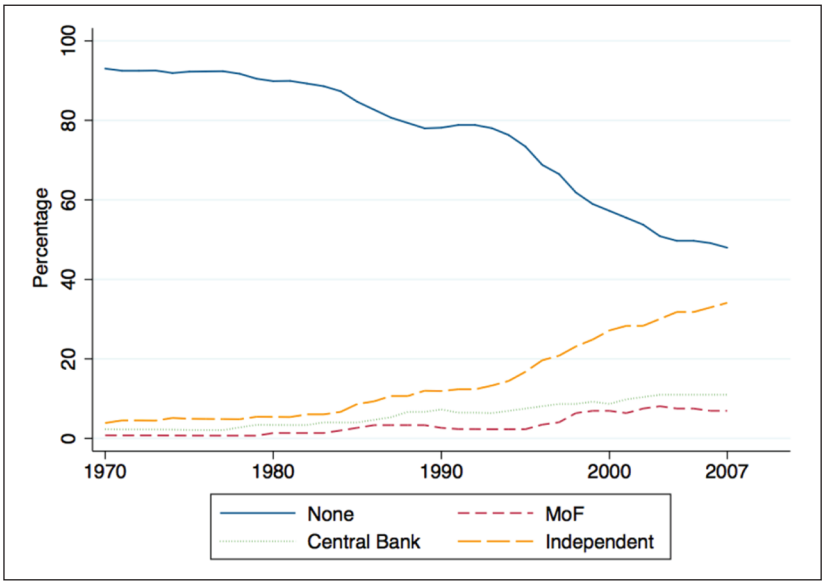

Figure 1. Prevalence of Explicit Deposit Insurance Governance in 174 Countries (1970–2007).

was considerable variety in governance. Two systems were operationally independent (those of the USA and Norway). Some countries, such as Lebanon and the Netherlands, created central-bank-controlled DI. The Dominican Republic and France created MoF-controlled DI in the early 1980s. Before the mid-1990s each governance style's prevalence remained proportionally constant. However, from the mid-1990s the proportion of countries with independent DI began to increase substantially, while the other types' prevalence remained constant (see Figure 1).[4]

It is important at this point to make a note about the data. Between 1980 and the 2007/08 financial crisis, once a country established an insurer it tended not to alter its governance.[5] Insurers changed governance only five times (about 6 percent of transitions). For this reason, I confine my theoretical discussion and empirical investigation to governance choices for jurisdictions' *first* explicit DI to achieve empirically meaningful results.

2. Policy diffusion or not

This section presents possible explanations for this phenomenon, including non-diffusion domestic economic-political causes, as well as international diffusion theories.

2.1. Domestic causes

The first two theories focus on domestic causes of governance choices. They implicitly assume that any multi-country trends are coincidental.

2.1.1. Moral hazard and democracy. Independence may help DI systems maintain banking-system stability while avoiding high public resolution costs that may result from guaranteeing deposits. Democratic policymakers may be more likely to delegate deposit insurance, because they have incentives to prevent crises and keep costs low.

A proximate cause of banking crises is what Friedman and Schwartz (1963) called the 'contagion of fear'. Individual bank failures prompt other banks' depositors to withdraw their money. They fear that these other banks will also collapse soon. Deposit insurance can prevent such bank runs by separating the probability of deposit loss from bank solvency. Depositors do not need to run to 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). Depositors no longer have an incentive to make decisions based on banks' safety. Banks therefore increase risky lending. Stability is undermined.

There are many ways to tailor a DI programme to minimize moral hazard while also gaining the benefits of deposit insurance, including closely regulating lending (see Demirgüç-Kunt and Detragiache, 2002; Grossman, 1992). Governance may play an important role in ensuring the effectiveness of these measures by changing how susceptible the insurer is to bank pressure.

Banks have an interest in loosely regulated DI. This allows them to capture risk premiums without worrying about losing deposits needed to make risky loans. They also have an interest in deposit insurance being directly linked to the public budget (for example, MoF control) rather than to a fund they contribute to. If a bank fails, the public pays, and not the banks. Conversely, moral hazard can be decreased if guarantee payouts are linked directly to banks and are separated from the public budget. For deposit insurance to work in the public good (preventing bank runs and moral hazard), it must be able to maintain credible limits on risky lending despite private bank pressure to do otherwise.

A long political-economy tradition argues that delegated institutions are better able to make credible commitments (see Kydland and Prescott, 1977; Thatcher, 2002). A number of International Monetary Fund (IMF) pieces argue that deposit insurance should be independent of politicians and banks to avoid conflicts of interest (Garcia, 1996, 1997, 1999, 2000). Political actors with ties to the industry could be influenced through cronyism (see Rosas, 2006; Satyanath, 2006) to loosen measures that decrease moral hazard. Independent agencies may be less vulnerable to such pressure.[6]

Democratic accountability may incentivize policymakers to minimize public costs and therefore incline them to delegate deposit insurance. Politicians receive rents from holding office. Receiving rents from banks in exchange for loose DI hurts diffuse taxpayers, as crises become more frequent. Keefer (2007) argues that if it is hard to remove office-holders, then incumbents will focus on extracting rents. Incumbents do not have to worry about being removed from office and losing their rents. Conversely, if it is easy for the public to remove incumbents from office, incumbents will avoid rent maximization. It would cause them to lose their positions. These incumbents will be more likely to pursue policies that minimize public costs.

It may be unreasonable to assume that the electorate has a preference for one type of DI governance over another. However, it is reasonable to assume that the electorate and especially taxpayers have preferences for preventing, containing, and resolving crises at minimum public cost (Enoch et al., 2001; Keefer, 2007; Rosas, 2006, 2009). Independent DI allows incumbents to benefit both diffuse taxpayers who incur fewer costs from crisis responses and diffuse depositors by insuring them against bank failure. Elections are a hallmark of democracy that makes it easy to remove incumbents. This leads to the following hypothesis: *democracies are more likely than autocracies to create independent DI*.

In particular, we would expect incumbents in democracies with very competitive elections to be most focused on minimizing public costs. So, *countries with more competitive elections are more likely to create independent DI*.

How can this theory explain the increase of independent DI from the mid-1990s? It could be that the proportion of countries with democracy simply grew following events such as the collapse of the Soviet Union.

2.1.2. MoF credibility. There are reasons other than crony capitalism that a government may retain direct control of deposit insurance. Deposit guarantees are different from other economic policy areas where authority is often delegated, such as regulation. Insuring deposits in the uncertainty of banking crises involves more than demonstrating credible limits on moral hazard. In a crisis, payouts must be credible to prevent bank runs (Diamond and Dybvig, 1983; Laeven and Valencia, 2008). Delegated insurers established before a banking crisis may have time to accumulate reassuring reserves. However, if such funds do not exist by the start of a crisis, only fiscal resources will be adequate. Credibly signalling the ability to use fiscal resources would likely require MoF control.

