INTERNATIONAL POLITICS OF FINANCE
AND BANK REGULATIONS

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The three essays that comprise this dissertation examine the nature of global governance of finance, with a focus on banking regulations. International political economy is often interested in the conditions under which countries engage in cooperation yet, only limited formal, rules-based governance structures have emerged in the area under study. The fundamental tension of whether a hegemon provides global public goods or national private goods is the theme of the first essay. I measure the effect of the renegotiation of international bank regulations, Basel III, upon US bank stock prices in the aftermath of the Great Recession. I establish that the regulations hurt US banks, which is inconsistent with the possibility that regulations provided private goods to US banks. The first essay establishes that, even in the richest countries, regulators can still effectively act against the wishes of financial special interests. The second and third essays focus on countries’ decisions to adopt focal point regulatory policies that they are under no obligation to adopt. Why do countries adopt international best practices given that global governance of finance is decentralized and has weak formal characteristics? I argue, and show evidence, that seemingly weak global governance structures are tied to the International Monetary Fund (IMF), which is highly centralized. The IMF acts as an autonomous international actor in its relationship with countries on an ongoing basis. Through this channel, it promotes diffusion of international best practices in both program and non-program years. Statistical analysis of establishing independent bank supervision and adoption of Basel I, respectively, during the 1990s and the 2000s, show evidence for this relationship. Thus, countries do not face direct international organization pressures, but the embedded nature of international best practices into the IMF monitoring and reporting changes adoption calculations, even in the absence of IMF program conditionality. Together, the essays establish that international governance has evolved in a haphazard manner that is not totally captive to US financial interests and not completely reflective of US political priorities.
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Going forward, my greatest hope is to use the skills, knowledge, and experience from graduate school to enhance the lives of others. It can happen in a variety of ways, and I look forward to seeing how it plays out in future parts of my life’s journey.

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Credibility and Distributional Effects of International Banking Regulations: Evidence from US Bank Stock Returns

Abstract:

Financial regulatory networks are a pervasive, new type of global governance heralded by some as a flexible answer to globalization dilemmas and dismissed by others as ineffective due to weak enforcement mechanisms. Whether regulatory network agreements provide global public goods or private goods for certain states’ firms is a second debated issue. This paper adjudicates among competing perspectives by examining whether Basel III, an international agreement negotiated by the bank regulatory network about bank capital minimums in 2009 and 2010, was viewed as credible and affecting regulated US firms. I use stock returns to measure investors’ perceptions, and an event study methodology to test whether regulated banks’ observed stock returns significantly differ from expected stock returns on days when new information about Basel III becomes available. If the agreement is viewed as credible and affecting firm value, banks’ stock returns will deviate from expectations. The direction of any deviation indicates whether regulations benefit or hurt banks. While the direction of effects is not uniform across events, I find that the initial stock return reaction and the net effect across all five events are negative, indicating that US banks were not helped by new international regulations. Further, US banks experienced stock returns that differed from expectations, providing evidence that international regulatory network agreements are viewed as credible and tangibly affect firms independent of domestic implementation.
1.1 Introduction

Financial regulatory networks – international groups of national regulators – represent a new form of governance and are the primary fora for financial regulatory cooperation. Comprised of national regulators, these are neither traditional intergovernmental organizations (IGOs) nor nongovernmental organizations (NGOs). Regulatory networks create international agreements, standards, best practices, and memoranda of understandings (MOUs) that are nonbinding upon members and rely upon decentralized implementation by national regulatory authorities.

This paper’s empirical analysis pushes forward two open debates about financial regulatory networks. First, do investors view regulatory network agreements as credible? That is, are international agreements expected to be implemented domestically? Regulatory network agreements are nonbinding and lack enforcement mechanisms, which may limit implementation likelihood and the ability to identify and punish free riders. Second, do these regulatory agreements help or hurt banks? Some scholars suggest these agreements create global public goods, while others argue they provide private benefits to regulated US firms.

To adjudicate among the competing claims of each debate, this paper analyzes the Basel III capital adequacy agreement negotiated by the bank regulatory network, the Basel Committee on Banking Supervision (BCBS). Basel III, negotiated between September 2009 and December 2010, is a most-likely agreement to affect firms because the agreement is detailed, which allows investors to evaluate expected distributional effects, and because prior agreements on the same topic have been in place since 1988, increasing the credibility of domestic implementation. Basel III unambiguously increased regulatory stringency compared to the status quo, both qualitatively (by narrowing the definition of capital) and quantitatively (by raising minimum required levels). If Basel III has no observable effect, then other BCBS outputs, such as principles and best practices, are unlikely to have any effect either.

Whether Basel III is credible and whether it holds distributional effects, however, is a priori

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1 See Slaughter 2004; Kahler and Lake 2009; and Helleiner 2012.
ambiguous. If US banks incur adjustment costs and higher ongoing costs to comply with more stringent regulations, they should be hurt. However, because regulated European and Japanese banks were expected to incur even higher adjustment costs than US banks, regulations may confer a competitive advantage upon, and potentially benefit, US banks. Regarding credibility, the US delayed implementation of Basel III’s predecessor agreement, Basel II, in 2006 and 2007 while Europe implemented in a timely manner. The effect of this compliance breach might decrease credibility of Basel III implementation within the US.

This paper uses an event study research design that incorporates stock returns as outcome measures to isolate investor perceptions about international regulatory network announcements. Event studies analyze whether specific types of news (each instance of a news release constituting an “event”) systematically affect outcomes of interest. Within the context of Basel III, events are BCBS press releases announcing Basel III negotiation progress. Basel III negotiations occur in secret and outcomes are announced through formal BCBS press releases. Thus, each press release provides new public information about Basel III regulations. On press release days, regulated firms’ observed stock returns are compared to expected stock returns. If investors believe the agreement will be implemented domestically (i.e. the agreement is credible) and that domestic implementation will significantly affect regulated firm value (i.e. the agreement has distributional effects), then there should be a statistically significant difference between expected and observed stock returns. On the other hand, if regulatory network outcomes are viewed by investors as either incredible or lacking distributional effects, then there should be no observable difference. The direction of any effect indicates whether investors perceive regulations to help (if observed stock returns are systematically higher than expected) or hurt (if observed stock returns are systematically lower than expected) regulated firms.

Expected stock returns refer to stock returns that are expected in the absence of an announcement. As they are unobserved counterfactuals, these values must be estimated from observed data. For each regulated firm for each event, this paper identifies a subset of firms that have similar stock

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4 Two other political science event studies interested in measuring the effects of international institutions include Bechtel and Schneider, who use a traditional event study methodology to establish the effect of European Security and Defense Policy upon seven European defense stocks, and Pelc, who uses google scholar searches to establish the possibility that audience costs are present for the case of WTO dispute settlement. Bechtel and Schneider [2010] and Pelc [2013]
return patterns to each regulated firm but that should be unaffected by the Basel III announce-
ments. The full set of unaffected firms is comprised of 2,884 nonfinancial firms publicly traded
on US stock exchanges. I use a variable selection method called a Lasso estimator to identify
the subset of nonfinancial firms that best predicts each regulated firm’s stock returns prior to the
announcement. Then, on an announcement day, the observed stock returns of the unaffected firms
are used to estimate the regulated firm’s expected stock return.

The proposed approach used in this paper - using select, unaffected firms to estimate the coun-
terfactual - improves upon the common event study approach. The traditional approach uses an
aggregate market index (such as the S&P 500) as a single regressor to predict each regulated firm’s
stock returns, resulting in two major problems. First, an aggregate market index value may include
the regulated firm itself, or other firms that are affected by the event of interest. In turn, there may
be direct relationships between the regressor and dependent variable. The proposed approach en-
sures that only nonfinancial firms comprise the counterfactual. Second, an aggregate market index
is an average of many firms’ stock returns on a given day, and thus include many firms that do not
predict the individual firm’s stock returns well. For this reason, the single index predicts many in-
dividual firms’ stock returns with a high degree of variation. In contrast, this paper uses a statistical
method to identify unregulated firms whose stock returns are most correlated with each regulated
firm’s stock returns, creating a custom market index that fits historical data with a consistently
high goodness of fit. I show that the Lasso regression explains more variation in historical stock
return data and provides more precise predicted values on event days compared to the traditional
approach.

Stock return patterns across the five BCBS announcements about Basel III negotiating progress
provide evidence that Basel III was viewed as credible and as having real effects upon regulated
firms. On each announcement day, regulated firms’ stock returns systematically differed from
expectations.

The direction of the effects is not uniform across events, but the initial reaction and net effect
across all five events are negative. Early events (the two 2009 announcements) are associated
with US bank stock returns that are systematically lower than expected by an average of 1.43%
and 0.41%, respectively, representing billions of dollars in foregone equity value. On these days,
investors either sold bank stocks, or did not buy as readily as expected. Negative reactions to the unexpected initial announcement in September 2009 (Event 1) may be clearly interpreted as investors viewing regulations as more stringent than expected and as hurting US banks. Once Basel III was in the public eye in 2010 (following a detailed consultative proposal released in December 2009 with public comments due April 2010), two midyear announcements, in July and September 2010, were associated with bank stock prices systematically higher than expected. Media coverage indicates the pattern is likely driven by increased regulatory certainty and long implementation timelines rather than expectations that competitive advantages from the regulation would benefit US banks. This paper illustrates a general method to analyze policies with distributional effects that are *a priori* ambiguous.

The next section explains theoretical debates associated with financial regulatory networks and justifies Basel III as a useful case for analysis. It introduces stock returns as objective measures of investor perceptions specifically attributable to news about international agreements. The distributional effects of capital minimums are explained, and hypotheses are developed to tie theoretical expectations to observable outcomes. The third section formally defines the methodology and estimation procedure used to calculate the press release effects. It provides detailed information about the data and explains analytical findings and implications. A final section concludes by discussing the larger implications of the analysis.

### 1.2 Credibility and Distributional Effects

Two debates surround the credibility and distributional effects of financial regulatory networks. First, increased regulatory stringency could plausibly help or hurt regulated firms. Second, it is unclear whether international financial regulatory network agreements will be credibly implemented as national regulations in the first place.

To adjudicate among the conflicting expectations of each debate, this paper uses systematic empirical analysis applied to Basel III. Basel III is an international agreement negotiated in 2009 and 2010 that codified bank capital minimums. Basel III emerged from closed negotiations among BCBS members. Negotiation outcomes are publicly reported through official press releases. Because of the surprise timing and content of press releases, firm-level stock returns are used to isolate
and measure financial regulatory effects as perceived by investors, and as distinct from other regulations negotiated at similar times such as the US Dodd-Frank Act. Whether observed stock returns deviate from expected stock returns on days of press releases, and the direction of any deviation, informs the two debates. Hypotheses that tie theoretical expectations to observable stock return outcomes are discussed before turning to research design and empirical analysis in the subsequent section.

