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Christopher Gandrud [a]

[a] Department of International Relations , Yonsei University , Wonju , Republic of Korea

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The diffusion of financial supervisory governance ideas

Christopher Gandrud

Department of International Relations, Yonsei University, Wonju, Republic of Korea

ABSTRACT

Who is watching the financial services industry? Since 1980, there have been multiple waves of thought about whether the ministry of finance, the central bank, a specialized regulator or some combination of these should have supervisory authority. These waves have been associated with the convergence of actual practices. How much and through what channels did internationally promoted ideas about supervisory 'best practice' influence institutional design choices? I use a new dataset of 83 countries and jurisdictions between the 1980s and 2007 to examine the diffusion of supervisory ideas. With this data, I employ Cox Proportional Hazard and Competing Risks Event History Analyses to evaluate the possible causal roles best practice policy ideas might have played. I find that banking crises and certain peer groups can encourage policy convergence on heavily promoted ideas.

KEYWORDS

Policy diffusion; event history analysis; financial supervision; crises.

The 2008–09 financial crisis caused policymakers 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.[1] Notably, in June 2010, the United Kingdom (UK) announced that it would abolish the previously unified and specialized Financial Services Authority (FSA) and reassign its functions to a body based in the central Bank of England. 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. Over just the two decades before the recent financial

crisis, there have been at least two major shifts in ideas and policy choices about who should supervise the banking and securities industries.[2] The first was a mixed style where the central bank and specialized regulators supervised deposit banks and securities firms. I call this the SEC model after the United States' (US') Securities and Exchange Commission (SEC). Along with the central bank and other specialized regulators, the SEC supervises the US financial industry.[3] From 1997, many countries with a variety of backgrounds – such as the UK, Germany, South Korea and Colombia – chose a different approach. They completely separated their supervisors from other institutions and unified 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 that includes work by Blyth (1997, 2002), Chwieroth (2010), Dobbin (1994), Finnemore and Sikkink (1998, 2001), Jacobs (2008), McNamara (1998, 2002), Windmaier, Blyth and Seabrooke (2007) and Yee (1996). One important component of this literature is the assertion that new, socially spread ideas (see Fligstein, 2001) can shape policymakers' understanding of how policies achieve their goals. Ideas can 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 prominent and powerful international institutions makes these policies more likely to be adopted. Their promotion may have been particularly successful because they benefited from the cachet of being associated with Anglo-American financial regulatory regimes (see Walter, 2008) and by tapping into the 'independent governance' paradigm that had dominated beliefs about optimal monetary policy governance since the 1980s (see McNamara, 2002). The result of this process at the aggregate level is that we observe policy convergence trends.

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 the time-order criterion. However, just noticing that the time-order criterion has been met is a very unsatisfying way of making a causal argument.[4] Yee (1996) insists that we study the mechanisms linking ideas to policy choices in addition to checking whether or not the time-order criterion has been met. So, to evaluate whether ideas influence convergence trends, I will use the following criterion as my minimum benchmark:

> the observed relationship between possible ideational diffusion mechanisms and a given policy choice must substantially increase soon after a positive idea about the policy begins to be promoted and vice versa for negative ideas.

If the relationships remain largely constant over time, then we cannot argue that the promotion of the idea caused policymakers' choices. I will refer to this as the time-varying criterion. Please note that I am not arguing that meeting this time-varying criterion guarantees that an idea has caused policy convergence. It is simply a minimum standard that a causal claim would have to meet.

To empirically test this, we need a method that can robustly incorporate time. So, I draw on the growing policy diffusion literature (see Boehmke, 2009; Brooks, 2005; Elkins, Guzman and Simmons, 2006; Elkins and Simmons, 2005; Füglister, 2012; Gilardi, 2005, 2010; Gilardi and Füglister, 2008; Gilardi, Füglister and Luyet, 2009; Jordana and Levi-Faur, 2005; Lee and Strang, 2006; Linos, 2011; Meseguer, 2006; Meseguer and Gilardi, 2009; Shipan and Volden, 2008; Simmons, Dobbin and Garrett, 2006; Simmons and Elkins, 2004; 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 converged on a standard empirical method: Single Transition Event History Analysis (EHA), primarily the Cox Proportional Hazard (PH) 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 the time-varying criterion.

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 specialized regulator (SR) or some combination of these. Given this complexity and guided by data availability, I use a pragmatic combination of Cox PH models and Fine and Gray (1999) Competing Risks Event History Analysis (FG-CREHA). This allows me to incorporate both changes over time and multiple starting and ending points.

I begin the paper by describing 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 dataset of 83 countries and jurisdictions' financial supervisors from 1980 to 2007 for my analysis. I find that banking crises and certain peer groups that actively promote a policy can encourage convergence on heavily promoted ideas, like the FSA model of financial supervision.

1. SUPERVISORY GOVERNANCE TRENDS

1.1. Who can supervise?

Systems of financial supervisory governance are often characterized by their position in two dimensions: (a) the type of bodies that are officially in charge of inspecting financial institutions and (b) their number. Economists at academic and international institutions have at various times seen both of these 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 specialized 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 US has numerous specialist supervisors, including the SEC and the Commodity Futures Trading Commission. The Federal Reserve – the CB – also has supervisory powers. The UK created a single specialist supervisor in 1997.

1.2. Financial supervisory convergence and ideas

Figure 1 shows the prevalence of certain combinations of institutions in banking and securities regulation from 1987 to 2007 in 83 jurisdictions.[6] Please see Table 4 for a full list of countries in the sample.[7] In Figure 1, we can see two governance adoption trends. Each is preceded in time by the

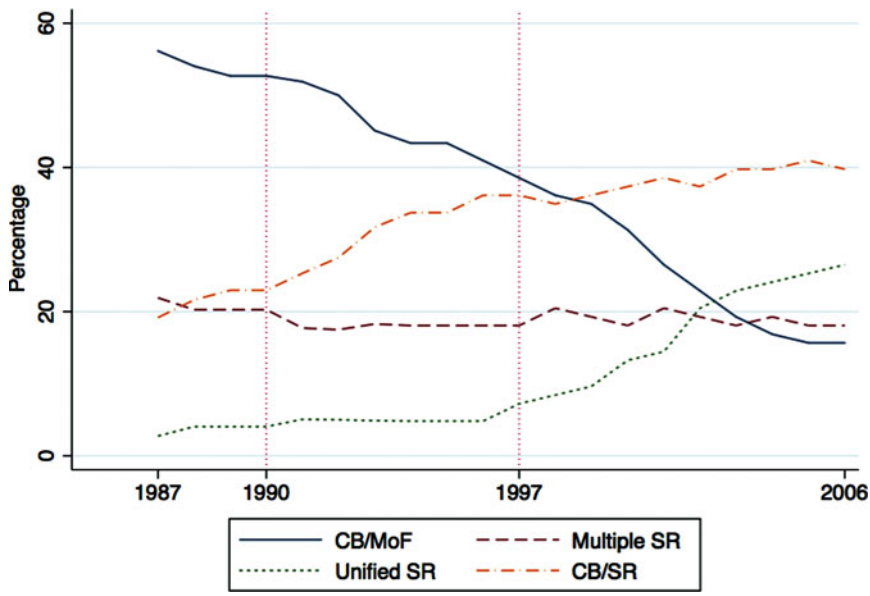

Figure 1 Percentage of 83 Countries with a Given Supervisory Style.
Note: The CB/MoF category includes countries with CB-only supervision.

promotion of international financial supervisory governance best practice ideas, the SEC and FSA models.[8]

1.2.1. The SEC model trend (1990–96). In the period before 1990, some combination of CB-only and CB/MoF[9] 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 an SR that usually focused on securities supervision: the SEC model. By 1996, just under 40 per cent of countries in the sample had SEC-like regulators, almost overtaking CB/MoF supervision. Notably, unified supervision by an SR (the FSA model) was almost non-existent.