There are numerous examples of ministries of finance being turned to during banking crises to reassure depositors. During its 1997 crisis, Indonesia established a DI financed and controlled directly by the MoF. This preceded the establishment of an independent insurer in 2005. In 2008, Sweden went a step further, asserting MoF control over its previously independent DI, arguing that credible DI during a crisis requires direct control by fiscal actors.[7] This leads to the following hypothesis: *countries in banking crises are more likely to establish MoF-controlled DI if they have not already created a scheme by the start of such crises*.

The problem of establishing credibility in a new DI scheme is rooted in the potential cost of payouts. This problem should be more acute and present even in non-crisis times in countries with relatively large banking sectors. Thus, we have another hypothesis: *countries whose banking sectors are large relative to the overall economy are more likely to choose MoF control*.

These two hypotheses clearly cannot explain the independence trend, but may have mediated it.

2.2. Policy diffusion

The hypotheses so far have assumed that actors know which governance style is optimal. The following hypotheses assume that not all actors have information about optimal governance at all times. Instead, information and the incentives to incorporate it into policy are diffused through interactions with other countries and international actors. These processes are particularly plausible for DI governance. There are many DI choices that may affect stability and public costs. So, it is difficult actually to identify what role *de jure* governance plays in outcomes (see March and Simon, 1993; Powell and DiMaggio, 1991). To date, only a very ambiguous empirical relationship has been made between DI governance and banking crises. No systematic studies have been done on the issue, to the author's knowledge,[8] and a summary examination of governance and banking crises using data from this article for 70 countries finds no correlation. Though this is not definitive, it is clear that countries in the 1990s and 2000s did not have complete information about optimal DI governance.

Despite an absence of evidence that DI delegation prevents crises, in the mid-1990s and early 2000s prominent international organizations began strongly to recommend independence as best practice. From the mid-1990s, IMF staff economists recommended that insurers be operationally independent from banks and political actors, and the central bank as a way of preventing deposit-guarantee 'pitfalls'. These included agency problems and moral hazard (Garcia, 1996, 1997, 1999, 2000).[9] The recommendation was put into the World Bank and IMF's Financial Sector Assessment Program when it began in 1999. These actions are correlated in time with the emergence of

independence as the predominant type of governance from the mid-1990s. How might they be causally related?

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 mechanisms (see Brooks, 2005: 280–1). One is competition (discussed below). Another is learning. Policymakers use their peers' experiences to identify optimal policies (Meseguer, 2005; Simmons and Elkins, 2004; Volden et al., 2008). Regional peers may provide useful samples of similar experiences to learn from. The most simplistic prediction is that *countries are more likely to adopt a type of DI governance as the proportion of prior adopters in their region increases*.

The hypothesis is fairly neutral, as any governance type could become more likely to be adopted in a region when more countries adopt it. It is indistinguishable from emulation (Simmons and Elkins, 2004) and begs the question of why this process starts.

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) that focused actors' attention. It was made by prominent actors such as IMF staff economists and drew on the dominant contemporary 'independence' paradigm (McNamara, 2002). However, unlike emulation, decision-makers may have been hesitant to adopt independent DI before seeing how well it applied to them. Regional peers that adopted the policy might have provided this information. Policymakers may have been learning from these two pieces of information. Best-practice recommendations serve as informative priors, which policymakers update with the experience of regional peers. Over short time horizons, the fact that a growing proportion of peers are adopting a policy without discernible negative consequences[10] may be the best new information they can get. As more peers adopt a policy, more actors may consider it successful. This leads to the following hypothesis: *countries are more likely to adopt a type of DI governance as the proportion of adopters in their region increases and when it is promoted as best practice*.

Beyond simple geographical groups, some formal regional organizations, such as the European Union, may be particularly good samples to observe. In 1994, the EU created the directive on deposit insurance. Though the directive did not mandate a governance type, countries required to create deposit insurance may have sought to learn about optimal governance styles from peers with the same requirement. We would expect the following: *from 1994 EU members and candidate countries were more likely to adopt independent DI*.

2.2.2. Competition. In open capital markets, depositors may choose where to place their deposits based on the qualities of banks' jurisdictions. Depositors may be attracted to countries with high guarantees. This possibly explains the existence of explicit DI and guarantee levels. How might competition affect governance?

Depositors may not only be influenced by guarantee levels, but also by the soundness of the banking system. Though guarantees are useful if a crisis occurs, depositors probably prefer to avoid crises. Even if their money is eventually returned, depositors incur opportunity costs from illiquid deposits during crises. Deposits should flow to countries with low perceived crisis probabilities. Depositors may partially determine this probability by looking at countries' public-institution quality. As discussed above, delegated DI became best practice (that is, perceived most likely to promote stability) from the mid-1990s. Therefore, from this point countries wishing to retain and gain deposits in an internationally competitive environment would adopt independent DI: *countries with internationally open deposit banking sectors are more likely to adopt independent DI from the mid-1990s*.

Clearly, if investors had perfect information about governance-crisis relationships, the association between competition and adoption would be constant over time. The increase in independence would be the result of increasing openness.

2.2.3. Crisis diffusion. Decision-makers may be especially open to recommendations when policies fail. If a country experiences a banking crisis, the status quo policy has demonstrably failed. There could be uncertainty about how to rebuild stability. Best-practice recommendations help to overcome uncertainty by suggesting solutions. When recommendations appear to be the best alternative, actors' preferences will converge on them, and they will be chosen more often (Blyth, 2002; Windmaier et al., 2007). One possible example is the rapid Latin American adoption of independent DI in the 1990s. The Inter-American Development Bank observed that countries, for example Argentina when suffering from the 'Tequila Crisis', created independent DI according to 'international best practice' (IDB, 2004: 105). So: *countries experiencing banking crises will be more likely to create independent DI after it has been promoted by prominent organizations*.

2.2.4. Coercion. As mentioned earlier, the IMF promoted independent DI. Did it go beyond recommending, forcing countries to create independent insurers? The IMF could have coerced policy choices with loan conditions (see Vreeland, 2003).

IMF advice and actions about creating deposit insurance *during crises* is mixed. IMF staff argued that 'there is no substitute for government support in a systemic crisis' and for countries in crisis 'advice … has been not to introduce [deposit insurance] until the banking system or its major banks have been restructured' (Garcia, 2000: 49). Though many documents needed to confirm IMF actions are not widely available,[11] some do indicate that the IMF did not coerce unstable countries to create new independent DI. Instead, it seems to have supported or at least agreed to MoF control. For example, Thailand's letter of intent for a stand-by agreement of 14 August 1997 indicates that a guarantee programme should be created through the MoF to restore confidence. Thailand created its first DI programme in 1997 with MoF control. After the crisis it was made independent.

We expect countries receiving IMF assistance will be less likely to create deposit insurance. For governance, we expected the following: *countries signing IMF stand-by agreements are more likely to create new MoF deposit insurance*.