1.2.1 Theoretical Debates About Regulatory Networks

What is the motivation behind increased regulatory stringency through financial regulatory networks? And, are resulting international agreements viewed as credible? The 1988 agreement (called Basel I) that first codified bank capital minimums is alternatively characterized as global public goods provision and as providing private goods for US domestic banks. Both perspectives assume the agreement will be credibly implemented across BCBS member countries, but they hold different expectations about the direction of the agreement’s distributional effects for regulated firms.

The public goods perspective is that international agreements enable greater financial stability while maintaining competitive advantage across countries. Regulators desire both financial stability and domestic bank competitiveness, yet when a regulator unilaterally decides upon a level of national regulatory stringency, he faces a tradeoff between these two objectives, known as the “regulator’s dilemma”. Higher (lower) regulatory stringency increases (decreases) financial stability, but hinders (helps) competitiveness of regulated firms. However, if regulators from different countries coordinate regulatory increases, it alleviates each country’s regulator’s dilemma. Financial stability increases while competitiveness is maintained. The increase in financial stability is a global public good.

A contrasting, private goods perspective is that higher regulatory stringency increases the competitiveness of firms in states that already have high regulatory stringency. International agreements require member countries with low regulatory stringency to increase minimum regulatory

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5Kapstein 1989 and Oatley and Nabors 1998, respectively. Singer extends the debate to identify conditions under which regulators generally prefer international cooperation. Singer 2004 and 2007.

6Kapstein 1989.

7Ibid., 324.

8Oatley and Nabors 1998.
levels, while member countries with higher regulatory stringency, at the time of the agreement, face lower adjustment costs to comply. In this way, banks in states with high regulatory stringency prior to the agreement will incur *private gains* in competitiveness compared to banks in states with relatively low status quo stringency.

These perspectives anticipate opposite distributional effects. The public goods perspective expects competitive advantage across countries is maintained while all countries’ banks must comply with higher minimums. In this case, US banks will be hurt by increased regulatory stringency, as compliance requires adjustment and ongoing operational costs. The private goods perspective expects relative benefits for banks in countries with high regulatory stringency prior to the agreement. In this case, US banks, which begin from high stringency, will benefit from competitive advantages shaped by the agreement.

The credibility of financial regulatory networks, while assumed by both the public goods and the private goods perspectives, is debated among international law scholars. Regulatory networks represent a new form of governance that does not neatly fit into existing governance typologies. From a functionalist perspective, the rise and proliferation of regulatory networks implies that demand exists for such governance structures. Slaughter argues that these groups are flexible, efficient, and accountable, and that their nonbinding nature facilitates governments’ willingness to delegate to international bodies. From an institutional design perspective, Verdier and Brummer, among others, argue that regulatory network agreements are ineffective because they lack enforcement mechanisms.

Negotiated agreements that emerge from financial regulatory networks are all nonbinding soft law, as they are not established through treaties or other formal obligations among countries.

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9Within the context of Basel I, Japanese bank expansion was the main concern. See, for example, Oatley and Nabors 1998, 36; and Tarullo 2008, 45–54.

10Political science typologies abound to explain the form and function of various global governance arrangements, yet regulatory networks fall through the cracks because they are not agreed upon by executives or direct executive representatives, and agreements are nonbinding. For instance, see Koremenos, Lipson, and Snidal 2001 on formal features of international institutions; Abbott, Keohane, Moravcsik and Slaughter 2000 on legalization; Abbott and Snidal 2000 on hard and soft law; Abbott and Snidal 1998 on formal institutions’ roles; Lipson 1999 on informal agreements; and Vabulas and Snidal 2013 on informal international organizations. A related set of typologies theorize about relationships between various actors and government authority. See, for instance, Kahler and Lake, eds. 2003; Hawkins, Lake, Nielson, and Tierney, eds. 2006; and Buthe and Matti 2011. This list excludes a large legal scholarship exploring concepts and implications of hard versus soft international law.


12Verdier 2009, especially 132–133, 162–163; and Brummer 2011, especially 263–264.

13Soft law describes agreements that are legally nonbinding, while hard law includes laws or regulations on the books. See, for
Informal agreement lowers the likelihood, relative to binding agreements, that states will implement. Implementation itself is decentralized, requiring each country to incorporate the agreement’s terms within its national regulations or domestic laws. Finally, regulatory networks lack institutional enforcement mechanisms through which noncompliance may be identified and rectified. For these reasons, financial regulatory networks have formal characteristics of relatively weak international organizations. Specifically, the BCBS relies upon decentralized implementation, holds limited monitoring channels, and has no process to address compliance breaches, all increasing state discretion to implement and comply on an ongoing basis. Empirically, the US delayed Basel II implementation while Europe implemented ahead of schedule. Basel II did not have to be adopted until 2006, but in October 2005 the European Union adopted a Capital Adequacy Directive implementing Basel II. In contrast, US regulators issued final rules more than two years later, in November 2007. Nonetheless, Slaughter and others continue to find regulatory networks remain a growing form of governance associated with widespread adoption and policy diffusion.

If regulators implement international agreement terms by incorporating them into national laws or regulations, full domestic bank compliance may be assumed. This is empirically justified. The United States, along with other advanced industrial countries, has strong bank supervision, meaning that regulators have broad powers to oversee bank operations and, on an ongoing basis, to sanction banks that do not comply with regulations. Because US banks generally comply with regulations on the books, and so the relevant research question is whether international agreements shape national regulation. The next section discusses these debates within the context of Basel example, Abbott and Snidal and Raustiala In the US case, regulators hold administrative authority to implement into regulations. Lipson and Simmons both argue that nonbinding, or informal agreements rely upon reputation to compel compliance. Lipson and Simmons 1991 and Simmons 2000. This statement is descriptive and takes the regime design as a given in order to emphasize the questionable nature of country compliance with financial regulatory network agreements. Theoretically, institutional design features are endogenous to member preferences at creation and evolution of any regime. Explaining the design of financial regulatory regimes lies outside the scope of this paper, although existing theories expect that states create weak institutions when there is a high future uncertainty about various aspects of the issue at hand. Koremenos, Lipson and Snidal 2001. It is worth noting that a number of authors argue that formal institutional enforcement is not necessary for effectiveness. See Lipson 1991, Chayes and Chayes 1993, Simmons 2000, Gilligan 2006, Dai 2007, Kelley 2007, and Morrow 2007. Or, informal practices of formal institutions may matter more than formal practices, as in Stone. Stone 2011. Tarullo 2008, 126–130. Slaughter 2004, Kahler and Lake 2009, and Bach and Newman 2010. Thanks to Stephen Chaudoin for emphasizing this point. Whether the content of regulations adequately prevents crisis and limits regulatory arbitrage opportunities is a separate question.
III, and justifies the case selection.

The Case of Basel III

Basel III represents a regulatory network agreement which is most likely to be credible and to have distributional effects. It is preceded by the 1988 Basel I agreement and its 2004 renegotiation (called Basel II), both of which were widely adopted among BCBS members and nonmember states. Wide adoption of prior agreements may increase the likelihood that Basel III will be implemented domestically. Second, among financial regulatory outputs, Basel III is rule-based and unusually detailed. Thus, observers can anticipate and evaluate the regulation’s distributional effects once details become available. Third, Basel III significantly increased regulatory stringency compared to Basel II, forcing banks to maintain triple the old standard for high quality (i.e. Tier 1) capital. Finally, as will be discussed below, Basel III’s negotiation process enables a research design that can isolate investors’ reactions to international agreement news. The next section explains the distributional effects of Basel III upon US firms in more detail before explaining how credibility and distributional effects will be measured.

Distributional Effects of Basel III

Regulatory capital is a bank’s buffer against unexpected losses. An accounting measure called the “capital ratio” – regulatory capital as a percent of risk-weighted assets – quantifies a bank’s capital level at any time. Three aspects of Basel III regulations, the definition of capital, minimum required capital levels, and the implementation timeline, all affect the magnitude and direction of the distributional effects upon regulated firms. First, the capital ratio definition delineates what counts as regulatory capital and sets rules for calculating asset riskiness. It can affect the types of assets and capital that firms hold, in turn affecting adjustment costs and ongoing costs to comply with regulations. Second, the required minimum capital ratio level is thought to affect firms’ ongoing opportunity costs, as holding higher levels of capital requires firms to hold money that could otherwise be actively invested. Finally, the implementation timeline affects how quickly

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21 Simmons 2001; Ho 2002; and Barth, Caprio, and Levine 2006.
22 In contrast to “unexpected loss”, an example of an “expected loss” is a bank’s estimated percentage of loans that will not be repaid as part of standard business operations. Expected loss is incorporated directly into a reserve line item on the bank’s balance sheet.
firms must adjust operations to become compliant. Long timelines provide firms with flexibility. From a competitiveness perspective, US firms are most likely to benefit compared to European and Japanese rivals, primarily through capital ratio definition details.

**Capital Ratio Definition Details.** Capital ratio components, regulatory capital and risk-weighted assets are calculated as a combination of balance sheet accounts. Balance sheet accounts are comprised of assets, liabilities and shareholder’s equity. Liabilities and shareholder’s equity accounts are both types of firm financing, but liabilities are financing that the firm promises to pay back (e.g. loans) while shareholder’s equity is financing in return for corporate ownership (e.g. stock shares). While a company is insolvent if it cannot pay its debt, shareholder’s equity does not define a firm’s solvency. Capital is comprised of shareholder’s equity accounts, and in this way it acts as a buffer against insolvency (i.e. paying debt obligations) in the case that assets do not produce expected revenues to cover liabilities. The most narrow definition of “capital” would be common stock and retained company earnings. Broader definitions of capital reflect capital with higher levels of obligation for the company to pay shareholders (e.g. preferred stock and hybrid capital). Basel I and Basel II each defined two tiers of capital: “Tier 1” comprised of narrow capital and “Tier 2” comprised of broad capital. Basel III created additional minimum levels of common stock distinct from Tier 1 and Tier 2.

Upon initial announcement of Basel III negotiations in September 2009 (Event 1), it was clear that capital would be narrowly defined under Basel III, in turn requiring higher adjustment costs for European and Japanese banks as compared to US banks. As of 2008, European banks held high levels of hybrid securities, which are combinations of debt and shareholder’s equity. These were a form of Tier 2 capital under Basel II but would not be considered regulatory capital under Basel III’s more narrow definition. Media coverage of the initial Basel III announcement in September 2009 immediately identified European banks, especially French and German banks, as being hurt because of reliance upon hybrid securities. Japanese media also reported throughout late 2009...