The SEC reform trend is further indicated by the changing prevalence of official English-language names given to securities regulators.[10] Figure 2 shows the naming patterns. In the late 1980s, around 90 per cent of securities regulators with official English-language names did not have at least two words similar to or forming the same acronym as 'Securities and Exchange Commission'.[11] In the early to mid-1990s, there was an increase in countries with SEC names (for example, the Hong Kong Securities and Futures Commission, which was created in 1989).

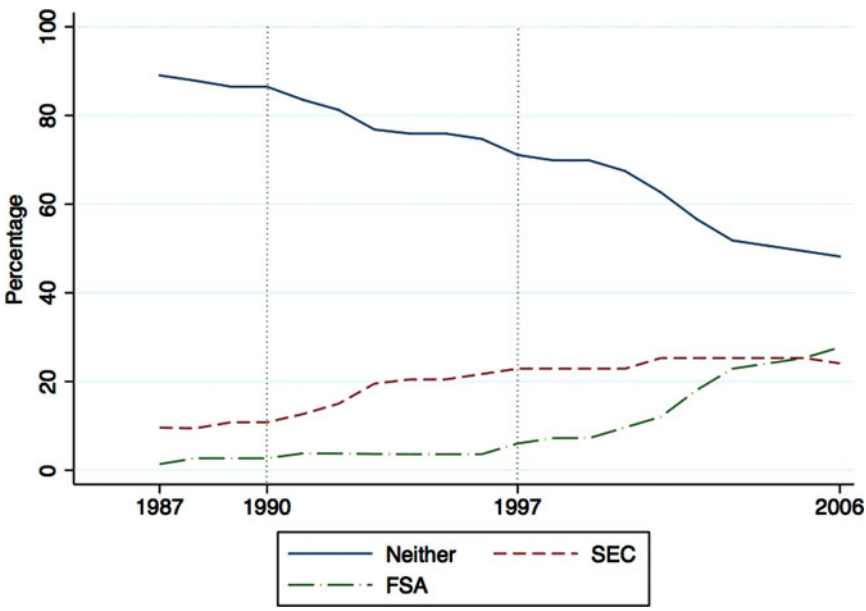

Figure 2 Percentage of Securities Supervisor English Language Names in 83 Countries.

A complex version of the SEC model originated in and has been used for a number of decades by a country with very prominent financial markets, the US. The model's prominence increased further in the 1980s with the establishment of an international institution that promoted it as a best practice. In 1983, the International Organization of Securities Commissioners (IOSCO) was created out of an inter-American predecessor organization. Around 1990, IOSCO actively promoted the creation of 'independent'[12] securities regulators (for example, see the Development Committee of IOSCO, 1990: 5), leaving room for deposit banking supervision by the CB or another regulator.

1.2.2. The FSA model trend (1997 until at least 2007). In Figure 1, we can see that shortly after 1997, adoption of SEC-like supervision flattened. From that point, unified and specialized supervision – the FSA model – began to take off. This is mirrored in the names given to the regulators (Figure 2). Before 1997, almost no country 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, which was created in 2000).

This adoption trend was closely preceded by heavy promotion of the FSA model as a best practice. From 1997, the International Monetary Fund (IMF), the Basel Committee for Banking Supervision (Basel Committee), members of the UK government, elite academia and the business press promoted the FSA model.[13] The UK, 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 a part of new international best practice standards from 1997 (Walter, 2008: 23–4). Around this time, many authors in academia and at the IMF began researching and/or promoting some sort of supervisory unification and 'independence'. A seminal paper on the topic was published by Goodhart and Schoenmaker in 1997. It was followed by many other works (for examples, see Goodhart, 2002; Masciandaro, 2006; Masciandaro, Quintyn and Taylor, 2008; Quintyn, Ramirez and Taylor, 2007). Usually, 'independence' meant a regulator separate from elected officials, private interests and even the CB (Goodhart and Schoenmaker, 1997; Quintyn and Taylor, 2003).[14] 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 included the independence idea as the first of its Core Principles for Effective Banking Supervision. These were released in 1997. The idea of unified supervision was also advocated. Principle 20 states that supervisors should regulate banks 'on a consolidated basis',

that is, across securities and deposit banking. The IMF and World Bank endorsed the Core Principles in October 1997. From 1999 onwards, these two organizations 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 and even IOSCO.

The popularity of the FSA model is epitomized 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 of the time: the UK's FSA.[15]

2. WHAT MIGHT EXPLAIN CONVERGENCE?

So far, we have established an association between when financial supervisory governance best practice ideas were promoted and policy convergence. Anecdotally, individual supervisors have mentioned diffusion as one of the reasons they were created. The Taiwan Financial Supervisory Commission (TFSC, a unified SR), for example, lists 'Global Trend' as one of the main reasons that it was formed (TFSC, 2010). Nonetheless, we have only met one basic criterion for establishing plausible causal relationships between ideas and convergence: time-order.

To make a sturdier causal case, in this section, I lay out the 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-varying criterion with event history analysis. I also discuss major competing non-ideational and non-diffusion hypotheses.

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. I want to establish a number of empirically testable hypotheses about the mechanisms through which these ideas could be important.

2.1.1. Ideas as causal models. A large social constructivist literature has established theoretical arguments for how ideas are important causes of policy change. Briefly, ideas can shape policymakers' goal-oriented behaviour by resolving the means-ends uncertainty they have about what policy choices are likely to create their preferred outcomes. Ideas are essentially causal models that link means to ends and suggest what policies actors should choose to achieve their goals.

Despite multiple waves of best practice recommendations, there is still considerable uncertainty about supervisory styles' outcomes and how policymakers should choose between them. Eichengreen and Dincer (2011) recently found that supervisors separated from the CB are associated with lower non-performing loan ratios. This may be because they are better able to overcome the conflicting objectives that CBs 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 not answered by the empirical finance literature. 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 problems of uncertainty about how supervisory governance works and what outcomes are likely to result. Choosing to believe one model over another, in turn, shapes the choices of policymakers. Nonetheless, not all ideas are adopted and influence policy change positively. Why might the SEC and FSA recommendations have been influential?

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 thinking since the 1980s (see McNamara, 2002).[16] These links were made despite the relative inapplicability of the term, 'independence', in describing the suggested SEC and FSA reforms. Independence is awkward for describing SRs, especially when you consider the term's use in the general political economy literature. It usually refers to independence from political principals. Pertaining to financial supervision, authors have often used it to mean separation from an already independent CB. The term seems inadequate also because the CB and SR often need to work together to share information (Goodhart and Schoenmaker, 1997)[17] and may have significant staff overlap.[18] 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).