3. Empirical model

To test these hypotheses, we need an empirical model that can accommodate a number of issues. These include (1) covariates that vary over time, (2) countries that do not adopt any form of deposit insurance by the end of the observation period (right censoring), and uniquely up to this point in the diffusion literature, (3) the likelihood of making one decision given the existence of three choices and their coincidence with a common choice. This section justifies the model chosen (that is, a Fine and Gray Competing Risks Event History Analysis) as that best able to address these issues. It also discusses the variables.

3.1. The EHA in policy-diffusion research

Many recent studies of policy diffusion have used the EHA to test theories of why adoption rates change over time (see above). In them, choices are modelled as dichotomous responses. Unit i can choose policy k or continue without it. The EHA is used because it directly models time by focusing on the time it takes before a unit experiences an event k. This is modelled with the hazard rate

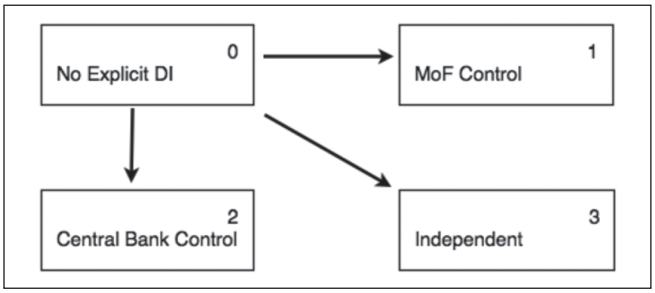

Figure 2. Competing Risk Model of First Deposit Insurance Scheme Governance Choices.

h(t): the instantaneous rate of an event *k* occurring conditional on the values of a unit *i*'s covariates. Formally:

$$h\left(t \mid \mathrm{X}_i\right) = \lim_{\Delta t \to 0} \frac{\Pr\left(t \le T_k \le t + \Delta t \mid T_k \ge t, \mathrm{X}_i\right)}{\Delta t}, \tag{1}$$

where T_k is the time that event *k* occurs during some interval *[t, t + Δt]* and x_i are the unit's covariates (Cleves et al., 2004: 7).

It is common in diffusion studies to use Cox's Proportional Hazards (PH) model (1972). The Cox PH rate for the *i*th unit is given by the following:

$$h\left(t \mid \mathrm{X}\right) = h_0\left(t\right)\exp\left(\mathrm{X}\beta_x\right), \tag{2}$$

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

3.2. Competing risks

This method lacks the ability to model the multiple choices actors have and how the existence of these choices affects decisions. We cannot simply run a Cox PH model examining why countries chose independent DI and ignore countries that made other choices. Making other choices affects the probability of choosing independent DI. We need a way of including this information. A single Cox PH model is inadequate here.

Though there are a number of different ways to examine multiple choices (see Putter et al., 2007), a competing-risks approach is most appropriate for examining DI governance choices in the period of interest, as well as new institution variation in general. None of the governance types is a priori the final choice. When a country creates deposit insurance with one governance type, it could later switch. However, data availability influences the research design. There were only five instances between 1970 and 2007 when a country changed governance types at established insurers. A convenient way to handle this data limitation is to confine our research focus to governance decisions for *new* DI.

Also, certain bodies may have *de jure* control of deposit insurance, while other actors may have de facto influence. Though it would be interesting to examine these instances in future research, in this article I am solely concerned with *de jure* governance decisions for new DI. This makes the three 'final' states of governance shown in Figure 2. In such situations, competing-risks models with mutually exclusive non-repeated transitions are the most appropriate EHA type (Pintilie, 2007).

There are two ways to approach competing risks: transition-specific hazards[12] (TSH) and hazards of the sub-distribution (HSD). In practice, the TSH means running Cox PH models for each choice, while treating countries that make different choices as censored, that is dropping them from the analysis for all following years (Anderson et al., 2002; Bakoyannis and Touloumi, 2011). This is justified and estimated covariate effects will be equivalent to the HSD if the covariates affect only *one* choice (Bakoyannis and Touloumi, 2011). However, we expect covariates to have opposite effects on multiple choices. For example, the democracy hypotheses predict that democracies are more likely to create independent and less likely to create ministry of finance DI. For these hypotheses, it is more appropriate to use the HSD. Additionally, the TSH is not suited to distinguishing the reasons for creating one type of DI governance from the reasons for creating deposit insurance overall. The HSD deals with this much more straightforwardly (see Bakoyannis and Touloumi, 2011).

The HSD rate at time t, $\gamma_k(t)$, for a transition of interest k is given by the following:

$$\gamma_k(t) = \lim_{\Delta t \to 0} \frac{\Pr\left(t < T \leq t + \Delta t, C = k \mid \left\{T > t \text{ or } \left(T \leq t \text{ and } C \neq k\right)\right\}\right)}{\Delta t} \tag{3}$$

where T is the time of the observed transition C.[13] If at time t no event is observed, then the observation is censored. The condition in braces is one in which 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 model, analogous to the Cox PH model, to estimate hazards of the sub-distribution $\gamma_k(t)$:

$$\gamma_k(t \mid \mathrm{X}) = \gamma_{k,0}(t)\exp\left(\beta_k^T \mathrm{X}\right) \tag{4}$$

Here, $\gamma_{k,0}(t)$ is the baseline sub-hazard. The FG-CREHA allows us to analyze independent variables on a policy choice of interest while accounting for the potential effects of other choices. Since we are interested in governance choices among countries creating their first DI, we are looking for effects that differ across the models. Effects having equivalent magnitude, direction, and significance indicate common factors behind creating deposit insurance in general (Bakoyannis and Touloumi, 2011). These would therefore be ancillary to the focus on governance.

3.3. Variables

The analyses intend 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 was chosen because of data availability. **[AQ: 1]**The sample of 174 countries was constricted to 70, the extent of Reinhart and Rogoff's banking-crisis data (2010). Analyses using imputed data[14] over a similar period for the full sample were conducted as robustness checks. They produced similar results and are not shown.

Democracy and electoral competitiveness. Democracy is operationalized with Unified Democracy Scores (UDS) (Pemstein et al., 2010). The scores were found with Bayesian latent variable analysis using 10 democracy measures, including Freedom House and Polity.[15] A *new democracy* dummy variable is also included to see if becoming a democracy had an effect on governance choice. The variable equals one for the first five years that a country's Polity IV score (Marshall and Jaggers, 2009) was greater than five.

Electoral competitiveness is operationalized with two variables from Beck et al. (2001), which were updated to 2010. They are the *indices of legislative electoral competitiveness* (LIEC) and the *indices of executive electoral competitiveness* (EIEC). They range from one when there is no election to seven when multiple parties or candidates run for office and no party or candidate gets more than 75 percent of the vote. As in Keefer (2007), analyses include both the basic variables and dummies, which are one if the LIEC or EIEC were six or seven (multiple parties or candidates contested the election). It is zero otherwise.

Banking crisis. The second domestic and crisis diffusion hypotheses both make predictions about how crises affect governance choices. *Banking crisis* is a dummy variable equalling one for every year that a country has a banking crisis and zero otherwise (from Reinhart and Rogoff, 2010).