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23The following is a simplified description for the purpose of explaining the role of capital and how regulatory definition of capital may affect firms’ costs in the short- and medium-term. For a more technical review, see Tarullo 2008, 16–29.
24Because of double-entry bookkeeping, at any given time a company’s assets exactly equal the sum of a company’s liabilities plus shareholder’s equity.
25For instance, on September 15, 2009, Reuters reported, “The big change in Sunday’s reforms is that at least half of core Tier 1 capital must be common equity and retained earnings.... A greater focus on common equity within Tier 1 is already something the United States has done and Switzerland and the UK as well, but there are still plenty of markets in Europe where hybrids account for
and 2010 that Basel III’s narrow capital definition would require Japanese banks to raise capital.\(^{26}\) In contrast, no reports identified US banks as incurring especially high adjustment costs relative to other countries. Thus, if any country’s banks would benefit from relative competitive advantage, it would be US banks at the expense of European and Japanese banks.

Although a secondary issue during Basel III negotiations, asset risk-weights affect a firm’s capital ratio. Asset risk-weights capture each asset’s likelihood of incurring an unexpected loss.\(^{27}\) For illustrative purposes, under Basel I investments viewed as most safe, such as cash or loans to OECD member governments, had a zero percent asset risk-weighting, indicating that no capital need be held against these assets. In contrast, investments considered more vulnerable, such as loans to non-OECD member governments, held a 100 percent risk-weighting, meaning minimum capital (8%) of the full value of the assets must be held by the bank.\(^{28}\)

**Capital Ratio Levels.** Basel III clearly increased minimum levels of required capital compared to Basel I and Basel II.\(^{29}\) Minimum required levels of capital are associated with opportunity costs, as banks are forced to hold greater amounts of capital that could otherwise be invested to earn a return.\(^{30}\) Firms that must raise capital to become compliant with new minimums will incur adjustment costs. For a bank to increase its capital ratio it must increase capital (the ratio’s numerator) or decrease risk-weighted assets (the ratio’s denominator). Common approaches by banks to increase capital ratio levels are to issue new stocks, to change the asset mix, or to sell-off assets. Each option is expensive, as new equity issues dilute existing stock shares’ values, and selling assets or a large proportion of capital... This could affect UK government stakes in UK banks, as well as holders of hybrid capital in banks elsewhere in Europe. It may force France and Germany to semi-nationalise more of their banks.” Reuters News, 2009, “Banks Eye Clock on Tougher Capital Rules”, September 15. Similar sentiments were reiterated in January 2010 following the release of the consultative proposal, for instance, Weaver, Courtney, 2010, “Capital Rules Worries Hurt Banks Financial Times January 13, Asia Page 22.


\(^{27}\)See footnote 22.

\(^{28}\)For in-depth discussion of the distortions and distributional effects of Basel Accord asset risk-weightings for developing countries, see Claessens, Underhill and Zhang 2008.

\(^{29}\)Basel I required 8% minimum capital to risk-weighted assets, with at least 4% of risk-weighted assets held as Tier 1 capital. Basel III also required 8% minimum capital to risk-weighted assets, but comprised of higher quality capital. Moreover, Basel III requires that common equity comprise at least 4.5% of risk-weighted assets and total Tier 1 capital (including common equity) must comprise at least of 6% of risk-weighted assets. Basel III additionally requires a dynamic, countercyclical buffer (additional capital that has to be held during times of high credit growth), a leverage ratio (a straightforward measure of Tier 1 capital over non-risk weighted assets), and a liquidity ratio (a measure of liquid assets as a percent of liabilities). GAO 2012, 8.

\(^{30}\)This is a common assumption but not a fact. For a strong argument that holding higher levels of capital does not increase firm costs, see Admati and Hellwig 2013. Additionally, many banks overcomply with capital regulations on an ongoing basis and therefore perhaps adjustment costs are small. See, for example, Winecoff 2012.
substantially changing asset mix takes time.

**Implementation Timelines.** Finally, implementation timelines affect banks’ adjustment costs. BCBS members made clear throughout BCBS press releases that implementation would not hinder general economic recovery. Banks prefer long timelines because it allows for gradual compliance and the possibility of favorably interfering in regulatory details at the level of national implementation.

In summary, while Basel III unambiguously increased regulatory stringency compared to existing regulations, US firms could plausibly be helped or hurt. Capital definitions were expected to affect European and Japanese regulated banks more so than US firms. The next section explains how stock returns are used to assess credibility and distributional outcomes of the regulations upon regulated US banks.

### 1.2.2 Using Stock Returns to Measure Institutional Effects

It is challenging to find a measure that isolates the effects of international institutions and international agreements because international institutions are endogenous to member selection into institutions, and international agreements are endogenous to member negotiations. This study uses firm stock prices as observable measures that inform regulatory effects. Stock prices, transformed into stock returns, are analyzed within an event study, a research design with clear counterfactuals that circumvent endogeneity and have causal interpretation.

Stock prices adjust to public news almost immediately, and this analysis uses stock returns to proxy for investors’ perceptions about international agreements. Considering only the immediate period following the announcements isolates reaction to the expected effects of the international agreement. Stock returns offer a costly, observable measure of investors’ changing perceptions of a firm’s value. A large literature in economics debates whether stock price movements are best explained by the efficient market hypothesis, where investors rationally and consistently recalculate firm value, or by behavioral theories, where investors trade based on expectations of the future nominal price of the stock distinct from the underlying firm value. However, no assumption about

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31 At any given time, however, the direction of the effect is contingent upon investors’ expectations, which change as regulatory details develop.

32 See Downs, Rocke, and Barsoom 1994; Von Stein 2005; Hafner-Burton, Victor, and Lupu 2012, and Martin ?.

33 Although, it is distinct from national implementation.
investors’ trading behaviors are necessary in this application because regardless of an investor’s trading strategy all investors seek profit. Whether an investor trades because his perception of a stock’s inherent value changes (if he acts consistently with efficient market theories) or because he anticipates other actors’ reactions will result in a change in the stock’s nominal value (if he acts consistently with behavioral theories), the observable outcome – a stock price change – is the same. New information that changes an investor’s perception of a stock’s value will cause him or her to act, with the change reflected in the stock price and occurring on the day that new information is available. Stock returns thus proxy for perceived credibility and distributional effects of the regulation. Firms regulated by the agreement are those that should be affected by investor actions.

This study contributes micro-level evidence to existing empirical studies that use policy adoption and firm accounting data to measure long-term regulatory effects. Bach and Newman establish the most systematic empirical association between financial regulatory networks and state policies. They convincingly show that states with securities regulators who are members of the securities regulatory network (called IOSCO), are more likely to adopt and implement insider trading legislation. No equivalent pattern holds for states with bilateral MOUs with the US. Bach and Newman establish broad patterns of adoption and implementation, yet these are necessarily associational and not causal, as there is endogeneity in selecting into the institution and policies. Bach and Koubi use accounting data to establish regulatory effects upon firm operations. They provide empirical evidence that higher minimum capital regulations are associated with less loan liquidity. The limitation of this approach is the inability to isolate whether firm changes are due to international agreements or domestic implementation of the agreement.

The next section explains Basel III negotiation as an especially appropriate case for such an analysis because of the opaque BCBS negotiation process and specific, identifiable dates when negotiation progress becomes public knowledge.

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36 See footnote 32.

Table 1.1: **Events:** Between September 2009 and December 2010, five BCBS meetings resulted in press releases providing public information about Basel III negotiations. Event 1 and Event 3 state broad agreement to move forward with negotiations to increase regulatory stringency, without providing details of the regulations, while Event 2, Event 4, and Event 5 provide details about some aspect of the likely Basel III rules. **SOURCE:** BCBS press releases, available on the BIS website, [http://www.bis.org/statistics/press_releases/index.htm](http://www.bis.org/statistics/press_releases/index.htm).

### 1.2.3 Surprise Announcements

BCBS press releases represent new public information about Basel III negotiation progress, making Basel III an appropriate case upon which to apply an event study research design. Because stock returns constantly adjust to new information, to identify a stock price effect it is important that information be released to the public on a clear date without prior information leaks.\(^{[38]}\) The standard BCBS negotiation process, followed for Basel III, upholds this element of surprise.

To negotiate Basel III, the BCBS followed its standard negotiation process characterized by closed meetings among BCBS members followed by public press releases to announce meeting outcomes, and a public consultative process. Table [I.I] outlines the five events that constitute the international agreement negotiations.\(^{[39]}\)

BCBS press releases are surprises in both release dates and content. As shown in Table [I.I], BCBS press releases are not released at a set time following a BCBS meeting. Press releases range from being announced on the same day as the BCBS meeting (as in the case of Event 4, where both the meeting and press release occur on September 12, 2010), to being announced more than two weeks after the meeting (as in the case of Event 5, where the meeting was held on November 30 and December 1, 2010 but a press release detailing meeting outcomes was not made until December

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\(^{[38]}\)If the content of an announcement is accurately anticipated or released to different actors at different times, stock returns will adjust prior to the official announcement.

\(^{[39]}\)Although additional updates that tweak the December 2010 agreement and develop some of the more vague regulations have occurred since.
16, 2010). Further, newspaper coverage about the Basel Committee between events provides no indication that there are any non-events, where investors expected, but the BCBS did not make, a press release about negotiation progress.

The BCBS is an extremely opaque negotiating body and BCBS press release content is unknown to the public and to private interests prior to formal announcements. Meeting minutes are never publicly released, and the organization maintains closed archives. Although the public may know BCBS meeting dates, newspaper coverage never reports meeting outcomes prior to BCBS press releases, increasing confidence that press releases reflect new public information. Further, interview evidence suggests that, during 2009 and 2010, the BCBS maintained especially formal and distant relations with private interests.

Finally, BCBS meeting outcomes cannot be known with certainty prior to each meeting because BCBS members actively negotiate within meetings. In a rare description of BCBS meeting proceedings, Sheila Bair, the US Federal Deposit Insurance Corporation (FDIC) chairman during the Basel III negotiation period, gives no impression that BCBS meeting outcomes were determined prior to each meeting. In contrast, she documents a fragmented US negotiating position just days prior to certain BCBS meetings about Basel III. If the US position was unclear prior to meetings, it is reasonable to believe that the collective outcome of a 27-country negotiation was also unforeseeable. No negotiation updates occur between BCBS meetings.

Overall, BCBS press releases about Basel III negotiations represent new public information upon which investors may trade.

**Contingent Expectations**

Because stock return deviations capture changes relative to investor expectations at a given time, ideally each press release’s content could be compared to an objective measure of investors’ ex-
pectations just prior to the announcement on each dimension of regulations (e.g. expected capital levels, capital definitions, and implementation timeline). Unfortunately, no such measure exists to the author’s knowledge and would be nearly impossible to create given limited media coverage of Basel III prior to announcements. However, media coverage provides high-level insights. Specifically, between September 2009 and December 2010, Basel III regulations were consistently expected to be more stringent than the status quo, and Event 1 (initial announcement that Basel III negotiations would begin) and Event 4 (“calibration”, or the revelation of specific capital minimums and implementation timelines) emerge as the events that generated the most media coverage and may be considered most substantively important.