Another reason that the ideas may have been accepted more easily by policymakers is that, being based on regulatory systems in the US and the UK, they likely gained the 'prestige and cachet' that was afforded

to the Anglo-American financial regulatory model by the international community of financial policymakers, academics and private sector actors, especially in the late 1990s (see Walter, 2008).

2.1.2. Mechanisms.

Level of promotion. Despite their use of the same independence paradigm and association with prestigious Anglo-American institutions, the previous section demonstrated that there was significantly less active support for the SEC model even at its peak in the early 1990s. It appears to have been promoted largely by IOSCO. Conversely, the FSA model was very highly promoted by many international organizations and policymakers in countries with prominent financial markets. Using Finnemore and Sikkink's (1998) terminology, the SEC idea was promoted from a much smaller 'organizational platform'.[19] If an idea's level of promotion is important for its adoption, we should observe a weaker diffusion effect for the SEC model as compared to the FSA model. This leads to the first hypothesis that the *following ideational diffusion mechanisms should have a stronger effect for adoption of specialized and unified supervision than CB and specialized supervision*.

Peers and ideational promotion. A number of theories have been put forward for why policies spread within a region or between peer groups conceptualized more broadly (see Brooks, 2005: 280–1).[20] Formal peer groups can be organizational platforms that actively promote or discourage certain best practice ideas. Furthermore, countries 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 conditions (see Meseguer, 2005; Simmons and Elkins, 2004; Volden, Ting and Carpenter, 2008). The more the peers that adopt a supervisory model, the more opportunity there is to learn about a promoted policy. Despite the abundance of other peer hypotheses, we can use the time-varying criterion to determine if peer effects could be 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 when a larger proportion of its peers adopt it and it is promoted. *The probability of creating an SEC- or FSA-like supervisor increases as the proportion of peers who adopt these institutions increases and following the model's promotion*.

If the proportion of peer adopters is estimated to have an effect, but does not change when the model is promoted, we have evidence for other types of peer diffusion processes. Effects that remain the same could indicate emulation, competition or some other process (see Simmons and Elkins, 2004).

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 attractive. During a crisis, it can be very difficult to determine to what extent 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 – that is, 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 *jurisdictions in crisis are likely to adopt a supervisory model when it is heavily promoted*.

2.2. Non-ideational convergence

2.2.1. Functional response to crisis. In their study of capital account liberalization, Simmons and Elkins (2004) propose that crisis is not a diffusion mechanism, but has an economically functional effect on policymakers' decisions to open (or close) capital markets. They hypothesize that countries with similar experiences with economic shocks will choose the same policy solution: curbing capital outflows. They propose that having a crisis should hinder the adoption of the heavily promoted capital openness policy (though they find evidence that the opposite is true). Likewise, countries may adopt certain supervisory styles in crises because the styles optimally solve their problems. As noted before, there is some reason to be doubtful that one type of supervisory governance is actually optimal in crises, or at least that policymakers know objectively what type this is. Masciandaro, Panisini and Quintyn (2011) found little empirical evidence that FSA-type regulators are actually negatively correlated with banking sector resilience after a crisis, despite it being promoted as a more robust style of supervision. Nonetheless, whether or not policymakers respond to crisis with supervisory reforms in a functional or ideational manner is an empirical issue that I examine using the time-varying criterion below. *If actors adopt supervisory reforms in response to crises in a functional manner, we would expect the effect of crises on reforms to be constant over time*.

2.2.2. Financial industry cross-sector consolidation. One of the primary functional, that is, non-ideational, arguments for unified supervision was that as financial companies expanded across sectors, supervisors should or are likely to do the same (Čihák and Podpiera, 2007; Lastra, 2003; Masciandaro, 2006).[21] Returning to the example of the Taiwanese Financial Supervisory Commission, it also highlights financial market consolidation as a reason

for its creation. Keeping aside the endogeneity issue of whether or not the trend towards consolidation was also the product of ideational diffusion – that is, 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 *jurisdictions with more consolidated financial sectors are more likely to adopt unified supervision*.

3. HYPOTHESES TESTING

Figure 3 shows the number and type of reforms observed in the sample. We can see, for example, that there were nine instances of supervision being taken away from the CB/MoF and replaced with a unified SR, the FSA model. In total, 19 FSA-type regulators were created. SEC-type regulators were created 18 times. Every one of these regulatory systems was made by replacing the MoF with an SR alongside the CB.

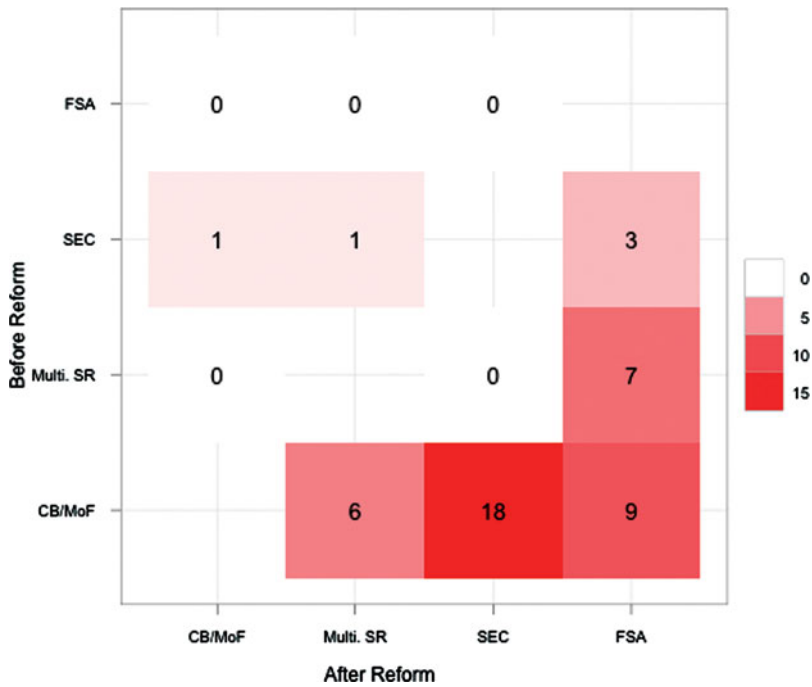

Figure 3 Frequency of Supervisory Governance Reforms in 83 Countries, 1988–2006. *Source*: The graph shows the supervisory governance reforms observed in the data set. For example, there were nine observed instances of a CB/MoF supervisory system being changed to a unified and specialized regulator (the FSA Model). *Note*: Zeros indicate that no reforms of that type were observed.