Banking system. The structure of the banking sector may influence governance choices. The importance of deposit banking in general is considered using a ratio of *deposit banks' assets to GDP* (Beck and Demirgüç-Kunt, 2009). To make interpretation easier, it is turned into a percentage. Alternatively, the importance of big versus small banks is measured using their *concentration* variable: a country's three largest banks' assets to total bank assets in a given year. Though concentration was included in preliminary analyses, its results are not shown because it had many missing values. Other banking variables (discussed below) not directly related to the main hypotheses are also included in an attempt to minimize omitted-variable bias.

Peers. According to the regional peer-diffusion hypotheses, as more countries in a region adopt specific forms of governance, non-adopting countries will be more likely to create them. This process is captured with *regional peer independence* and *MoF* spatial effects (Neumayer and Plümper, 2010). For any one country, this is simply the percentage of other countries in their region that have independent or MoF deposit insurance in a given year (adapted from Brooks, 2005; Strang and Tuma, 1993). World Bank regional classifications and the full 174-country sample are used to find the variables. All regions are included apart from North America (Canada and the USA had deposit insurance before the observation period).

A *European Union* dummy variable is included to account for countries that were or, for candidate countries, wanted to be under the jurisdiction of the EU's DI directive. It equals one for every year from 1994 that a country was either a member or a candidate country (as in Demirgüç-Kunt et al., 2008).

Competition. Though the competition hypothesis is concerned with depositors shifting their funds across borders, there is unfortunately little data on deposit flows for the sample. The KAOPEN index of capital account openness (Ito and Chinn, 2008) is used as a proxy. It measures *de jure* openness.

The IMF. A dummy variable *IMF stand-by* is created equalling one in the year that a country signed a stand-by agreement with the IMF and also for the following year.[16] It may have been useful to examine the actual texts of these agreements, limiting the dummy to agreements requiring a specific governance type. Since few countries have made their agreements available outside of the IMF's archive, this information is difficult to obtain.

Other variables. The following variables are included at some stage of the analysis to explore the possibility that omitted-variable bias caused the main results of interest. A number of

bureaucratic and general country-level *governance-quality* measures are included from the International Country Risk Guide (ICRG, 2009). Countries with higher-quality governance, regardless of democracy level, could be more likely to establish public-goods-enhancing institutions such as independent DI.

Likewise, wealthier countries may be better able to establish complex institutions such as independent DI. *Gross domestic product per capita* (GDP per capita) in thousands of current US dollars is included (World Bank, 2011).

Central bank strength may influence DI governance choices. Stronger central banks may be more likely to gain control of new DI. This would affect the probability of creating independent or MoF deposit insurance. The included proxy for strength is *central bank governor time in office* (CBG tenure). This variable is from Dreher et al. (2008, 2010).[17]

Countries with a high level of government involvement in banking may not establish explicit DI programmes at all, since there may already be clear implicit guarantees. Also, given such a propensity for government involvement in banking, if they create deposit insurance, they could be more likely to give the MoF control. I include variables for the proportion of deposits and the proportion of assets held at banks at least 50 percent owned by the government. The *government ownership variables* are from Barth et al. (2006). However, data are only available for 2005 and, regarding assets, for 2000. Analyses are run with these limited variables assuming that they were constant over the observation period. The inconclusive results do not indicate an effect on DI governance choices and are not reported.

I attempted to include measures of country-averaged ratios for *capital to assets* and *liquid reserves to assets* (World Bank, 2011). Perhaps those with better-capitalized banks would be less likely to create deposit insurance. Unfortunately, the data only extended back to 2000 for most countries. This drastically constricts the observation period and led to very inconclusive results (not shown).

Of these variables, I only show results from models with GDP per capita and CBG tenure. The governance variables were highly correlated with GDP per capita. Removing GDP per capita and CBG tenure weakened the magnitude of many main variables' coefficients, but there were no substantive changes.

4. Results

Tables 2 and 3 show results from two sets of the FG-CREHA. These coefficients (which are interpreted in a similar way to logistic regression coefficients) correspond to the primary governance types of interest: ministry of finance and independent. Results from the EHA with central bank DI are not shown. It was treated as a competing event in both analyses. Only countries that did not have deposit insurance before 1984 are included.[18] Since my purpose is to compare reasons for different governance choices, estimated differences in sign and significance between the two models are our focus. They are summarized in Table 1. Note that full replication data and code for all analyses shown can be found at http://christophergandrud.github.com/di-governance/data.html.

Before discussing the results, I want to note further alterations that were made as the result of numerous robustness checks. Ideally, the analyses would have included as many factors as possible that might help explain choices. However, many of the variables are highly correlated with one another. Problems associated with high multicollinearity are well known (see Achen, 2002), especially the tendency to create unreliable coefficient estimates. Numerous regressions were made to determine which variables could be meaningfully included (Van den Poel and Larivière, 2004), only a subset of which are shown. Schoenfeld-like residuals plotted against analysis time, along

Table 1. Summary Comparison of Estimated Covariate Effects.

	None → MoF	None → independent
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 –)

Notes: The directions (signs) of the estimated effects are shown if they were consistently significant at at least the 10 percent level. A time-varying coefficient is indicated by 'tvc', that is the coefficient switches sign over the course of the analysis. The order of the signs over time is shown in parentheses.

with locally weighted regression-smoothed lines, were used to diagnose how the models conformed to the proportional hazards assumption: whether covariates are multiplicatively associated with the hazard (Fine and Gray, 1999: 503). Linear time-varying coefficients were added for variables that violated the assumption (Stata Corporation, 2009: 214–5). For these variables, the coefficients consist of both a time-invariant part β and $\beta_g(t)$ that varies linearly with analysis time.[19] The estimated coefficients are $[\beta + \beta_g(t)]$.

Note that because the analysis time is standardized,[20] time-specific events common to all units (for example, best-practice promotion) are captured in the baseline sub-hazard. The coefficients reported in Tables 2 and 3 are estimated effects averaged over the analysis time (Hernán, 2010). Ideally, predicted probabilities would be graphed to illustrate the interplay between the baseline sub-hazard and the variables. However, there is currently no straightforward way to make these graphs in Stata or R for FG-CREHA models with time-varying coefficients. It is to be hoped that future versions will include this. A solution for identifying the impact of time-period-specific best-practice promotion is to compare FG-CREHA models with constricted time periods (see below).

4.1. Similarities

My purpose in this article is not to determine why explicit DI is created in general.[21] However, the central bank governor's tenure variable had a similar time-varying effect in both of the models, indicating that it may be part of the process behind both choices. In separate models in which central bank control was the event of interest, it seems to have had no effect. Across the main choices of interest in the mid-1980s, central bank governor tenure is estimated to have a positive effect. The longer the central bank governor's tenure, the more likely that ministry of finance or independent DI was created. However, beginning in the 1990s this reversed. It is unclear why this was so and is beyond my scope here.