Event 1, on September 7, 2009, was a press release announcing that BCBS members agreed in principle to update capital standards, and offered broad direction of reforms. Minimum capital quantities and quality would increase compared to the status quo. A leverage ratio and liquidity ratio would be introduced. The Financial Times’ London Edition reported on September 8, 2009 that, “Regulators have agreed [upon] tough rules for banks...that would force many institutions in Europe to raise tens of billions of euros in capital in coming months.” While investors expected some form of new regulations would be negotiated, the timing of the announcement came as a surprise.

Event 2 included two consultative documents released on December 17, 2009 and were reported upon by the media to be more stringent than expected. “The description of what will count as tier 1 capital and how the leverage ratio will be calculated was stricter than some analysts had expected.” with public responses due April 16, 2010. At the same time, multiple newspaper reports commented that the implementation timeline was longer than expected. By the time of Event 3, July 26, 2010, consultative proposals had been scoured by the public and new regulations were clearly on the way. “Basel III” was a household name.

Event 3 occurred in the wake of media reports that bankers were trying to weaken Basel III pro-

posals. On July 28, 2010 the Financial Times reported that “the principles outlined late on Monday by the Basel Committee on Banking Supervision contained far-reaching concessions [by regulators towards industry preferences for weaker regulations].” Nonetheless, the BCBS announced general agreement to move forward with negotiations, and included some intended modifications from the consultative proposals regarding certain specific capital definitions. Event 3 also occurred just after the seminal US national legislation, the Dodd-Frank Wall Street Reform and Consumer Protection Act, was signed into law on July 21, 2010.

Finally, Event 4 and Event 5 provided regulatory details of capital minimum levels and confirmed the shape of rules, respectively. Event 4 on September 12, 2010 was “calibration”, the first unveiling of minimum capital levels that banks would have to hold. The Wall Street Journal’s front page headline read, “Banks Get New Restraints - Historic Refashioning of Rules,” while the front page of the Financial Times explained, “global banking regulators on Sunday sealed a deal to in effect triple the size of the capital reserves that the world’s banks must hold against losses...” Regulatory stringency unambiguously increased. At the same time, it was noted generally that regulated banks welcomed certainty about the regulations with which they would have to comply. An official implementation timeline was released, confirming full implementation would not be required until 2019. The final rules release, Event 5 on December 17, 2010, finalized regulatory details and the implementation timeline, without any significant changes or surprises from previously released details. The Wall Street Journal stated, “the resulting compromise was rules that are much tougher than the current requirements but don’t fully kick in for nearly a decade.” Thus, regulations were confirmed to be of high increased regulatory stringency compared to the existing regulations.

While Basel III increased stringency compared to the status quo, it is unclear a priori how

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54 Although, with shorter-term, phase-in deadlines.
investors evaluate the relative contributions of more stringent rules, the long implementation timeline, and general regulatory certainty. Stock market data provides an unambiguous indication of whether investors, in the aggregate, viewed news to be especially helpful, especially harmful, or a wash, for banks.

Event 1 (agreement to negotiate with broad objectives) and Event 4 (detailed capital minimums and implementation timelines) emerged as the most important news events, evidenced by front page stories in both *The Wall Street Journal* and the *Financial Times*. Reaction to Event 1 clearly captures investors’ initial perspectives about increases in regulatory stringency. Specific to Basel III, it should be difficult to find an observable negative effect for the first announcement (i.e. Event 1) since investors could reasonably expect increasingly stringent bank regulations after the height of the financial crisis in September 2008 and likely priced expected costs of increasingly stringent regulation into bank stock prices prior to Event 1 in September 2009. As early as November 2008, the French President and British prime minister called for a “New Bretton Woods,” assumedly a sweeping overhaul of international financial cooperation. Leaders of G-20 nations began meeting semi-annually in November 2008 to coordinate international crisis response, and the ascent of democratic Barack Obama to the US presidency in January 2009 all increased the likelihood of more stringent regulations for US banks.

Event 4 confirmed dramatic increases in required minimum capital levels. Stock return reactions to Event 4 capture investors’ marginal changes in expected firm value relative to cumulative expectations. The next section lays out hypotheses that tie theoretical expectations to observable outcomes.

1.2.4 Hypotheses

For reasons explained above, stock returns of US regulated banks on dates of BCBS press releases are used to proxy for investor reactions to Basel III negotiating progress. Each regulated firm’s observed stock return is compared to a firm-specific counterfactual stock return. The counterfactual stock return is the estimated firm stock return in the absence of any extraordinary news on a given day. The difference between each firm’s observed stock return and counterfactual stock return is the firm’s abnormal return, or the estimated effect of the announcement for the firm (‘‘Abnormal
Firm Return”). The average effect across all firms on a trading day is the average effect of the press release (“Average Announcement Effect”).\footnote{In formal event study terminology, Average Announcement Effect is called “Average Abnormal Return”. BCBS “announcements” and “press releases” are used interchangeably. For an overview of event study calculations and intuition, see MacKinlay 1997 and Corrado 2011. For event study methodological issues, see McWilliams and Siegel 1997.}Average Announcement Effect is estimated for each of the five BCBS press release announcements between September 2009 and December 2010. If regulated firms experience systematically negative or positive average effects on days of BCBS announcements, this is evidence that investors are reacting to BCBS press release content.

As discussed earlier, the most fundamental question is whether BCBS press releases provide meaningful news to investors. Investors will only react to BCBS press releases if Basel III is viewed as both likely to be implemented and is viewed to significantly change perceived firm value. Thus, an Average Announcement Effect statistically distinct from zero requires an agreement that investors perceive as both credible and as having distributional effects. This leads to Hypothesis 1.

**Hypothesis 1, Institutional Effect:** If an international agreement is viewed to be credible and to impact the profits of regulated firms, then regulated firms’ stock returns will have non-zero Average Announcement Effects on press release days.

As discussed above, the direction of any effect implies whether US regulated banks were helped or hurt by Basel III regulations, and it is worth reiterating that stock price changes are conditional upon investor expectations at an existing point in time. Four mechanisms could underlie increasingly stringent regulations in a way that benefits banks. First, consistent with Oatley and Nabors, regulatory details may benefit firms that easily comply with regulations compared to firms that face high adjustment costs.\footnote{Oatley and Nabors 1998.} This calculation occurs at the firm level, yet national differences, as discussed above, affect general proclivity of regulations to be more or less favorable to a country’s banks. US banks faced lower adjustment costs to comply with Basel III than did European and Japanese banks. While a direct comparison of US and foreign stock returns is beyond the scope of this paper, focusing upon US banks identifies whether investors viewed competitive advantage to be the dominant effect of regulations. This mechanism relies upon relative adjustment costs of compliance.

Second, keeping in mind that reactions are conditional upon investor expectations at a given
time, if regulatory details were less stringent than investors expected, bank stock returns could increase on days when new information reveals regulations are not as stringent as expected. Third, if investors prefer regulatory certainty and are less concerned about regulatory details, certainty could increase bank stocks. This was cited in media coverage and earnings calls. Finally, in the wake of the 2008 financial crisis, investors may have an increased preference for financial stability, or if the regulations are expected to increase firms’ long-term financial stability, this may actually increase investors’ perceptions of firm value. Under all these alternative circumstances, US banks will benefit from stringent regulations, and stock returns would be systematically positive on event days.

If any of the four mechanisms are the dominant one at work, then US banks will benefit from stringent regulations. Demand for bank stocks will increase, regulated banks will have positive Abnormal Firm Returns, and in aggregate, Average Announcement Effect will be positive. This leads to Hypothesis 2a.

**Hypothesis 2a, Bank Regulatory Benefits:** If Basel III is viewed as a credible international agreement and is expected to benefit regulated firms, then days of BCBS press releases will be associated with positive estimated Average Announcement Effects.

An alternative expectation is that Basel III will hurt banks due to compliance costs or because regulations are more stringent than expected. More stringent regulations are often associated with adjustment costs to become compliant and ongoing opportunity costs associated with holding higher capital. Increased firm costs will hurt banks. If investors perceive regulated banks as less profitable investments today compared to yesterday, demand for bank stocks will decrease, firms will experience negative Abnormal Firm Returns, and the analysis will reveal a negative Average Announcement Effect. This leads to Hypothesis 2b.

**Hypothesis 2b, Costly Bank Regulations:** If Basel III is viewed as a credible international agreement and is expected to increase regulated firms’ operating costs, then days of BCBS press releases will be associated with negative estimated Average Announcement Effects.

58 Thanks to Bob Keohane, David Lake, and Helen Milner for each emphasizing this point.

59 This does not mean that companies do incur costs, but instead that investors perceive this as the dominant effect of regulations.
<table>
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<tr>
<th>Hypothesis</th>
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<td>H1, Institutional Effect</td>
<td>Credibility</td>
<td>Does Basel III...affect banks?</td>
<td>Average Announcement Effect (\neq 0)</td>
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Table 1.2: *Hypothesis Summary*: Hypotheses and observable implications are presented in the above table.

For clarity, the three hypotheses are summarized in Table 1.2. The next section formally defines the method used to test for evidence of each hypothesis, and the research design as applied to Basel III negotiations.

### 1.3 Empirical Analysis

This section applies an event study methodology to estimate the effect of Basel III negotiation news upon US regulated firm stock returns. After describing the event study methodology, sample firms, and events, I define the model and quantity of interest. The paper uses a variable selection method to estimate counterfactual outcomes (that is, stock returns in the absence of an announcement). Compared to the traditional approach, based upon an aggregate stock market index, the variable selection model increases estimation precision and flexibility to conduct sensitivity tests related to estimation window choice. Results are then presented and interpreted.

#### 1.3.1 Event Study Methodology

Stock return event studies test whether an event of interest leads to unusually high or low unexplained stock returns in the immediate period surrounding an event. A strength of an event study is a clearly identified counterfactual. Applied to Basel III, BCBS press releases comprise the five events of interest. The trading day on which an event occurs is the day when any estimated effect is most attributable to investors’ reactions to Basel III news. When BCBS press releases occur on non-trading days (e.g. Event 1 and Event 4), adjustment is expected on the first trading day.

[60] The seminal event study was Fama, Fisher, Jensen and Roll, who studied the effect of stock splits on stock returns. Binder emphasizes that regulatory event studies (where regulations are the events of interest) are especially difficult to uncover abnormal stock returns because there is typically lots of anticipation surrounding regulations. Fama, Fisher, Jensen, and Roll [1969] and Binder [1985].