3.1. Empirical models

When choosing an empirical model, we need to keep in mind the total number of reforms we actually observe. Multiple SRs were only changed to the FSA model. No country did away with an FSA-type regulator during this period. Because of these data limitations, I split the analysis into two models for reform types that have sufficient observations to produce meaningful results. In this section, I first discuss the statistical methods – Cox PH and Fine and Gray (1999) Competing Risks EHA. Variable descriptions and results follow. Full replication data and code can be found at: <http://bit.ly/Qz7KHt>.[22]

3.1.1. The unification of multiple SRs. I use a Single Transition Cox-PH analysis for transitions where multiple SRs were unified, since this was the only type of reform made to these systems. 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)*. The hazard rate is the rate of an event happening to a unit, such as adopting a certain form of financial supervisor governance over a very small change in time conditional on the units' covariates. Formally,

$$h(t|\mathbf{x}_i) = \lim_{\Delta t \to 0} \frac{\Pr(t \leq T_k \leq t + \Delta t | T_k \geq t, \mathbf{x}_i)}{\Delta t}. \quad (1)$$

I estimate covariate effects on the hazard rate of transitions between multiple SRs and a unified SR (the FSA model) using a Cox PH model (see also Box-Steffensmeier and Jones, 2004; Golub, 2008). The basic Cox proportional hazard rate for the *i*th unit at time *t* is given by,

$$h(t|\mathbf{x}_i) = h_0(t) \exp(\beta' \mathbf{x}_i). \quad (2)$$

$h_0(t)$ is the baseline hazard at time t, i.e., the hazard rate when all of the covariates x are 0.

3.1.2. Removing the MoF and possibly the CB from supervision. Single Transition EHA is confined to questions regarding dichotomous event types, such as whether or not a country liberalizes its pension system (Brooks, 2005) or whether or not 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 competing risks event history analysis to examine the reasons that policymakers choose one type of reform over the others. There is no reason to assume that all of the variables will only affect the probability of undertaking one type of reform and not the others. So, the most appropriate way to examine the covariate effects with competing

risks analysis is with the hazards of the sub-distribution (Bakoyannis and Touloumi, 2012; Pintilie, 2007). The hazard of the sub-distribution[23] for transition k at time $t(\gamma_k(t))$ is given by,

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

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,

$$\gamma_k(t|\mathbf{x}) = \gamma_{k,0}(t) \exp\left(\beta_k^T \mathbf{x}\right). \tag{4}$$

$\gamma_{k,0}(t)$ is the baseline sub-hazard analogous to $h_0(t)$ from a standard Cox PH 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 and variables may have an influence on more than one reform choice. (See Gandrud (forthcoming) for a further discussion of how and when to use FG-CREHA in policy diffusion research.)

I do not consider reforms of SEC and FSA supervisors since they were reformed very infrequently.

3.1.3. Testing the time-varying criterion. All of the ideational diffusion hypotheses predict that the effect of a potential diffusion mechanism will change from the time when a new idea is promoted. To examine whether or not the effects do change, we can leverage a basic assumption of Cox PH and FG-CREHA: the proportional hazards assumption (PHA). This is the assumption that the hazards/sub-hazards for all units 'differ only by a factor of proportionality' (Chung, Schmidt and Witte, 1991: 71). Box-Steffensmeier and Zorn argue that a proportional hazard 'means that the effects of covariates are constant over time' (2001: 973). The estimated effects of covariates that violate this assumption[24] likely vary over time. If the effects do vary in this way, we can include interactions with functions of time in the analyses (Box-Steffensmeier and Zorn, 2001) to examine whether or not the variations are consistent with our ideational diffusion predictions.

In certain circumstances, the usual testing of the proportional hazards assumption may not give an adequate indication of whether or not a covariate has a time-varying effect. In situations where we rarely, if ever, observe an event of interest before a specific time, we are unable to estimate hazards/sub-hazards. This is the case for transitions to the FSA model in my particular sample. Depending on the competing risk model, we have very few or no observed transitions before 1997.[25] The models cannot estimate the sub-hazards before this time. Covariate coefficients represent

the average estimated effect from 1997 through 2006. If we cannot estimate the sub-hazards before 1997, then we cannot use traditional PHA tests to examine whether or not they differ by a constant factor of proportionality at those times. The usual PHA diagnostics can only examine whether this assumption was violated from 1997 to 2006. If we find that it was not, is this evidence against theories predicting effects that vary over the entire observation period?

This would not be a valid conclusion. The PHA diagnostics could not test this. In fact, the finding could provide evidence for ideational diffusion hypotheses that predict an interaction between FSA idea promotion and diffusion mechanisms. If we observe no effect followed by a relationship between a given variable and FSA reforms after 1997, then we could say that the relationship between the variable and the reforms changed over time: it changed from no relationship to a relationship. If the direction of the relationship is the same as the one predicted by the ideational diffusion mechanism hypotheses, we would have found evidence for the predicted interaction according to the time-varying criterion.

To examine this, we should focus not just on the traditional tests of the PHA and point estimate tables, where coefficients are averaged over the observation period, but also visually examine how the quantities of interest – predicted hazard rates[26] for the Cox PH model and similar cumulative incidence functions[27] for the FG-CREHA models – change over time.

3.2. Variables

Crisis. I gathered data from Laeven and Valencia (2008) 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. In this paper, I discuss results with a logarithmic transformation of the variable, crisis(log), which captures a falling crisis effect over six years.[28] This variable produced the best fitting results. It 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.

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 the 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 to supervisory reforms.[29] I did examine an East Asian peer group,[30] which

had low levels of formal peer organization, but saw widespread supervisory reforms during my observation period. Formal peer groups included the Basel Committee, the European Union and the Council of the Baltic Sea States (CBSS).[31] The last group, founded in 1992, regularly pushed for financial supervisory reforms from the mid-1990s onwards.[32]

I created monadic row-standardized spatial effects for each group (see Neumayer and Plümper, 2010a, 2010b).[33] These are equivalent to the variables of the proportion of peer adopters in the previous year. I rescaled the variables to be between zero and 100 to ease interpretation. It must be noted that it would be naive 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 might 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).[34] Laeven and Levine 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.[35] I use Laeven and Levine's 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. This included constricting the sample and the time period from 1998 through 2002. However, the results did not change substantively.

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 to examine the possibility that the main results of interest were caused by omitted variable bias. These included GDP/capita in thousands of US dollars (United Nations, 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 (International Country Risk Guide (ICRG), 2009) were also included as well as various 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 included because the others were not robust. As the IMF was a promoter of the FSA model and might have used crisis loans to coerce countries to accept it (see Vreeland, 2003), IMF standby 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, and zero otherwise. (See Table 5 for descriptive statistics.)

3.3. EHA results

Time averaged EHA estimated coefficients are shown in Tables 1, 2 and 3. I entered the variables sequentially into the models to ascertain possible multi-colinearity and identify unstable coefficients (Van den Poel and Larivière, 2004). The results tables show a selection of these model specifications to give you a sense of how large a problem this was, especially for the variables used to operationalize the key hypotheses.[36] In general, I focus my discussion on coefficient estimates that are robust[37] across all models. 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 (2011)[38] and the results tables show averages of five imputed data sets using Stata's mi estimate command with stcox or stcrreg commands, depending on whether it was a Cox PH model or FG-CREHA, respectively. Results for transitions from CB/MoF supervision to only multiple SRs are not shown because there were few observed transitions in this direction. This transition type is nonetheless taken into consideration as a competing risk.

3.3.1. Removing the MoF and replacing it with SEC-like supervision. Tests of the proportional hazards assumption indicate that the Basel Committee and East Asia spatial effects, as well as the IMF standby agreement variable, had time-varying effects on decisions to create financial supervision involving the CB and an SR – the SEC model. Linear time-varying coefficients (see Stata Corp., 2009: 214–5)[39] were added to estimate more accurately the time-varying effects (Table 1). I created graphs of the time-varying sub-hazard ratios over time to determine the direction of the change (not shown, but they can be created with Stata code provided in the replication file).