4.2. Differences

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

Table 2. Fine and Gray Competing Risks Coefficients for Creating an MoF-Controlled First 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***								−15.177***	−19.197***
			(0.62)								(0.875)	(1.157)
DB assets/GDP				−0.016						−0.013	0.015**	0.013**
				(0.010)						(0.014)	(0.007)	(0.005)
Crisis dummy					1.645**				1.537*	1.597*	3.134***	2.706***
					(0.823)				(0.814)	(0.905)	(0.775)	(0.720)
Regional peer SE (MoF)						0.096*					0.042	0.046
						(0.052)					(0.073)	(0.070)
Capital openness (KAOPEN)							−7.091***				−8.434***	−8.173***
							(2.546)				(2.623)	(2.997)
IMF stand-by								1.226*	1.048	1.283		
								(0.707)	(0.785)	(0.914)		
EU (from 1994)	−12.184***	−14.133***	−12.131***	−13.980***	−14.179***	−11.485***	−12.665***	−12.850***	−14.279***	−14.998***	−16.395***	−15.146***
	(1.323)	(1.171)	(1.332)	(1.154)	(1.471)	(1.274)	(1.235)	(1.118)	(1.223)	(1.287)	(0.860)	(1.215)
GDP/capita	−0.130		−0.136		−0.067	−0.126	−0.125*	−0.065	−0.005			
	(0.088)		(0.087)		(0.103)	(0.077)	(0.069)	(0.078)	(0.072)			
CBG tenure	0.353	0.371	0.318	0.282	0.271	0.331	0.460*	0.267	0.225	0.173		0.342
	(0.262)	(0.251)	(0.278)	(0.272)	(0.228)	(0.245)	(0.244)	(0.255)	(0.251)	(0.252)		(0.229)
Time interactions												
Capital openness (KAOPEN)							0.491***				0.594***	0.583***
							(0.170)				(0.193)	(0.211)
CBG tenure	−0.191**	−0.199**	−0.179*	−0.174*	−0.144*	−0.183**	−0.181**	−0.158**	−0.133**	−0.113**		−0.128*
	(0.093)	(0.093)	(0.097)	(0.089)	(0.077)	(0.088)	(0.085)	(0.072)	(0.063)	(0.054)		(0.070)
DB assets/GDP				0.002***						0.002**		
				(0.001)						(0.001)		
Countries at risk	49	50	49	47	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
Chi^2	197.365	228.187	1316.392	249.775	215.864	195.558	281.116	247.356	238.83	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

Notes: Standard errors are shown in parentheses. Significance levels: * indicates 10 percent; ** indicates 5 percent; and *** indicates 1 percent. 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. Fine and Gray Competing Risks Coefficients for Creating a Specialized and Independently Controlled First Deposit Insurer (Others Competing).

Variable	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Democracy (UDS)		2.222***								1.270*	2.335***
		(0.552)								(0.690)	(0.746)
New democracy			1.503**							0.395	0.890*
			(0.617)							(0.599)	(0.530)
DB assets/GDP				0.000							
				(0.006)							
Crisis dummy					0.766				0.792		
					(0.513)				(0.499)		
Regional peer SE (Ind.)						0.059***				0.046***	0.036*
						(0.019)				(0.017)	(0.019)
Capital openness (KAOPEN)							−0.357				
							(0.248)				
IMF stand-by								−0.687	−0.746		
								(0.763)	(0.761)		
EU (from 1994)	2.000**	2.104**	1.611**	2.694***	1.835**	1.764**	1.916**	2.009**	1.831**	1.001	1.648*
	(0.805)	(0.818)	(0.734)	(0.679)	(0.779)	(0.722)	(0.837)	(0.782)	(0.754)	(0.753)	(0.864)
GDP/capita	0.072***		0.095***		0.086***		0.110***	0.064**	0.078***		
	(0.027)		(0.028)		(0.028)		(0.040)	(0.027)	(0.028)		
CBG tenure	0.157**	0.173**	0.179***	0.162**	0.142**	0.186***	0.144**	0.155**	0.139**		0.189**
	(0.064)	(0.069)	(0.068)	(0.072)	(0.063)	(0.070)	(0.058)	(0.063)	(0.061)		(0.078)
Time interactions											
Democracy (UDS)		−0.144***								−0.068	−0.144***
		(0.039)								(0.045)	(0.050)
CBG tenure	−0.024***	−0.026***	−0.028***	−0.026**	−0.022**	−0.029**	−0.023***	−0.025***	−0.022***		−0.031**
	(0.009)	(0.010)	(0.010)	(0.011)	(0.009)	(0.012)	(0.008)	(0.009)	(0.009)		(0.013)
Countries at risk	49	49	49	47	49	50	49	49	49	53	50
No. of ind. created	18	18	18	17	18	18	18	18	18	20	18
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
Chi^2	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

Notes: Standard errors are shown in parentheses. Significance levels: * indicates 10 percent; ** indicates 5 percent; and *** indicates 1 percent. 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.

Democracy. Democracy seems to have had no effect on giving control to the MoF. Its estimated effect on 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 deposit insurance than older democracies and other regimes. The reverse effect was found for independent DI, in line with the hypothesis that democracies are more likely to delegate.

Democracy's time-varying coefficient seems to be driven by Australia and New Zealand, whose major banks are based in Australia. These were the only countries in the sample with a high UDS after 2002 and no deposit insurance. Unobserved factors may have influenced their choices not to create deposit insurance. Once the 'Oceania effect' is accounted for, it seems that democracies did prefer delegating. Limiting the sample to 1984 through to 2000 made the time-varying coefficient no longer significant.

Results from models with electoral competitiveness are not shown as they mirrored those with the UDS variable, but were less robust. Perhaps, incumbents are not only incentivized to create independent DI because of electoral accountability. Legal controls on corruption could constrain their ability to gain rents from banks. Transparency could reveal information about real and potential crisis costs to voters making them more able to sanction incumbents (Rosas, 2006). The UDS variable incorporates these factors, while the competitiveness variables do not.

Deposit banks' assets to GDP. Depending on the set of other covariates included in the model, the relative size of the deposit banking sector had a weak time-varying coefficient (almost negative to no effect in the first few years and then positive) or was simply positive, as in the 'garbage can' MoF model. This suggests very weak evidence for the hypothesis that, in order for guarantees to be credible in countries with large banking sectors, decision-makers directly link them to the public budget.

Banking crises. As predicted by the MoF credibility hypothesis, countries with banking crises were more likely to create their first insurer controlled by the MoF. There appears to be no effect of crisis on delegating. So evidence was not found to support the proposition that in crises actors reached for best-practice independence ideas. The obviously high costs of guaranteeing deposits during crises may simply make these recommendations implausible, regardless of their promotion.

As noted in the discussion of possible IMF coercion, there is limited evidence that IMF staff generally supported or at least acquiesced to countries in crises creating MoF control. Could the positive relationship between crises and MoF control actually be caused by recommendations? There are reasons to be doubtful. The IMF recommendations for countries in crisis generally discouraged the creation of new DI. We also find no relationship between a country having an IMF stand-by agreement and MoF deposit insurance (see below).