[61] The logic is not that BCBS announcements about Basel III are the only events leading to systematic returns. Instead, conditional on a Basel III negotiating announcement, an effect is expected if investors follow negotiation news about the international agreement. Media reports on announcement days reveal no obvious news that might affect all large banks but not the market as a whole, which might confound interpretation of announcement days as reaction to Basel III, with the exception of Event 3 which occurs just before the US Dodd-Frank Act is signed into law.
following the press release. This paper is interested in the effect of news upon firms that would be subject to the agreement’s regulations. Regulated firms are both identifiable and cannot opt into or out of being regulated.

**Stock Return Data**

Stock returns, the percent change in stocks’ prices today compared to yesterday, provide normalized measures of stock price changes across firms. For example, on the first trading day of 2009, Wells Fargo’s stock return was 1.76%, reflecting a nominal stock price increase of $0.56 (from $29.48 to $30.00). This stock return is about equal to Bank of America’s 1.78% stock return, even though Bank of America’s nominal stock price increase was only $0.25 (from $14.08 to $14.33). The analysis uses stock returns that account for dividends and stock splits.

Stock prices are not especially volatile across the 2009 and 2010 analysis period. Figure 1.1 plots broad US bank stock price trends between 2008 and 2012 compared to January 2008 levels, with grey panels highlighting 2009 and 2010, the years of Basel III negotiation. Dotted lines indicate the five press releases. The left panel shows divergent trajectories for the largest American banks. While JPMorgan Chase and Wells Fargo’s values plummeted during 2008, each recovered by the end of 2009. In contrast, Citigroup and Bank of America’s stock values fell and, through the end of 2012, remained low compared to January 2008. The right panel shows the average index level across all 45 banks in the sample. The average of sample banks’ price indicies are lower than stock prices at the beginning of 2008 and lower than the S&P index, a measure of the stock market as a whole. The figure provides broad context surrounding the analysis, yet because analysis considers short periods around each event, divergent, long-term trajectories of individual banks should not affect overall results.

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62 Event 1 is a press release made on US Labor Day (2009 September 7) and Event 4 is a press release on a Sunday (2010 September 12), both nontrading days. The first trading days following these events, and the days I expect to observe Average Announcement Effects on September 8, 2009 and September 13, 2010, respectively.

63 Theoretically, the firms could leave due to bankruptcy or enter if they experience high growth or through mergers. For this sample, however, no firms grow to become large enough to meet the threshold during this period, and firms that go bankrupt are excluded because of the criteria that trading data must be available for all trading days during 2009 and 2010. The sample thus includes firms that have been large for the full period under consideration. Thanks to Christina Davis for emphasizing this point.

64 Formally, this is the Center for Research in Security Prices’ (CRSP’s) “holding period return”, also known as “adjusted return” in Yahoo! Finance. Alternative approaches include the difference in logged prices or nominal percent change, but these do not capture stock splits or dividends which are not necessarily observable in nominal data.
Figure 1.1: Regulated Bank and Stock Market Indices, 2008 January 2 to 2012 December 31: Each graph plots a stock’s, or the average of a group of stocks’, price index, where 100 is the stock’s value on January 2, 2008. Left graph plots firm stock levels for the four mega US-headquartered banks. Wells Fargo and JPMorgan Chase do well over this four-year period, while Bank of America and Citigroup do poorly. The right graph plots the average index level of all sample regulated banks ($N_i = 45$) compared to the S&P 500, an index comprised of large stocks across industries. Trading days during 2009 and 2010 are shaded, and the five events are indicated with dotted lines. Although stock price levels change across time, the analysis uses short timeframes that ensures results are not driven by long-term stock price level trends.
Firms

The exact group of banks subject to international regulations is determined by national regulators, but large US banks were certain to be regulated by Basel III. For this reason, main results include the largest available sample of publicly-traded, US-headquartered banks with more than $10 billion in consolidated assets in 2009. Firms cannot opt into or out of the sample. This leaves a sample of 45 firms, whose names, asset sizes and Tier 1 Capital Ratio are listed in Appendix Table 1.3.

Nonfinancial firms comprise a set of firms that should not be directly affected by Basel III. 2,884 nonfinancial firms publicly traded on US stock exchanges have full stock return data to include in this group. Nonfinancial firms will be used to create counterfactual stock returns for each regulated firm of interest. Nonbank financial firms are excluded from analysis, as they are neither regulated firms nor are they a reliable control group because they could gain or lose from Basel III in a more direct way than nonfinancial firms. The formal estimation method is identified below; model specifications and results are then presented.

Formal Quantity of Interest

Formally, the following estimation is conducted for each of the five events listed in Table 1.1. Let \( i \) represent each regulated bank \((i = 1, 2, ..., 45)\) and \( t \) be a trading day relative to the event \((t = -\infty, ..., -1, 0, 1, ..., \infty)\), with the event occurring on day \( t = 0 \). Each regulated bank’s stock returns are observed on each trading day and are denoted by \( R_{it} \).
For each regulated bank, the observed stock return on the event day \((R_{i0})\) may be decomposed into Expected Firm Return \((R_{i0}^\ast)\) and an error term \((\epsilon_{i0}^\ast)\) which is the Abnormal Firm Return. Expected Firm Return is the estimated stock return for the regulated firm in the absence of an announcement. Abnormal Firm Return captures how much the observed stock return deviates from Expected Firm Return.

\[
\text{Observed Firm Return} = \text{Expected Firm Return} + \text{Abnormal Firm Return}
\]

The overall quantity of interest for each event, the Average Announcement Effect \((P)\), is the average Abnormal Firm Return across all regulated firms on event day. Specific to this analysis, there are 45 regulated firms \((N = 45)\).

\[
\text{Average Announcement Effect} = \frac{1}{N} \sum_{i=1}^{N} \epsilon_{i0}^\ast
\]

Abnormal Firm Return is the relevant estimate for each firm and it is the difference between Observed Firm Return \((R_{i0})\) and estimated Expected Firm Return \((R_{i0}^\ast)\), an approach that is illustrated by the grey panel in Figure 1.2.

To calculate Expected Firm Return on an event day, observed stock returns of firms that should be unaffected by the event and whose stock returns were highly correlated with the regulated firm’s stock returns prior to the event provide a reasonable measure of the expected stock return of the regulated firm in the absence of the event. This paper uses a variable selection method, a Lasso estimator, to identify specific firms that together create a custom market index for each firm for each event. While the Lasso regression differs from the traditional approach that uses an aggregate stock market index, both the Lasso regression and the traditional approach use data prior to the event to identify a relationship between each regulated firm and the measure of the stock market. They both assume that data observed prior to the (unanticipated) event captures the relationship between an individual stock and the stock market generally. Then, on the event day, the relationship observed prior to the event can be used to predict the individual stock’s return on event day.

Formally, to estimate Expected Firm Return, an estimation window is defined as the period
Figure 1.2: Calculating Firm Abnormal Return, Illustrative Example: Each day during the estimation window, a given firm’s stock returns are observed (solid dots). The relationship between a regulated bank’s stock returns and stock market returns generally during the estimation window are modeled such that counterfactual stock returns (open circles) are the fitted values of this estimation. On the day of the press release, the difference between the observed firm return and the counterfactual stock return is the firm’s Abnormal Firm Return. This process is repeated for each firm for each event.

of trading days prior to the event that captures the typical relationship between a regulated bank and the stock market generally. Formally, the estimation window \([a, b]\) is the set of trading days \(a < b < 0\) prior to the event \((t = 0)\). The estimation window is of length \(l = b - a + 1\). For instance, the main event window specification \([-20, -1]\) uses a 20-day estimation window \((l = 20)\) that includes the 20 trading days immediately prior to the event.\(^{68}\)

The next sections elaborate upon the traditional approach versus my Lasso methodology. I provide evidence that Lasso regression models historical data, and predicts out-of-sample observations, better than does the traditional approach.

**Traditional Approach – Stock Market Index.** Traditional event studies model each regulated firm’s stock returns over the estimation window as a function of a stock market index, such as

\(^{68}\)To control for possible anticipation effects, a separate 20-day estimation window \((l = 20)\) includes the 20 trading days prior to 10 days before the event, \([-30, -11]\).
the S&P 500 (the weighted-average stock returns of 500 large companies) or an equally-weighted index (the simple average of all publicly traded firm stock returns).

The traditional approach applies a simple linear regression to the estimation window data. The dependent variable is the regulated firm’s stock return each day during the estimation window, and the explanatory variable is the stock market index return each day. Formally, define $M_t$ as the stock market index return on a given trading day. For each regulated firm, for the set of all trading days within the estimation window, $a \leq t \leq b$, the following model is fit: $R_{it} = \alpha_i + \beta_i M_t + \epsilon_i$. The stock market index provides a single, daily measure of performance to fit all regulated firms. Because the daily index reflects an average over many firms’ stock returns, it poorly fits different regulated banks’ individual stock returns. Further, each stock market index may include some regulated firms themselves within the aggregate index measure, resulting in inconsistencies. Regulated firms of interest include large firms, such as Bank of America (Forbes’ #11 largest firm in 2009), Citigroup (# 12), JPMorgan Chase(# 16), and Wells Fargo (#41). Because regulated firm stocks are likely to affect general stock market indicies (which are supposed to act as a control group), this is a serious concern for this analysis. The next section explains the alternative method used in this paper to overcome these issues and create better goodness of fit.

**Variable Selection Model – Custom Firm Index via Lasso Estimator.** This paper uses a variable selection model, called a Lasso estimator, to identify a subset of nonfinancial firms whose weighted-average stock returns over the estimation window are most similar to each regulated firm of interest. Using patterns in the estimation window data, the Lasso estimator selects a subset of firms that create a custom market index for each regulated firm. This approach better fits estimation window data, creating precise estimations and the ability to test for model sensitivity across estimation windows.

The variable selection method utilizes individual stock returns of unregulated firms over an estimation window. Nonfinancial firms should not be affected by the Basel III regulations and thus the set of all nonfinancial firms comprise the control group. Formally, let $j$ denote a publicly-

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traded, nonfinancial firm \((j = 1, 2, \ldots, 2,884)\), where \(j \neq i\). The observed stock return of each nonfinancial firm on trading day \(t\) is denoted \(R_{jt}\).