The time-varying coefficients for both spatial effect variables fall over time. Around 1990, they both have a positive effect on removing the MoF from combined CB/MoF supervision and replacing it with an SR.[40] But these effects fall and become negative by the mid-1990s. For East Asia, this is equivalent to saying that Hong Kong's decision in 1989 to adopt SEC-model supervision did not have a positive impact on its peers' decisions because all of them reformed their CB/MoF supervisors before 1997. Soon after 1997, all of them created either FSA-like or multiple specialized supervision. Among Basel Committee members, the proportion of countries with CB/SR regulation is constant until 1997, from when it begins to decline. The decline is largely because the Basel Committee

Table 1 Fine & Gray Competing Risks Coefficients for Reforms from CB/MoF to CB/SR Supervision (SEC Model), others competing, 1988–2006

Variable	A1	A2	A3	A4	A5	A6	A7
Crisis(Log)			1.65			1.514	1.192
			(1.109)			(1.172)	(1.026)
IMF Stand-by				−4.053		−4.021	−3.345
				(2.938)		(3.063)	(2.591)
CBSS SE					0.084	0.176*	0.133
(CB/SR)					(0.065)	(0.099)	(0.086)
EU SE					0.092*	0.089	0.079
(CB/SR)					(0.051)	(0.057)	(0.052)
Basel SE					−0.436***	−0.425***	−0.409***
(CB/SR)					(0.051)	(0.056)	(0.033)
EA SE					−0.694***	−0.687***	−0.619***
(CB/SR)					(0.052)	(0.069)	(0.028)
GDP/Capita	−0.062**	−0.064**	−0.063**	−0.065*	−0.050*	−0.066*	
	(0.03)	(0.029)	(0.028)	(0.037)	(0.029)	(0.039)	
Asset Diversity		−3.225					
		(2.706)					
DB Assets/ GDP	−0.497	−0.811	−0.534	−0.459	−0.161	−0.023	
	(0.717)	(0.829)	(0.726)	(0.772)	(0.898)	(0.974)	
Concentration	−0.58	−0.221	−0.849	−0.226	−1.255	−0.904	
	(1.318)	(1.374)	(1.321)	(1.327)	(1.663)	(1.697)	
CBG Tenure	0.052	0.047	0.046	−0.186	0.028	0.03	
	(0.057)	(0.059)	(0.056)	(0.173)	(0.057)	(0.07)	
Time Interactions							
IMF Stand-by				0.369*		0.386**	0.356**
				(0.204)		(0.195)	(0.166)
CBSS SE					−0.013**	−0.021***	−0.018***
(CB/SR)					(0.005)	(0.007)	(0.006)
EU SE					−0.015**	−0.015**	−0.016**
(CB/SR)					(0.006)	(0.007)	(0.007)
CBG Tenure				0.022*			
				(0.012)			
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	2.317	2.228	75.663	55.621	116.806
p	0.11	0.179	0.041	0.029	<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 Schoenfield-Type residuals (see Fine and Gray, 1999) and time interactions were used to test the proportional hazards assumption. Linear time-varying covariates were added when the assumption was violated (Stata Corp., 2009, 214–215). Bureaucratic Quality and Democracy (UDS) were excluded due to high insignificance and high correlation with GDP/Capita.

members started to create independent supervisors without CB supervision. 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

Table 2 Cox Proportional Hazard Coefficients For Unifying Multiple SRs (FSA Model), 1988–2006

Variable	B1	B2	B3	B4	B5	B6	B7
Crisis(Log)			−1.569***			−1.529**	−1.572**
			(0.477)			(0.676)	(0.776)
IMF Stand-by				2.274		2.101	0.706
				(1.918)		(1.681)	(1.227)
CBSS SE					0.02	0.033	0.052***
(SR/U)					(0.041)	(0.049)	(0.016)
EU SE (SR/U)					0.038	0.052	0.014
					(0.034)	(0.036)	(0.026)
Basel SE					0.013	0.012	−0.002
(SR/U)					(0.042)	(0.057)	(0.032)
Asset		0.781					
Diversity		(3.17)					
CBG Tenure	0.189	0.189	0.151	0.265*	0.159	0.184	
	(0.17)	(0.175)	(0.176)	(0.143)	(0.168)	(0.136)	
Concentration	0.809	1.085	1.027	0.541	−0.462	−1.595	
	(1.432)	(2.19)	(1.411)	(1.998)	(3.78)	(4.748)	
DB Assets/	−4.407***	−4.521***	−4.375***	−4.322***	−5.445***	−5.442***	
GDP	(1.128)	(1.189)	(1.125)	(1.177)	(1.571)	(1.915)	
Bureaucratic	2.096***	2.209***	2.072***	2.934***	2.119***	2.790***	
Quality	(0.389)	(0.765)	(0.314)	(0.997)	(0.557)	(0.85)	
Countries at Risk	21	21	21	21	21	21	21
No. of Transitions	7	7	7	7	7	7	7
F	7.98	5.658	12.988	9.754	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 Füglister (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.

were best practice competitors. As such, the Basel Committee may actually have acted as an organizational platform for arguments that discouraged SEC adoption. Further case study research is needed to confirm this.

The IMF standby agreement variable had an opposite time-varying effect. It is negative and then becomes positive from 1997. I found no evidence that the IMF was an advocate of CB/SR supervision across the observation years. Perhaps, as a general advocate of specialized regulation, especially after 1997, the IMF may have been satisfied if loan recipients removed the

Table 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(Log)			−1.152*			−1.390*	−1.198*
			(0.639)			(0.808)	(0.659)
IMF Stand-by				1.946**		1.761	0.312
				(0.852)		(1.43)	(0.796)
CBSS SE (SR/U)					0.136***	0.119***	0.076**
					(0.028)	(0.028)	(0.035)
EU SE (SR/U)					−0.059	−0.031	−0.003
					(0.058)	(0.055)	(0.059)
Basel SE (SR/U)					−0.107	−0.145*	0.045
					(0.072)	(0.083)	(0.06)
EA SE (SR/U)					−0.014	0.004	0.049**
					(0.025)	(0.029)	(0.019)
Asset Diversity		−1.151					
		(3.636)					
CBG Tenure	−0.054	−0.057	−0.049	−0.058	−0.094	−0.094	
	(0.077)	(0.071)	(0.084)	(0.09)	(0.109)	(0.132)	
Concentration	−1.35	−1.23	−0.925	−0.806	−5.000***	−3.912**	
	(1.88)	(1.941)	(1.856)	(0.171)	(1.799)	(1.876)	
DB Assets/ GDP	0.847	0.79	0.655	1.257*	1.905*	2.036	
	(0.727)	(0.786)	(0.734)	(0.754)	(1.043)	(1.383)	
GDP/Capita	0.02	0.021	0.029	0.033	0.05	0.079**	
	(0.023)	(0.022)	(0.024)	(0.021)	(0.036)	(0.036)	
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	3.63	2.86	5.405	5.237	4.453
p	0.044	0.086	0.003	0.015	<0.001	<0.001	<0.001

Standard errors are in parentheses. */**/*** at 10/5/1% significance levels. All models were comared to similar models over the time period 1997–2007 to determine if the asset diversity variable produced different results. Diagnostic tests using Schoenfield-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.