Peers. Though the results do not provide support for the crisis diffusion hypothesis, they do suggest that regional peers influence governance choices. First, though EU legislation did not require a specific governance type, being an EU member or candidate seems consistently to have had both a positive effect on decisions to delegate governance and a negative effect on creating MoF control. Second, the proportion of regional peers with independent DI had a positive effect on delegation choices, even controlling for EU status. Conversely, the proportion of peers with MoF control does not appear to have had a relationship with choices. Separate analyses with a 1984–93 sample were conducted with the regional peer and general EU variables to see if the estimated effects were actually related to the mid-1990s recommendations, rather than being a general effect of another process. In the pre-1994 analysis, the variables had no relationship with choices. By examining the

time-period-specific 'biases' in the sample (Hernán, 2010) rather than just average effects, it is likely that peer emulation, simple learning, or some other time-independent regional effects are insufficient. Regional proximity and organizations appear to interact with recommendations to influence choices.

Competition. The capital openness variable had no relationship with delegation, and had a time-varying coefficient with MoF deposit insurance. It had a small negative effect until later in the observation period, when it became positive. However, the result is largely driven by El Salvador and Uruguay creating MoF deposit insurance around 2000. Both had very high KAOPEN scores. This provides weak evidence against the competition hypothesis, and suggests that there may be no association between competition and governance choices. Note that these results are not conclusive given the incomplete operationalization. Nonetheless, it does seem that having a more open banking system, one more prone to competition, did not impact choices.

IMF coercion. Though the IMF may have been important in promoting deposit insurance generally, there is little evidence that it coerced countries to adopt a governance style. This was especially true once the crisis variable was included.[22] IMF stipulations in stand-by agreements may have been inconsequential, since MoF deposit insurance would have been created by countries in crisis regardless. This result does not indicate that the IMF was not an important force in governance trends, just that its influence did not work through coercion.

4.3. Comparing the FG-CREHA to Cox PH

How do the results from the FG-CREHA compare to the Cox PH models used to estimate the TSH? Figure 3 shows coefficients estimated from the FG-CREHA in models A12 (ministry of finance DI) and B11 (independent DI) as well as Cox PH models with the same variables and competing events treated as censored. As expected based on the statistical literature, when a covariate was found to have an effect on only one choice, the estimates were equivalent. We saw that crises have a positive relationship with creating ministry of finance DI, but no relationship with independent DI. The FG-CREHA and Cox PH crisis coefficients are similar. Other variables, such as being a new democracy and being an EU member or candidate, were found to have opposite effects on the two choices. Estimates from the two EHA methods are very different. Cox PH estimates are negative for both decisions, whereas the FG-CREHA estimates for both variables are positive for independent and negative for MoF deposit insurance. The FG-CREHA estimates fit our predictions. In such situations, the statistical literature indicates that FG-CREHA estimates are more accurate. These findings justify the use of the FG-CREHA here.

Discussion. In this article, I have attempted to understand why countries converged on independent DI in the mid-1990s. I have also sought to make an important methodological contribution to policy-diffusion studies by demonstrating how the FG-CREHA can be used to research decisions in complex choice environments. The FG-CREHA is useful for studying policy choices (1) when there are multiple policies to choose from, (2) when choices on different, but necessarily related issues are made simultaneously, and (3) when we expect relationships between causes and choices to vary over time and (4) have different effects on more than one choice.

The FG-CREHA has allowed us to identify a number of possible reasons why countries converged on independent DI. The FG-CREHA enabled the identification of a possible positive

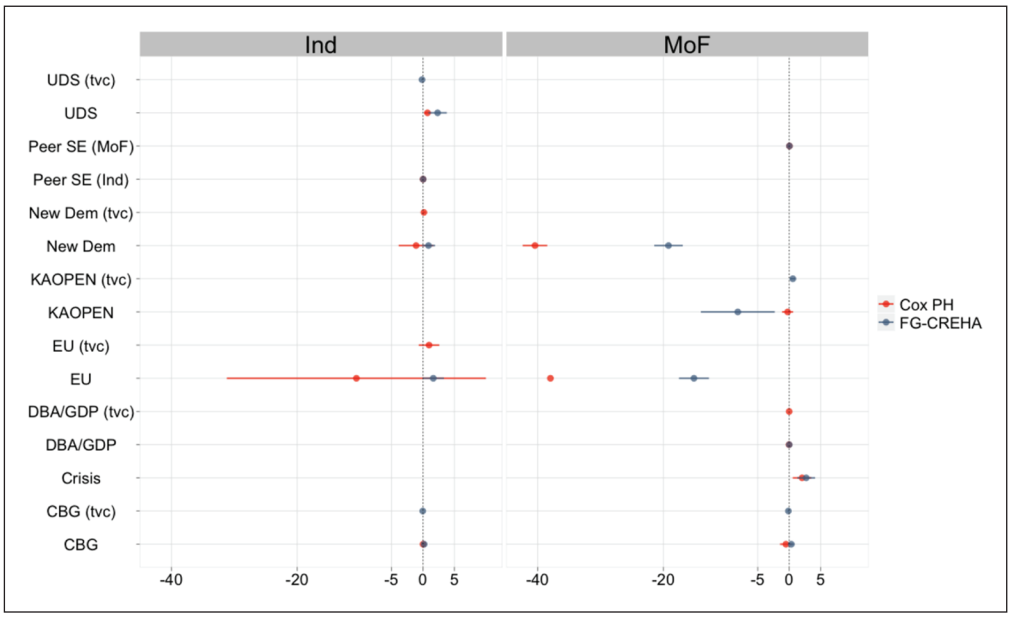

Figure 3. Comparing Coefficient Estimates from FG-CREHA and Transition-Specific Cox PH.
Notes: The plots compare coefficients and 95 percent confidence intervals estimated with FG-CREHA and Cox PH using the variables in A12 (MoF) and B11 (independent). Unfortunately, a few of the estimates (for example, for new democracies) are large numbers and distort the graph's scales, making it difficult to discern small, but sometimes substantively meaningful coefficients.

relationship between regional-peer governance-type adoption and best-practice ideas. It is fairly conclusive from this evidence that a simple emulation process did not drive choices, otherwise the positive relationships would have been more consistently observed across the governance types. By pinpointing the time correlation between when recommendations were made and when peer-adoption trends began, we can suggest that recommendations helped initiate peer learning processes. Recommendations seem to have acted as a catalyst for learning.

The FG-CREHA enabled us to see how domestic functional factors affected convergence patterns. An increasing proportion of democratic countries in the late 1980s and early 1990s may have helped cause the observed convergence. Democracies, and especially new democracies, appear to be more likely to delegate. This is possibly due to electoral incentives to mitigate public costs. These results are puzzling given the regional-peer findings.

Did actors objectively know that independent DI reduces moral hazard and helps prevent crises? 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 assumptions about actors' information. In reality, actors do not have perfect information about how DI governance will achieve electorally conditioned goals. Equally, they are not totally ignorant of the effects of governance styles in the absence of IMF recommendations or peer evidence.