This model also uses a simple regression, but one with a Lasso constraint and with individual firm returns as possible regressors. The dependent variable is the regulated firm’s stock return each day during the estimation window, and \(N_j\) explanatory variables are the stock returns of each unregulated firm. Because there are many more possible regressors \((N_j = 2,884)\) than observations during the event window, the Lasso estimator imposes a constraint such that most weights are constrained to zero and only regressors that best approximate estimation window data have non-zero weights. Formally, the estimation window data is fit by the following model: \(R_{it} = \alpha_i + \sum_{j \neq i} R_{jt} \beta_{ij} + \epsilon_i\) subject to the constraint \(\sum_{j \neq i} |\beta_j| < \lambda\). Thus, the series of \(\hat{\beta}_{ij}\) over the set of \(j\) control firms is the weight given to each nonfinancial, control firm \(j\) to fit regulated bank \(i\)’s stock returns over the estimation window. Most \(\hat{\beta}_{ij}\) equal zero. Thus, only a few nonfinancial firms emerge as regressors for each regulated firm and they are specifically selected based upon regulated bank’s stock returns over the estimation windows. When estimation windows change, selected regressors change accordingly. Table 1.4 in the Appendix shows variation for the largest US banks (e.g. Wells Fargo, JPMorgan Chase, Bank of America, and Citigroup), illustrating that even the most similar banks have largely different regressors across firms and events.

The Lasso estimation method has significantly higher goodness of fit and better predictive power than the traditional stock market index approach, indicating that Lasso provides a more precise model than the traditional approach. Figure 1.3 plots density of goodness of fit (i.e. adjusted \(R^2\)) under each estimation strategy for a 20-day estimation window. The interquartile range of the full set of adjusted \(R^2\) values using the Lasso estimator is between 0.58 (first quartile adjusted \(R^2\)) and 0.95 (third quartile adjusted \(R^2\)). This range is smaller, and has a higher fit, than the full set of adjusted \(R^2\) using the traditional approach (which is between 0.29 (first quartile) and 0.72 (third quartile)).

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71 See Tibshirani [1996] and Hastie, Tibshirani, and Friedman [2009] 68–72. Selecting \(\lambda\) is an important modeling choice in these models, and in all specifications I use 5-fold cross-validation to produce a series of 100 lambda and select the largest lambda within one standard deviation of the minimum.

72 Of 2,884 nonfinancial firms that are potential regressors, the Lasso constraint identified, on average, 17.5 regressors (with a standard deviation (sd) of 3.51) for 20-day estimation windows, 26.1 regressors (sd of 6.64) for 30-day estimation windows, and 147.7 regressors (sd of 25.18) for 180-day estimation windows.

73 Adjusted \(R^2\) controls for the number of regressors. Separating the plots into individual events, or creating a parallel plot using 180-day estimation window, does not meaningfully change the shape or distribution of each curve.
Figure 1.3: Comparing Goodness of Fit (Adjusted $R^2$) Distribution Across Estimation Methods: Adjusted goodness of fit estimates for each firm’s model of stock returns over a 20-day estimation window is calculated for each event using the traditional approach and Lasso regression methods, resulting in 225 adjusted $R^2$ estimations for each method ($= 45$ banks $\times$ 5 events). The above graph plots density curves of the traditional (dotted line) and Lasso (solid line) goodness of fit estimates pooled across events and firms. Higher goodness of fit for Lasso over traditional model using the same observed stock price data indicates that Lasso provides a better model of regulated firm stock returns over the estimation window.

0.67 (third quartile)). The Lasso regression fits observed data during the estimation window better than does the traditional approach. Further, to ensure that better goodness of fit of sample data translates into better predictive values outside of the estimation window, I calculate the root mean square error (RMSE) for random samples of nonfinancial firms using both the Lasso method and traditional approach. RMSE measures variation in observed values compared to predicted values, with lower RMSE indicating a regression line with better predictive value. Lasso regression has lower RMSE than the traditional event in each calculation, and RMSE using the traditional approach is, on average, 43 times larger than RMSE using the Lasso regression.\footnote{Specifically, for each event, I calculated RMSE using Lasso regression and the traditional approach for five random samples of 200 randomly selected nonfinancial firms without replacement. In each of the 25 samples (5 samples for each of the 5 events) the Lasso regression always had a significantly lower RMSE. For summary purposes, pooling the 25 samples, average RMSE for}
of fit and better predictive power using the Lasso estimator lowers estimation noise and leads to clearly interpretable results.

To estimate uncertainty around Average Announcement Effect, I compute 95 percent confidence intervals by following a modified bootstrap method specific to the Lasso estimator. Additional estimation details are provided in the next section before presenting statistical results.

**Estimation Specifications**

Average Announcement Effect is calculated using four estimation window specifications. Specification 1, the base specification, uses a 20-day estimation window, comprised of the 20 trading days just prior to each event \([-20, -1]\). The results from these models indicate whether stock returns on an event day differ from stock return patterns just prior to press releases. Specification 2 uses a 30-day estimation window immediately prior to each event \([-30, -1]\) to add confidence that Specification 1 results are not driven by the arbitrary choice of a 20 day estimation window. Specification 3 uses a long, 180-day estimation window \([-180, -1]\) to check for result sensitivity. The interpretation of 180-day estimation window is stock returns compared to long-run, average stock prices. Finally, Specification 4 uses a 20-day estimation window but controls for the possibility of anticipation effects by ending the estimation window 10-trading days prior to each press release \([-30, -11]\).

Given a relatively small sample of 45 firms, two tests ensure each calculated Average Announcement Effect is not driven by outliers. First, a jackknife procedure checks that the calculated Lasso was 0.039 (with a range between a minimum of 0.002 to a maximum of 0.261) versus 0.392 for traditional approach (with a range between 0.168 and 0.600). Among the average RMSE values, Lasso is 10 times lower than the traditional approach, while taking the relative RMSE values for each observation results in the average 43 times referenced in the text.

Chatterjee and Lahiri 2011 show their modified bootstrap process yields a consistent confidence interval for Lasso estimators. The specific process first entails calculating the set of residuals from the set of regulated firms’ expected stock returns on an event day. The set of residuals are sampled, with replacement, and added to the fitted values of the original data to create a new sample of (bootstrapped) observed stock returns. For each of 100 bootstrapped samples per event, I use bootstrapped observed returns to reestimate Abnormal Firm Return and calculate Average Announcement Effect. Assuming a normal distribution, I obtain 95 percent confidence intervals using point estimates from the bootstrapped sample data and standard deviation calculated from the bootstrapped samples.

That is, the estimation window includes the set of trading days \(t = \{-20, ..., -1\}\).

Event 1 occurs on the 172 day of trading data, so the estimation window for Event 1’s third model is \([-171, -1]\) instead of \([-180, -1]\).

Alternative anticipation periods, including 5-trading days prior to each announcement, or an event-specific anticipation period based on media reports, do not change substantive results.

Note that First Bancorp PR (NYSE: FBP) meets all criteria laid out in footnote 65 but it was identified as an outlier firm driving net effect direction. Therefore, it is removed from the sample.

---

Footnotes:

75 Chatterjee and Lahiri 2011 show their modified bootstrap process yields a consistent confidence interval for Lasso estimators. The specific process first entails calculating the set of residuals from the set of regulated firms’ expected stock returns on an event day. The set of residuals are sampled, with replacement, and added to the fitted values of the original data to create a new sample of (bootstrapped) observed stock returns. For each of 100 bootstrapped samples per event, I use bootstrapped observed returns to reestimate Abnormal Firm Return and calculate Average Announcement Effect. Assuming a normal distribution, I obtain 95 percent confidence intervals using point estimates from the bootstrapped sample data and standard deviation calculated from the bootstrapped samples.

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77 Event 1 occurs on the 172 day of trading data, so the estimation window for Event 1’s third model is \([-171, -1]\) instead of \([-180, -1]\).

78 Alternative anticipation periods, including 5-trading days prior to each announcement, or an event-specific anticipation period based on media reports, do not change substantive results.

79 Note that First Bancorp PR (NYSE: FBP) meets all criteria laid out in footnote 65 but it was identified as an outlier firm driving net effect direction. Therefore, it is removed from the sample.
quantity of interest is not driven by any one firm. Each firm is dropped individually from the analysis and Average Announcement Effect and the 95 percent confidence interval is recalculated. Second, I regress Abnormal Firm Return on Observed Firm Return and use Cook’s Distance to identify any influential points. The set of influential points are dropped simultaneously and the Average Announcement Effect is recalculated with remaining firms. Results are not sensitive to either test.\(^{80}\) Table 1.4 in the Appendix shows distributions of Observed Firm Returns, Expected Firm Returns and the bootstrapped estimates of Average Announcement Effects.

Finally, to establish the validity of the method as a whole, I run a placebo test randomly selecting samples of unregulated firms and estimating Average Announcement Effect for these firms that should not be affected by Basel III regulations. I sample across industries so Average Announcement Effect should be statistically indistinguishable from zero.\(^{81}\) Specifically, of the 2,884 non-financial firms, I take 100 random samples of 200 nonfinancial firms without replacement and treat each as if it were a regulated bank. I estimate the Average Announcement Effect using a 20-day estimation window. To add confidence to the research design and statistical models, placebo results should be statistically insignificant. The next section presents empirical results.

1.3.2 Empirical Results

Two substantive findings and one methodological point emerge from the empirical analysis. First, across events and estimation windows, stock returns systematically differ from expectations, consistent with Hypothesis 1 that regulatory agreements, despite weak formal enforcement mechanisms, are viewed as credible and as affecting firm value. A placebo test, using an identical methodology but where random sets of nonfinancial firms are treated as if they were regulated firms, uncovers a null result (that is, Average Announcement Effects do not statistically differ from zero) and adds confidence that results for firms of interest are not driven by the selected methodological strategy.

Second, although the direction of the effects varies across events, initial investor reaction to

\(^{80}\)Cook’s Distance indicates the following outliers: Event 1 outliers include Sterling (ticker: STSA), Popular (BPOP), and Citigroup (C); Event 2 outliers include Sterling (STSA), Popular (BPOP), Synovus (SNV), and Huntington (HBAN); Event 3 outliers include Fifth Third (FITB) and Citizens Republic (CRBC); Event 4 outliers include First Citizens (FCNCA), Sterling (STSA), First Horizon (FHN) and Privatebancorp (PVTB); and Event 5 outlier is PNC (PNC). Average Announcement Effect sign and significance does not change when outliers are simultaneously removed from the analysis.

\(^{81}\)For each randomly selected firm that I treat as a financial firm, I limit possible estimates to firms outside the selected firm’s industry at the broadest, 1-digit SIC specification.
Basel III negotiations in September 2009 and December 2009 (Event 1 and Event 2) were unambiguously negative, more consistent with the public goods perspective (Hypothesis 2b) and less consistent with the private goods perspective (Hypothesis 2a). That is, initial investor perception was that US regulated banks were likely to incur costs associated with new regulations. This is striking given that investors expected some increase in regulatory stringency prior to any Basel III announcement, and indicates that Basel III’s broad outlines were more stringent than investors expected.