MoF from supervision and gave some responsibility to an SR, even if the CB retained some control.

The crisis dummy had no effect. 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.

The main finding in this analysis has been a lack of evidence for time-constant relationships. Instead, we found evidence that peer spatial effects varied when we expected that they would, given interaction with highly promoted ideas. Overall, most of the possible ideational diffusion mechanisms were negatively associated with SEC adoption. This finding generally conforms to the promotion hypothesis. The SEC model received little promotion by international organizations and prominent countries. So, we

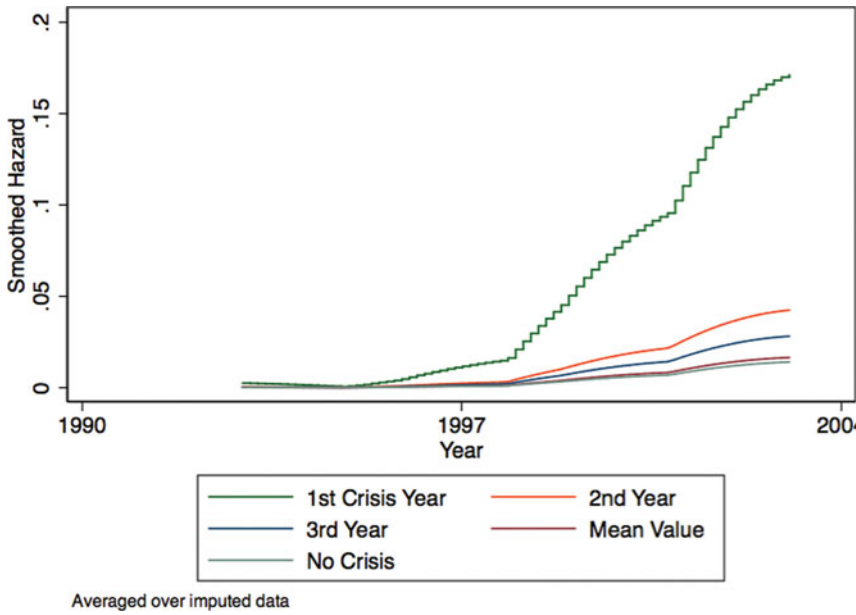

Figure 4 Smoothed Hazards for Unification of Multiple SRs (FSA): Crisis(log) (Model A7).

would expect ideational diffusion mechanisms to have a weak impact on adoption. Some unobserved factors likely led to SEC model convergence.

3.3.2. Unification of multiple specialist supervisors: The FSA model 1. I did not find any violations of the proportional hazards assumption in either of the models looking at why countries created unified SRs. As mentioned in the previous section, I expected this because few countries created this type of regulatory governance before 1997. This finding is evidence for ideational promotion theories, if the direction of the relationship between the mechanisms and reforms is also what we predict.

As the crisis diffusion hypothesis predicted, crisis(log) has a positive effect on multiple supervisors being unified after 1997 (Table 2). Note that the coefficient is negative, but this indicates a positive effect due to the variable's scale. Please see the earlier discussion on the variable's operationalization for details. The crisis variable meets the time-varying criterion. We can see in Figure 4 that crisis has no effect before 1997, but then becomes positive *after* the FSA model is promoted in 1997. This is contrary to the functional crisis response hypothesis. Asset diversity does not appear to have an effect on decisions to unify multiple supervisors. Admittedly, it is poorly operationalized, so these results should certainly not be treated as

conclusive. The prevalence of the FSA model among the CBSS, EU or Basel Committee also does not appear to have affected unification choices for countries that had multiple specialized supervisors, especially when we control for bureaucratic quality and deposit bank assets as a proportion of GDP.

3.3.3. Unifying CB/MoF supervision into an SR: The FSA model 2. Again, as the promotion and crisis diffusion hypotheses predicted, 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 (Table 3). We can see this in Figure 5. 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 time-varying criterion. The IMF standby agreement variable was significant in a model that did not include crisis. However, it dropped out of significance when crises were included. This suggests that it is the means-ends uncertainty created by crises that may be a mechanism of FSA model diffusion, rather than IMF coercion.

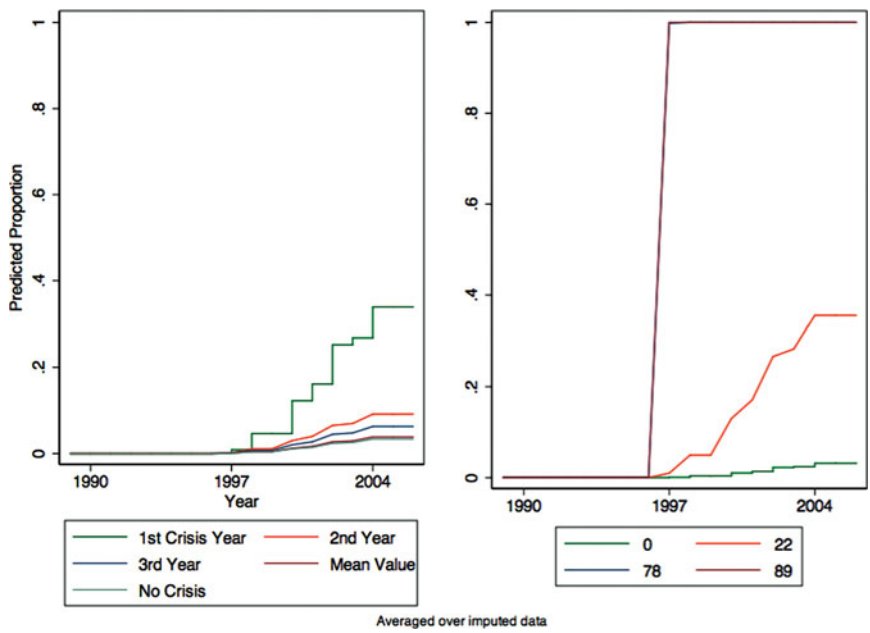

Figure 5 Crisis Dummy and CBSS Spatial Effect Predicted Proportions Creating Unified Supervision (FSA) from CB/MoF Control Using a Representative Range of Values (Model C6).

Table 4 Country Sample and Supervisor Type (1987–2006)