Crises seemed to dampen the spread of independence. During a crisis the main problem for new insurers is credibility. Because guarantees could be very costly, new programmes tend to be credible when directly backed by the national budget. Crises, rather than promoting the adoption of best practice, can actually inhibit it when large liabilities are apparent. This suggests we need at least to

qualify claims that countries adopt policies for socially diffused reasons (see McNamara, 2002) when high and obvious fiscal costs are involved.

It is important to note a major limitation. Since only about 6 percent of countries changed governance in existing insurers, governance and DI-creation choices are empirically tied together. It is very difficult to separate the complex interactions leading to both governance and insurance-creation choices. I am limited to identifying explicitly different results across models. This would be a limitation for any research on variation in new institutions. Nonetheless, I have made an important step in expanding our ability to examine policy choices in complex environments. This enables future researchers to examine convergence and variation in other policies and institutions.

Notes

Thank you to the LSE PSPE seminar, Kristina Gandrud, Mark Hallerberg, Edward Kane, Jouni Kuha, Simon Hix, Charles Goodhardt, Cheryl Schonhardt-Bailey, Kevin Young, and three anonymous reviewers for helpful comments. An earlier version of this article was presented at the 2011 KPSA World Congress. Replication data and code can be found at the following URL: http://christophergandrud.github.com/di-governance/data.html.

1. Central bank control is treated as distinct. It can be independent, but also tends to be a well-established institution with significant financial resources such as the MoF. Deposit insurance controlled by a central bank is not examined in detail. Results from analyses with central bank governance as the choice of interest are available upon request. For the full list of countries examined and their observed type of *de jure* DI governance, see the following URL: http://christophergandrud.github.com/di-governance/tables.html.
2. Other authors, particularly Demirgüç-Kunt et al. (2008), have looked at why countries create explicit DI using single-transition EHA.
3. It can be implemented with the Stata 11 (and higher) stcrreg command.
4. Data are based on a sample of programme descriptions in 166 countries by Demirgüç-Kunt et al. (2005). The author coded the programmes, expanded the sample to 174 countries, and extended it through to 2007 using the relevant national organizations' websites.
5. With a few exceptions, some detailed below, this remains true.
6. This article generally does not make a distinction between independent public and private DI schemes, which may be relevant for this theory. Nonetheless, private schemes are mostly in Caribbean countries not included in the final analysis.
7. Regarding this, see the following URL: https://www.insattningsgarantin.se/en/Om-verksamheten/Relation-till-riksgalden/.
8. The first systematic study of deposit insurance's general effects was published in 2002 by Demirgüç-Kunt and Detragiache.
9. It is beyond the scope of this article to determine why this recommendation was made. For an example of this type of research, see Chwieroth (2009).
10. The number of banking crises globally fell from the mid-1990s to 2007 (Reinhart and Rogoff, 2010: 21).
11. Electronic publication requires individual country agreement.
12. 'Cause-specific hazard' is used in epidemiology.
13. Covariates are omitted for simplicity.
14. These were created with the R package Amelia II (Honaker et al., 2010).
15. Only posterior means are used.
16. Data were taken from Dreher (2006) and updated to 2008.
17. Regarding modifications to this variable, please contact the author of the current article.
18. Of the 70 countries in the sample mentioned above, 53 were at risk. Nine of these created ministry of finance DI and 20 created independent DI.
19. Other functions were tested, but did not substantially increase model fit.
20. All analysis times were standardized, with zero being the first observation year and 24 the last.

21. For coefficient estimates from models looking at the creation of any type of new DI, please contact the author.
22. The two are not strongly correlated here.

References

Achen, Christopher H. (2002) Toward a new political methodology: Microfoundations and ART. *Annual Review of Political Science* 5: 423–50.

Anderson, Per Kragh, Steen Z. Abildstrom and Susanne Rosthøj (2002) Competing risks as a multi-state model. *Statistical Methods in Medical Research* 11: 203–15.

Bakoyannis, Giorgos and Giota Touloumi (2011) Practical methods for competing risks data: A review. *Statistical Methods in Medical Research* 21(3): 257–72.

Barth, James R., Gerard Caprio Jr and Ross Eric Levine (2006) *Rethinking Banking Regulation: Till Angels Govern*. Cambridge: Cambridge University Press.

Beck, Thorsten and Asli Demirgüç-Kunt (2009) Financial institutions and markets across countries and over time: Data and analysis. *World Bank Policy Research* Working Paper 4943. Washington, DC: World Bank.

Beck, Thorsten, George Clarke, Alberto Groff et al. (2001) New tools in comparative political economy: The Database of Political Institutions. *World Bank Economic Review* (1).

Blyth, Mark (2002) *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. Cambridge: Cambridge University Press.

Brooks, Sarah M. (2005) Interdependent and domestic foundations of policy change: The diffusion of pension privatization around the world. *International Studies Quarterly* 49: 273–94.

Brooks, Sarah M. (2007) When does diffusion matter? Explaining the spread of structural pension reforms across nations. *Journal of Politics* 69(3): 701–15.

Chwieroth, Jeffrey M. (2009) *Capital Ideas: The IMF and the Rise of Financial Liberalization*. Princeton, NJ: Princeton University Press.

Cleves, Mario, William W. Gould, Roberto G. Guitierrez et al. (2004) *An Introduction to Survival Analysis Using Stata*, 1st edn. College Station, TX: Stata Press.

Cox, D.R. (1972) Regression models and life tables. *Journal of the Royal Statistical Society Series B* 34(2): 187–220.

Demirgüç-Kunt, Asli and Enrica Detragiache (2002) Does deposit insurance increase banking system stability? An empirical investigation. *Journal of Monetary Economics* 47(7): 1373–406.

Demirgüç-Kunt Asli, Edward J. Kane and Luc Laeven (2008) Determinants of deposit-insurance adoption and design. *Journal of Financial Intermediation* 17: 407–38.

Demirgüç-Kunt, Asli, Baybars Karacaovali and Luc Laeven (2005) Deposit insurance around the world: A comprehensive database. Available at: http://go.worldbank.org/KXEZESCGJ0.

Diamond, Douglas W. and Philip H. Dybvig (1983) Bank runs, deposit insurance, and liquidity. *Journal of Political Economy* 91(3): 401–19.

Dreher, Axel (2006) IMF and economic growth: The effects of programs, loans, and compliance with conditionality. *World Development* 34(5): 769–88.

Dreher, Axel, Jan-Egbert Strum and Jakob de Haan (2008) Does high inflation cause central bankers to lose their job? Evidence based on a new data set. *European Journal of Political Economy* 24(4): 778–87.

Dreher, Axel, Jan-Egbert Sturm and Jakob de Haan (2010) When is a central bank governor replaced? Evidence based on a new data set. *Journal of Macroeconomics* 24(4): 766–81.