Each event’s stock return deviations must be interpreted as a change from investors’ expectations at a given point. While the direction of effects varies across events, the net effect is negative and statistically significant. Early events (during 2009) are clearly interpretable while later events (during 2010) are less straightforward because they are associated with stock returns that are more positive than expected (Event 3 and Event 4, between July and September 2010), and then more negative than expected (Event 5 in December 2010). Qualitative evidence indicates that any positive effects follow from expectations of relatively less stringent rules than expected (conditional upon information from Event 1 and Event 2) rather than more stringent rules as benefitting US banks at the expense of foreign rivals. Specifically, newspaper coverage of the 2010 events cite the regulation’s long implementation timelines and certain capital definition adjustments as more favorable to regulated banks than early events. In sum, there is more evidence to support Hypothesis 2b that Basel III regulations are provided as global public goods, and less evidence to support Hypothesis 2a that they provide private goods for US firms.

Methodologically, the sign and significance of Average Announcement Effects for each event are stable across various estimation windows. Because each estimation window uses different control firms for counterfactuals, this adds confidence to the results. The next section presents the statistical results.

Statistical Results

Figure 1.4 displays statistical results in two panels. The left panel includes the base specification using a 20-day estimation window immediately prior to each event (shown with an open circle) and the placebo test result (shown with a black square). The right panel includes all four
specifications, as a test of sensitivity across event windows.

Beginning with the left panel, placebo test estimates are statistically indistinguishable from zero for each of the five events, indicating that the methodology is capable of uncovering a null result. This increases confidence that test results are not drive by random noise in the market as a whole.

20-day estimation window (i.e. Specification 1) results indicate stock returns statistically differ from zero (evidence in support of Hypothesis 1) and are not sensitive to outlier observations. The largest divergence was Event 1, where observed stock returns for Event 1 were lower than expected stock returns by 1.43% on average (that is, the Average Announcement Effect was $1.43\%$). This is the equivalent of $783$ million foregone equity for Citigroup shareholders and $2.1$ billion foregone equity for Bank of America shareholders. Event 2 (consultative paper release) and Event 5 (final rules release) also resulted in negative and statistically significant stock returns, but with smaller magnitudes (Average Announcement Effects of $-0.41\%$ and $-0.51\%$, respectively). Event 3 and Event 4 are associated with firm stock returns that are greater than expected by $0.78\%$ and $0.79\%$, respectively. Together, the results imply that stock returns do deviate on days of press releases, and while the direction of deviations vary, the net effect is negative and statistically significant, averaging $-0.77\%$.

The right panel presents all four estimation window specifications and establishes consistent results (same sign and statistical significance) across specifications. Within each event, estimates using different estimation windows have similar directions and magnitudes.

It is worth noting that Event 4, “Calibration,” emerges as the most anticipated press release. That is, the 20-day estimation window (Specification 1) and its 95 percent confidence interval do not overlap with the 20-day estimation window with a 10-day anticipation control (Specification 4). Compared to stock returns immediately prior to the press release, regulated bank stocks were higher than expected by an average of $0.79\%$. Compared to stock returns up until two weeks before the press release, regulated bank stocks were higher than expected by more than double, an average

\[ \text{Average Announcement Effect} = -1.43\% \]

\[ \text{Citigroup's previous closing day price was $4.85 with 11.3 billion stock shares outstanding, and Bank of America's previous close was $17.09 with 8.65 billion shares outstanding.} \]

\[ \text{The one exception is the statistically insignificant Net Effect for Specification 4, the 20-day estimation window with 10-day anticipation window. This is the result of the large positive effect of Event 4 when controlling for anticipation, as discussed below.} \]
Figure 1.4: Average Announcement Effect on Event Days: For each event, the Average Announcement Effect with 95 percent confidence interval reflects the experience of 45 US regulated firms, with the expectation of the Placebo, which represents 100 samples, each sample comprised of 200 randomly selected nonfinancial firms. Average Announcement Effect is the simple average of regulated firms’ Abnormal Firm Returns, where Abnormal Firm Return is the difference between observed firm return and expected firm return (calculated using a Lasso estimator as described in the text). Estimates are directly interpretable as the average percent that each regulated firm’s stock return were above or below what would have been expected controlling for each day’s specific market conditions.
of 1.64%. This may indicate that anticipation effects in the days leading up to the press release led to underestimated positive stock returns on the day of press release.

Stock return patterns indicate that investors pay attention to financial regulatory network agreements, and clear interpretation of negative effects for Event 1 and Event 2, along with net negative effects, indicate that investors view the regulations as hurting regulated banks. Results provide evidence that investors view international financial regulations as credible and as affecting regulated firms. The relative positive effects of Event 3 and Event 4 reflect less stringency instead of competitive benefits from more stringent regulations.

1.4 Conclusion

This article offers the first statistical evidence that financial regulatory network agreements, despite weak enforcement mechanisms, are viewed as credible and as affecting firm value. The research, based upon observed stock returns of regulated US firms in reaction to surprise bank regulatory updates throughout 2009 and 2010, confirms that investors systematically traded regulated stocks on days of bank regulatory network updates. This holds across all press releases. Specific to the case of Basel III, initial announcements in 2009 about new regulations led investors to trade bank stocks at systematically lower levels than expected. This is consistent with banks incurring greater regulatory costs, and less consistent with any expectation that US regulators negotiate for the private net benefit of US banks. As regulatory negotiations progressed, later events (mid-2010 announcements) were associated with higher stock returns than expected, though this is relative to the cumulative, high-regulatory stringency expected based on earlier events. Media coverage surrounding 2010 events indicate that any relative benefit is attributable to a relatively less stringent regulation than initially expected as the BCBS confirmed long implementation timelines and broadened some capital definition details.

The findings presented here demonstrate the promise of event studies and other micro-level data to analyze informal international obligations, or other policy events that have ambiguous distributional effects. Using indirect outcome measures such as stock returns, which are costly, allow researchers to isolate very specific events, and to parse out international agreement effects distinct from domestic implementation. It circumvents endogeneity inherent in the traditional
study of institutional effects which typically measure government actions in response to formal international commitments.

Substantively, findings support the view of financial regulatory networks as credible global governance bodies, consistent with Slaughter and other theorists who argue that third-party enforcement is not necessary for international regime effectiveness. For an important international agreement negotiation, regulators set the regulatory agenda motivated by providing global public goods rather than the international regime locking in net benefits for US firms, consistent with Kapstein. It is also an important case study that shows that regulatory capture does not seem to fully dilute outcomes as Basel III was negotiated.

Finally, this study informs general analysis of international institutional design. Financial regulatory networks, comprised of regulators and agreeing upon technical, nonbinding regulatory commitments, defy easy fit into existing typologies of international institutions. Future research on international institutions should continue to find additional ways to systematically analyze non-traditional forms of global governance.
Figure 1.5: Distributions of Firm Returns, Bootstrapped Samples, 20-day Estimation Window: To add transparency, these graphs show the data distributions (histograms and density curves) that underlie the aggregate results in Figure 1.4. The vertical dotted line in each graph delineates zero returns. For the sample of 45 regulated US banks, the top row is the distribution of Observed Firm Returns ($R_{i0}$) for each event, where the vertical solid line shows the average observed firm return. The middle row is the distribution of calculated Abnormal Firm Returns ($\epsilon_{i0}$) for each event, where the vertical solid line shows the average Abnormal Firm Return for each event. The bottom row is the distribution of the calculated Average Announcement Effect for 100 bootstrapped samples for each event. The white circle at the top of each graph on the bottom row indicates the point estimate from the 100 bootstrapped sample, and 95 percent confidence interval. Together, the figures reinforce that results are not driven by outlier observations.
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<thead>
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<th>Ticker</th>
<th>Company Name</th>
<th>Consolidated Assets</th>
<th>Tier 1 Capital Ratio</th>
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Table 1.3: Banks in Sample: The table gives key firm size and capitalization characteristics of the 45 banks in the main sample. SOURCE: Compustat.
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<th>JPMorgan Chase</th>
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<td>China Unicom Hong Kong Ltd</td>
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<td>Saba Softward Inc.</td>
<td>InvaCard Corp</td>
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<td>Q L T Inc</td>
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<td>M Y R Group Inc DE</td>
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Table 1.4: Nonfinancial Firm, Lasso-Selected Regressors for Select US Regulated Banks: For the four largest US banks, the table shows the three nonfinancial firms for each event that the Lasso constraint identified as having the highest weights using Specification 1, a 20-day estimation window \([-20, -1]\). Regressor firms vary across events and largely vary across US banks. Two exceptions are EOG Resources Inc., which are key regressors for Event 3 for both JPMorgan and Bank of America, and Q L T Inc., which is a key regressor for Event 5 for Wells Fargo, JPMorgan Chase, and Bank of America.
Paper 2

Selecting Regulatory Capacity: National Bank Supervision in International Markets

Abstract:

What explains the trend among developing countries to adopt independent domestic bank supervision – objective regulatory oversight for banks? While existing literature expects independent bank supervision emerges in reaction to demands of international institutions or to decisions of competitor states, this paper argues instead that political executives lead adoption in a proactive way. Executives hold policy levers to establish independence and, at the beginning of their tenures have incentives to build goodwill with international financial actors, including the International Monetary Fund (IMF), by proactively signaling intention to cooperate with international best practices. Survival analysis examines 62 middle income countries’ experiences over the period 1991 through 2005. New executives are systematically associated with increased likelihood of establishing independent bank supervision, while there is less evidence for the role of IMF conditionality or competitive diffusion. A case study of Turkey’s bank supervision since 1990 illustrates the key role that executives play. This paper is relevant to the broader literature on developing country compliance with international financial standards, which is interested to understand the degree to which noncompliance results from low levels of bureaucratic capacity.
2.1 Introduction

Following the 2008 financial crisis, Turkey’s bank supervisor, the BRSA, was commended by the banking industry for effectively shielding Turkey from negative effects of the worldwide liquidity glut. BRSA effectiveness in 2010 and 2011 is especially notable compared to before September 2000, when Turkey’s bank supervisors did not rigorously enforce prudential regulations on the books and Turkish banks expected government support in the case of insolvency. Moral hazard abounded and the lack of effective bank supervision was a barrier to market competition. Within a decade, Turkey dramatically changed its bank supervision – the ongoing monitoring of bank operations to ensure compliance with national bank regulations. Turkey is one example of many developing countries that have similarly moved away from bank supervision marked by cronyism and towards bank supervision marked by de jure and de facto independence.

This paper analyzes such change, asking, what explains the timing of developing countries’ decisions to move from bank supervisory arrangements marked by cronyism toward independence? Cronyism in bank supervision may range from requiring bank supervisors to gain political approval prior to taking certain actions against banks to ad hoc political interference on issues within the jurisdiction of bank supervisors. Independent bank supervision entails enforcing national regulations equally across banks and without political interference. Executives that move away from cronyism forgo interference for personal political gain, but a move toward independence allows for a competitive banking system, as banks must compete based on operational strategy rather than political ties.