Country	First Year Observed	Supervisors	Supervisors' Name Type
Afghanistan	1987	Central Bank/MoF	Neither
Albania	1987	Central Bank/MoF	Neither
Albania	2006	Central Bank/Multiple Specialized	FSA
Argentina	1987	Central Bank/Multiple Specialized	Neither
Australia	1987	Central Bank/Multiple Specialized	Neither
Australia	1998	Multiple Specialized	Neither
Austria	1987	Central Bank/MoF	Neither
Austria	2002	Unified Specialized	FSA
Bahamas	1987	Central Bank/MoF	Neither
Bahamas	1999	Central Bank/Multiple Specialized	Neither
Bahrain	1987	Central Bank/MoF	Neither
Bangladesh	1987	Central Bank/MoF	Neither
Barbados	1987	Central Bank/MoF	Neither
Barbados	2001	Central Bank/Multiple Specialized	SEC
Belgium	1987	Multiple Specialized	Neither
Belgium	2002	Unified Specialized	Neither
Brazil	1987	Central Bank/MoF	SEC
Brunei Darussalam	1987	Central Bank/MoF	Neither
Bulgaria	1987	Central Bank/MoF	Neither
Bulgaria	2003	Central Bank/Multiple Specialized	FSA
Canada	1987	Multiple Specialized	Neither
Chile	1987	Multiple Specialized	Neither
China	1987	Central Bank/MoF	Neither
China	2004	Multiple Specialized	Neither
Colombia	1987	Multiple Specialized	Neither
Colombia	2005	Unified Specialized	Neither
Croatia	1991	Central Bank/MoF	Neither
Croatia	2005	Central Bank/Multiple Specialized	FSA
Cyprus	1987	Central Bank/MoF	Neither
Cyprus	2001	Multiple Specialized	SEC
Czech Republic	1993	Central Bank/MoF	Neither
Denmark	1987	Multiple Specialized	Neither
Denmark	1988	Unified Specialized	FSA
Dominican Republic	1987	Central Bank/Multiple Specialized	Neither
Ecuador	1987	Multiple Specialized	FSA
Egypt	1987	Multiple Specialized	Neither
El Salvador	1987	Multiple Specialized	Neither
Estonia	1991	Central Bank/MoF	Neither
Estonia	1998	Multiple Specialized	Neither

Table 4 Country Sample and Supervisor Type (1987–2006) (*Continued*)

Country	First Year Observed	Supervisors	Supervisors' Name Type
Estonia	2002	Unified Specialized	FSA
Finland	1987	Central Bank/MoF	Neither
Finland	2003	Unified Specialized	FSA
France	1987	Multiple Specialized	Neither
Germany	1987	Central Bank/Multiple Specialized	Neither
Germany	2002	Unified Specialized	FSA
Ghana	1987	Central Bank/MoF	Neither
Ghana	1993	Central Bank/Multiple Specialized	SEC
Greece	1987	Central Bank/MoF	Neither
Guatemala	1987	Multiple Specialized	Neither
Honduras	1987	Unified Specialized	Neither
Hong Kong	1987	Central Bank/MoF	Neither
Hong Kong	1989	Central Bank/Multiple Specialized	SEC
Hungary	1987	Multiple Specialized	Neither
Hungary	2000	Unified Specialized	FSA
Iceland	1987	Central Bank/MoF	Neither
Iceland	1998	Unified Specialized	FSA
India	1987	Central Bank/Multiple Specialized	SEC
Indonesia	1987	Central Bank/MoF	Neither
Indonesia	2000	Central Bank/Multiple Specialized	Neither
Ireland	1987	Central Bank/MoF	Neither
Israel	1987	Central Bank/Multiple Specialized	Neither
Italy	1987	Central Bank/Multiple Specialized	Neither
Jamaica	1987	Central Bank/Multiple Specialized	Neither
Japan	1987	Central Bank/MoF	Neither
Japan	2000	Unified Specialized	FSA
Jordan	1987	Central Bank/MoF	Neither
Jordan	1997	Central Bank/Multiple Specialized	SEC
Kenya	1987	Central Bank/MoF	Neither
Korea	1987	Central Bank/MoF	Neither
Korea	1997	Unified Specialized	FSA
Latvia	1991	Central Bank/MoF	Neither
Latvia	2001	Unified Specialized	Neither
Lithuania	1991	Central Bank/MoF	Neither
Lithuania	1994	Central Bank/Multiple Specialized	SEC
Luxembourg	1987	Central Bank/MoF	Neither
Macedonia	1992	Central Bank/Multiple Specialized	SEC

(Continued on next page)

Table 4 Country Sample and Supervisor Type (1987–2006) (*Continued*)

Country	First Year Observed	Supervisors	Supervisors' Name Type
Malawi	1987	Central Bank/MoF	Neither
Malaysia	1987	Central Bank/MoF	Neither
Malaysia	1993	Multiple Specialized	SEC
Malta	1987	Central Bank/MoF	Neither
Malta	2002	Unified Specialized	FSA
Mexico	1987	Multiple Specialized	Neither
Mexico	1999	Unified Specialized	Neither
Morocco	1987	Central Bank/MoF	Neither
Morocco	1993	Central Bank/Multiple Specialized	Neither
Netherlands	1987	Central Bank/MoF	Neither
Netherlands	2002	Multiple Specialized	FSA
New Zealand	1987	Central Bank/Multiple Specialized	SEC
Nicaragua	1987	Unified Specialized	Neither
Nigeria	1987	Central Bank/Multiple Specialized	SEC
Norway	1987	Multiple Specialized	Neither
Norway	2003	Unified Specialized	FSA
Oman	1988	Central Bank/Multiple Specialized	Neither
Peru	1987	Multiple Specialized	Neither
Philippines	1987	Central Bank/Multiple Specialized	SEC
Poland	1991	Central Bank/Multiple Specialized	SEC
Poland	2006	Unified Specialized	FSA
Portugal	1987	Central Bank/MoF	Neither
Portugal	1991	Central Bank/Multiple Specialized	SEC
Saudi Arabia	1987	Central Bank/MoF	Neither
Saudi Arabia	2003	Central Bank/Multiple Specialized	Neither
Singapore	1987	Central Bank/MoF	Neither
Slovak Republic	1993	Central Bank/Multiple Specialized	Neither
Slovak Republic	2006	Central Bank/MoF	Neither
Slovenia	1994	Central Bank/Multiple Specialized	Neither
South Africa	1987	Central Bank/MoF	Neither
South Africa	1991	Central Bank/Multiple Specialized	FSA
Spain	1987	Central Bank/MoF	Neither
Spain	1988	Central Bank/Multiple Specialized	Neither
Sri Lanka	1987	Central Bank/Multiple Specialized	SEC

Table 4 Country Sample and Supervisor Type (1987–2006) (*Continued*)

Country	First Year Observed	Supervisors	Supervisors' Name Type
Sweden	1987	Multiple Specialized	Neither
Sweden	1991	Unified Specialized	Neither
Switzerland	1987	Multiple Specialized	Neither
Taiwan	1987	Central Bank/MoF	Neither
Taiwan	2004	Unified Specialized	FSA
Thailand	1987	Central Bank/MoF	Neither
Thailand	1992	Central Bank/Multiple Specialized	SEC
Turkey	1987	Central Bank/MoF	Neither
Turkey	2001	Multiple Specialized	FSA
Uganda	1987	Central Bank/MoF	Neither
Uganda	1996	Central Bank/Multiple Specialized	Neither
United Arab Emirates	1987	Central Bank/MoF	Neither
United Arab Emirates	2000	Unified Specialized	Neither
United Kingdom	1987	Central Bank/Multiple Specialized	Neither
United Kingdom	1997	Unified Specialized	FSA
United States	1987	Central Bank/Multiple Specialized	SEC
Vietnam	1987	Central Bank/MoF	Neither
Vietnam	1996	Central Bank/Multiple Specialized	SEC
Zambia	1987	Central Bank/MoF	Neither
Zambia	1993	Central Bank/Multiple Specialized	SEC

The CBSS spatial effect is positive and very strong from 1997, when the CBSS promoted the FSA model, and it also meets the time-varying criterion. The predicted effect shown in Figure 5 seems comically strong. However, it is largely depicting empirical reality. Only two – Denmark and Sweden – out 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 from then on. The reason that the model predicts that all CBSS members with CB/MoF supervision would choose FSA reforms is that all six 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

Table 5 Summary Descriptive Statistics

		Observed			Average of 5 Imputed		
Variable	Prop. Missing	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	0.51	70.762	15.645	0.51	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

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 its Core Principles for Effective Banking Supervision, 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. I find no evidence that countries with more consolidated banking sectors were more likely to consolidate their supervisors. Because the period for which I have data on consolidation is so short, we should certainly not take this as anything close to definitive evidence that cross-sector consolidation did not play a role in the adoption of the FSA model. Nonetheless, there are some reasons for believing that the results are not completely uninformative. I 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 were between 1998 and 2002, the period for which we have consolidation data. Hopefully, more complete data will become available in the future so that we can more adequately examine the role of cross-sector consolidation.