Elkins, Zachary, Andrew T. Guzman and Beth A. Simmons (2006) Competing for capital: The diffusion of bilateral investment treaties, 1960–2000. *International Organization* 60: 811–46.

Enoch, Charles, Gillian Garcia and V. Sundararajan (2001) Recapitalizing banks with public funds. *IMF Staff Paper* 48(1): 58–110.

Fine, Jason P. and Robert J. Gray (1999) A proportional hazards model for the subdistribution of a competing risk. *Journal of the American Statistical Society* 94(446): 496–509.

Friedman, Milton and Anna Schwartz (1963) *A Monetary History of the United States, 1867–1960*. Princeton, NJ: Princeton University Press.

Garcia, Gillian (1996) Deposit insurance: Obtaining the benefits and avoiding the pitfalls. *IMF* Working Paper WP/96/83. Washington, DC: IMF.

Garcia, Gillian (1997) Protecting bank deposits. *Economic Issues* 9: 1–20.

Garcia, Gillian (1999) Deposit insurance: A survey of actual and best practice. *IMF* Working Paper WP/99/54. Washington, DC: IMF.

Garcia, Gillian (2000) Deposit insurance and crisis management. *IMF* Working Paper Series 1(3). Washington, DC: IMF.

Gilardi, Fabrizio (2005) The institutional foundations of regulatory capitalism: The diffusion of independent regulatory agencies in Western Europe. *Annals of the American Academy of Political and Social Science* 598: 84–101.

Grossman, Richard S. (1992) Deposit insurance, regulation, and moral hazard in the thrift industry: Evidence from the 1930's. *American Economic Review* 82(4): 800–21.

Hernán, Miguel A. (2010) The hazards of hazard ratios. *Epidemiology* 21(1): 13–15.

Honaker, James, Gary King and Matthew Blackwell (2010) Amelia II: A program for missing data. Available at: http://gking.harvard.edu/amelia/.

ICRG (2009) The International Country Risk Guide researcher's dataset. *LSE Data Library*. London: LSE.

IDB (2004) *Unlocking Credit: The Quest for Deep and Stable Bank Lending*. Washington, DC: Inter-American Development Bank.

Ito, Hiro and Menzie Chinn (2008) A new measure of financial openness. *Journal of Comparative Policy Analysis* 10(3): 309–22.

Jones, Bradford S. and Regina P. Branton (2005) Beyond logit and probit: Cox duration models of single, repeating, and competing events for state policy adoption. *State Politics and Policy Quarterly* 5(4): 420–43.

Keefer, Philip (2007) Elections, special interests, and financial crisis. *International Organization* 61(3): 607–41.

Kydland, Finn E. and Edward C. Prescott (1977) Rules rather than discretion: The inconsistency of optimal plans. *Journal of Political Economy* 85(3): 473–91.

Laeven, Luc and Fabian Valencia (2008) The use of blanket guarantees in banking crises. *IMF* Working Paper WP/08/250. Washington, DC: IMF.

Lee, Chang Kil and David Strang (2006) The international diffusion of public-sector downsizing: Network emulation and theory-driven learning. *International Organization* 60: 883–909.

McNamara, Kathleen (2002) Rational fictions: Central bank independence and the social logic of delegation. *West European Politics* 25(1): 47–76.

March, J.G. and H.A. Simon (1993) *Organizations*. Oxford: Blackwell.

Marshall, Monty G. and Keith Jaggers (2009) *Polity IV Project: Dataset Users' Manual* (electronic).

Meseguer, Covadonga (2005) Policy learning, policy diffusion, and the making of a new order. *Annals of the American Academy of Political and Social Science* 598(1): 67–82.

Neumayer, Eric and Thomas Plümper (2010) Model specification in the analysis of spatial dependence. *European Journal of Political Research* 49(3): 206–26.

Pemstein, Daniel, Stephen A. Meserve and James Melton (2010) Democratic compromise: A latent variable analysis of ten measures of regime type. *Political Analysis* 18(4): 426–49.

Pintilie, Melania (2007) Analyzing and interpreting competing risk data. *Statistics in Medicine* 26: 1360–7.

Powell, W.W. and P.J. DiMaggio (1991) *The New Institutionalism in Organizational Analysis*. Chicago, IL: University of Chicago Press.

Putter, H., M. Fiocco and R.B. Geskus (2007) Tutorial in biostatistics: Competing risks and multi-state models. *Statistics in Medicine* 26: 2389–430.

Reinhart, Carmen and Kenneth Rogoff (2010) From financial crash to debt crisis. *NBER* Working Paper 15795. Cambridge, MA: National Bureau of Economic Research.

Rosas, Guillermo (2006) Bagehot or bailout? An analysis of government responses to banking crises. *American Journal of Political Science* 50(1): 175–91.

Rosas, Guillermo (2009) *Curbing Bailouts: Bank Crises and Democratic Accountability in Comparative Perspective*. Ann Arbor: University of Michigan Press.

Satyanath, Shanker (2006) *Globalization, Politics, and Financial Turmoil: Asia's Banking Crisis*. Cambridge: Cambridge University Press.

Shipan, Charles R. and Craig Volden (2008) The mechanisms of policy diffusion. *American Journal of Political Science* 52(4): 840–57.

Simmons, Beth A. and Zachary Elkins (2004) The globalization of liberalization: Policy diffusion in the international political economy. *American Political Science Review* 98(1): 171–89.

Stata Corporation (2009) *Stata Survival Analysis and Epidemiological Tables Reference Manual: Release 11*. College Station, TX: Stata Press.

Strang, David and N.B. Tuma (1993) Spatial and temporal heterogeneity in diffusion. *American Journal of Sociology* 99: 615–39.

Thatcher, Mark (2002) Delegation to independent regulatory agencies: Pressures, functions, and contextual mediation. *West European Politics* 25(1): 125–47.

Tversky, Amos and Daniel Kahneman (1981) The framing of decisions and the psychology of choice. *Science* 211(4481): 453–8.

Van den Poel, Dirk and Bart Larivière (2004) Customer attrition analysis for financial services using proportional hazard models. *European Journal of Operational Research* 157(1): 196–217.

Volden, Craig, Michael M. Ting and Daniel P. Carpenter (2008) A formal model of learning and policy diffusion. *American Journal of Political Science* 102(3): 319–32.

Vreeland, James Raymond (2003) Why do governments and the IMF enter into agreements? Statistically selected cases. *International Political Science Review* 24(3): 321–43.

Weber, Klaus, Gerald F. Davis and Michael Lounsbury (2009) Policy as myth and ceremony? The global spread of stock exchanges, 1980–2005. *Academy of Management Journal* 52(6): 1319–47.

Windmaier, Wesley W., Mark Blyth and Lenard Seabrooke (2007) Exogenous shocks or endogenous constructions. *International Studies Quarterly* 51: 747–59.

World Bank (2011) World development indicators. Available at: http://data.worldbank.org/data-catalog/world-development-indicators.

Author biography

Christopher Gandrud is Lecturer in International Relations at Yonsei University, Republic of Korea.