CONCLUSION: DID IDEAS INFLUENCE FINANCIAL SUPERVISORY CONVERGENCE?

In this paper, I have shown how the time-varying criterion can be used as a minimum benchmark for assessing whether or not ideational diffusion affects de jure financial supervisory governance convergence trends. I have also extended the diffusion literature's methodological toolkit by demonstrating how a pragmatic use of multiple types of event history analysis can be helpful in examining policymaking in complex choice environments.

What has this approach enabled us to learn about financial supervisory governance convergence and what has it contributed to the broader political economy literature?

I found evidence that the level of promotion is important for whether or not an idea is diffused. The little promoted SEC model does not seem to have been diffused through ideational mechanisms, such as crisis diffusion or the peer groups identified here. Some unobserved factors led to the early 1990s' convergence on SEC-type supervision.

The story for the heavily promoted FSA model is very different. This paper has identified a number of possible ideational mechanisms behind the convergence on the FSA model. Banking crises and times of particular means-ends uncertainty appear to not have had a uniform effect on FSA reforms over time, even when controlling for a number of financial sector structure factors. According to the time-varying criterion, this finding is evidence against a purely functional approach to understanding the impact of crisis. Crises were associated with reforms in the direction of the strongly promoted FSA idea at the same time that the model was promoted. Crises appeared to have had no effect on the much less promoted SEC idea. From this evidence, it seems that in banking crises, actors may be more likely to adopt highly promoted best practice ideas. Certain financial supervisory 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 and especially in the CBSS, which actively promoted the FSA idea. More research is needed to understand why the CBSS was much more successful than the Basel Committee at promoting the FSA model.

Though I found evidence that some ideational diffusion mechanisms met the minimal time-varying criterion, due to limited data, I was only partially able to examine the functional banking system structure causes

of supervisory governance reforms – in particular, cross-sector financial industry consolidation. Most transitions to the FSA model were during the period when data was available and results from models with just this period were largely the same as the entire time span – that is, no effect. Nonetheless, from the evidence presented here, we cannot draw any definitive conclusions about whether cross-sector consolidation, consistently discussed in the financial supervision literature as being an important reason for consolidating financial supervision, was or was not the main driver of supervisory governance consolidation during this period.

The pragmatic event history analysis approach I have used in this paper to examine the time-varying criterion could easily be adopted to study the reasons, especially ideational promotion, for policy choices in a number of other complex issue areas. Future studies could examine, for example, how ideational diffusion may be important in choosing to use fiscal stimulus or austerity to respond to economic downturns or to use different types of bad banks to resolve banking crises.

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NOTES

1 Given the 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 generalized 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) and Quintyn and Taylor (2003).

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

3 My use of the term, 'SEC model', refers not only to the securities regulator, but also the fact that some other body is regulating the deposit banking industry. It describes supervision in both sectors.

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

5 The 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 the 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.

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

7 The list of sources consulted in the creation of this dataset can be found at <http://bit.ly/Qz7KHt>.

8 It is important to understand the processes behind the creation of these ideas and the reasons why they were promoted. I touch on some of these issues in this paper. However, an in-depth study of these issues is beyond the scope of this paper. For an example of what this research might look like, please see Chwieroth (2010) for an examination of how ideas are developed and come to be promoted by IMF staff.

9 Due 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.

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

11 Coding done by the author.

12 Much of the literature and documents from government and international organizations 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, 'specialized', instead. See below for a further discussion.

13 Despite 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 organizational 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).

14 Please note that Goodhart and Schoenmaker (1997) discussed both the potential positive and negative consequences of specialized supervision. However, this piece is often quoted in later research as advocating a unified SR.

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

16 The recommendations' timing 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).
17 Goodhart and Schoenmaker actually voiced considerable scepticism about the appropriateness of the term, independence, 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 (e.g., Quintyn, Ramirez and Taylor, 2007).
18 This 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.
19 Clearly 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.
20 It 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 would not be strong predictors.
21 Initially, 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.
22 Please note that the international country risk indicators are made available for replication only. They should not be distributed.
23 Covariates are omitted for simplicity.
24 We can use a number of PHA diagnostic tests such as residual-based approaches (Box-Steffensmeier and Zorn, 2001; Fine and Gray, 1999) and time interactions (Stata Corp., 2009, 214–5).
25 Only four countries in the entire 83 country sample had unified SRs before 1997. Sweden and Denmark unified multiple SRs in 1991 and 1987, respectively, so only they are included in the model Cox PH model of transitions from Multiple SR to Unified SR. Denmark, like all transitions made in 1987, was not 'observed' by the model because the year, 1986, was not included due to lack of data availability. Honduras and Nicaragua both had unified regulators well before the beginning of the observation period, so they are not included in the models either.
26 Sometimes referred to also as hazard functions.
27 Cumulative incidence functions are the probability of observing the event of interest and not another event before a certain time, if it hasn't already happened, given certain values of the covariates. Formally: $CIF(t \mid x) = Pr(T \leq t \text{ and event type of interest } \mid x)$ (modified from Stata Corp., 2009: 532).

28 The specific logarithmic base 10 transformation of the impact of crisis from the first crisis year to some year found by

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

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

29 Plausibility was determined by examining descriptive statistics and peer organization documents.

30 China, Hong Kong, Japan, South Korea and Taiwan.

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

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

33 The procedure I used to create the dyadic datasets for finding the spacial effects was from Gilardi and Füglister (2008).

34 Asset diversity for firms with assets of at least US$100 million is calculated by

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

35 Pakistan and Venezuela, included in Laeven and Levine (2007), were not included in the analysis due to lack of available data on their financial supervisors.

36 Results from models with very highly correlated and insignificant variables are not shown. These are discussed in the table captions.

37 That is, statistically significant at at least the 5 per cent level.

38 To assess the imputation results, I ran the diagnostic test suggested by Honaker, King and Blackwell (2011) and implemented in Amelia II, including comparing observed and imputed variable densities and running models with overdispersed starting values. These methods did not reveal any major anomalies in the imputed data used for this paper's analyses.

39 The estimated linear time-varying coefficients are made up of two parts, a non-time-varying β and a time-varying β(t). So, the coefficient is $\beta + \beta$(t). Various non-linear functions of time were also tried, but did not substantively change the results.

40 The GDP per capita variable was also negative and significant at between the 5 and 10 per cent significance level, depending on the model specification.

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

NOTES ON CONTRIBUTOR

Christopher Gandrud is Lecturer of International Relations at Yonsei University, Wonju.

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