Figure 2.1 graphs the time trend of developing country adoption of independent bank supervision, using an International Monetary Fund (IMF) measure of bank supervisory independence, between 1991 and 2005. While all country groups trend upwards, developing countries –

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1 Wall Street Journal Europe, Turkish Bank Warns of Lending Rise, January 14, 2011; The Banker, Isbank’s Steady Hand, November 1, 2011. Worldwide liquidity followed from the US Federal Reserve’s quantitative easing policies, and the BRSA’s role was specifically to oversee, and to manage, bank lending trends.

2 Financial Times, Anger at Turkish Bank Bailout, January 11, 1999. Erol Sabanci, head of longtime leading Turkish bank Akbank since the 1980s, repeatedly called for more objective bank supervision to benefit banks, such as his, that would be market competitive in the absence of political interference.

3 Rajan and Zingales 2003.

4 Briefly, this measures whether a country’s bank supervisors meet at least three of the following criteria: (1) jurisdiction over all banks operating in a country, (2) whether supervisors perform on-site and off-site bank examinations, (3), whether there is formal and de facto political independence, and (4) whether banks must comply with minimum capital levels set by the 1988 Basel Capital Accord. This measure will be explained in detail in Section 2.3.
operationalized as those that are middle income – enjoy a marked increase from 2% of developing countries with independent bank supervision in 1990 to 70% in 2005.

While existing theories attribute change to the demands of international institutions or to decisions of competitor states, this paper argues that political executives proactively establish independent bank supervision.\(^5\) Executives hold policy levers, through both formal and informal means, to establish independent bank supervision and, specifically at the beginning of their terms, they hold incentives to establish a cooperative reputation with international financial actors. For this reason, I argue that adoption is a proactive signal to international financial institutions, including the

IMF, and I expect that it is at the *beginning of an executive’s tenure* when establishing a reputation is easiest and will yield the greatest benefit. This is when independent bank supervision is most likely to be established. Alternative explanations expect change to be systematically associated with greater direct pressures upon a country from international organizations, or the adoption of similar arrangements by competitor countries.

Lax bank supervision has been associated with important outcomes ranging from financial crisis to inflation, but this is the first paper to systematically analyze substantive variation in developing countries’ bank supervisory capacity. The scope of inquiry is limited to developing countries because these countries face distinct globalization pressures compared to developed countries and exhibit wide variation in degree of cronyism and independence. As stated succinctly by Satyanath, “While I am unable to identify a single bank regulatory bureaucracy that is genuinely insulated from politicians in the developing world [with the possible exception of Chile], [genuine independence] often prevails in the developed world.” I exclude perpetually poor countries, as they face so many concurrent issues it is unclear that they would be able to implement independent bank supervision even if they desired such institutions. In contrast, I assume that middle income countries have the resources to implement independent bank supervision if they so choose.

My focus is on the proximate causes of country policy change toward independent bank supervision, and claims are systematically tested through statistical analysis of 62 middle income countries for the period between 1991 through 2005. A measure of independent bank supervision, coded by the IMF, uniquely captures across-time and across-country variation. The period of statistical analysis is characterized by sweeping systematic changes that include financial liberalization, global economic crises, and changes in international financial global governance. Survival analysis is an appropriate statistical tool to analyze such data, as it controls for temporal events that

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6 Among others, Haggard 2000 discusses political interference in bank supervision and its link to the Asian Financial Crisis; Satyanath 2006 analyzes how an executive’s ability to appoint his finance minister affects the likelihood of miscommunication of bank health; Jacome 2004 attributes lax bank supervision to both the outbreak, and protracted nature, of bank crisis in Ecuador between 1996 and 1999; and Copelovitch and Singer 2008 find that OECD countries with bank supervisors independent from the central bank enjoy lower levels of inflation. Kleibl 2013 analyzes correlates of developed countries to replace existing regulators, and Gandrud 2013 analyzes across-time diffusion of US and British regulatory institutional models across a large number of developed and developing countries. In contrast, this study focuses upon the substance, rather than the effects, or formal institutional characteristics, of bank supervision.

7 Mosley 2003.

8 Satyanath 2006, 4–5; Huber and McCarty 2004 emphasize more generally that bureaucratic capacity for developing countries should not be assumed.
affect all countries and estimates correlates that surround country-level change.

I find persistent statistical evidence that new political executives are associated with increased likelihood of adopting independent bank supervision, mixed evidence that international institutional coercion increases adoption, and little evidence that diffusionary pressures affect adoption patterns.9 Results hold when controlling for a host of domestic institutional factors that affect general likelihood of policy change, various types of economic crises which might simultaneously increase likelihood of establishing independent bank supervision and of a new political executive, and local economic conditions. Empirical analysis suggests that political executives are key actors that affect likelihood of establishing independent bank supervision.

A case study of Turkey’s bank supervision since 1990 illustrates the claim that political executives hold both policy levers and incentives to adopt independent bank supervision. In the case of Turkey, the new Ecevit government entered office in January 1999, more than 2 years after the end of Turkey’s previous IMF program. Ecevit made bank supervision reform a top priority, specifically to attract an IMF loan. Turkey and the IMF signed a standby arrangement in December 1999. Bank supervision responsibilities were transferred from the central bank and treasury to a semi-independent bank supervisory board, the BRSA, beginning in September 2000. Independent bank supervision was driven by the Ecevit government to proactively court an IMF loan.

The paper proceeds in Section 2.2 with descriptive patterns of independent bank supervision adoption and discussion of the theoretical tradeoff between bank supervision marked by cronyism and independence. Key hypotheses are stated. Section 2.3 contains statistical analysis of time to country adoption of independent bank supervision. I find evidence that new executives are robustly associated with increased likelihood of developing country adoption of independent bank supervision. I find some support that IMF programs with conditionality requiring bank supervision reform is associated with greater likelihood of adoption, and little evidence that diffusionary pressures are systematically associated with establishing independent bank supervision in developing countries. Section 2.4 illustrates the new executive mechanism through a case study of Turkey’s bank supervision since the 1990s. A final section concludes with larger implications of the study.

9 Please note the statistical analysis for diffusion is not yet complete, so this version of the paper largely focuses upon the new executive argument compared to the international coercion argument. Case study research and preliminary analysis does not find strong evidence that diffusionary pressures drive the phenomena of interest.
2.2 Politics of Bank Supervision

Bank supervision is the ongoing monitoring by bank supervisors of bank compliance with a country’s bank regulations. Political interference within bank supervision may have a long history within a country and may provide private gains for politicians and some of their supporters. Under these conditions, banks do not face identical rules and political interference impedes the emergence of a rule-based, competitive bank system. This section describes the developing country trend since 1991 toward adopting independent bank supervision. Broadly, independent bank supervision can be explained by its codification into the Basel Core Principles, which made it an official international best practice and international focal point policy. Further, international organizations have become slightly more inclusive over this period which may lead to socialization and country willingness to adopt best practices. At the individual country-level, however, there is high variation across countries. Existing theories expect countries to adopt best practices when they are compelled to do so through interactions with international organizations or when they see competitor states adopting these policies. In contrast, I argue that countries adopt in a proactive manner during periods when new executives come into office. It is during these times when executives hold policy levers and the strongest incentives to change bank supervision from cronyism to independence.

The Importance of Bank Supervision

This paper provides the first systematic analysis of the substance of bank supervision across developing countries. Bank supervision is the ongoing monitoring of bank operations to ensure that banks are in compliance with domestic regulations. When bank supervisors observe noncompliance by a bank or excessive bank-level risk, they have certain formal powers (that vary by country) to work with the bank to rectify violations. When a country’s bank supervisors have independence to complete this general task, it results in even-handed regulation of that country’s banks. When bank supervisors lack key powers, or experience political interference in their supervisory respons-

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10 Regulation and supervision are distinct, but related, concepts. Defined by Barth, Caprio and Levine, “Regulation typically refers to the rules that govern the behavior of banks, whereas supervision is the oversight that takes place to ensure that banks comply with those rules.” Barth, Caprio and Levine [2006] 4. Throughout the paper, I use the terminology “bank supervision” to emphasize interest in a country’s capacity to enforce regulations (i.e. are bank supervisors and regulators effective?), as opposed to looking at regulatory stringency (i.e. are bank rules more or less strict than in another country or jurisdiction?).
sibilities, then regulations may be applied in a haphazard manner, with benefits accruing to banks with political connections.

Bank supervision has been associated with macroeconomic outcomes such as inflation, as well as the likelihood of incurring financial crisis and a country’s ability to effectively manage bank crises. For advanced industrial countries, Copelovitch and Singer show how bank supervision located outside of a central bank is associated with lower levels of inflation. Additionally, bank supervision has been associated with likelihood of crisis. Satyanath argues that an executive’s ability to appoint its country’s head bank regulator affects the likelihood of miscommunication between the executive and regulator. This affects whether banks will face strict or lax bank supervision, with implications for economic crisis. Haggard explains how deliberate and accidental political interference in bank supervision – “sins of commission” and “sins of omission”, respectively – limit supervisors’ abilities to identify financial instability and to act in a timely manner to avoid bank insolvency. Jacome shows how the Ecuador financial crisis between 1996 and 1998 was precipitated and prolonged by bank supervision marked by cronyism. Rather than study the effects of supervision, as past work has done, this paper analyzes the prior question of how countries decide to build capacity for independent bank supervision.

A burgeoning scholarship analyzes the evolution of formal institutional characteristics of bank supervision, including whether bank supervision follows the American or British models and conditions that correlate with regulator replacement. Further, economists have documented institutional details of bank regulators and have developed theories regarding the trade-offs between bank supervision located within (versus outside of) central banks. This paper builds upon these works by focusing on substantive change in supervisor capacity, which is especially important for the wide variation in developing country quality of independent bank supervision.

Finally, bank supervision is an important and often unmentioned component of financial open-

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11 Copelovitch and Singer 2008
12 Satyanath 2006. Satyanath uses the term “regulation” but substantively his signaling mechanism is most important prior to a crisis, when it is not as important that the regulations quickly change, but rather that regulators are supervising banks and rigorously enforcing existing prudential regulations.
13 Haggard 2000, 32–38.
15 Gandrud 2013; Kleibl 2013; Gilardi 2002; Gilardi and Servalli 2012; Barth, Caprio and Levine 2006; Peek, Rosengren and Tootell 1999; Goodhart 2002.
ing, which entails lifting capital controls, regulatory changes that remove additional barriers to free capital flows (such as bank entry requirements) and prudential regulations that establish legal limits for institutions that move capital. Capital control liberalization has been analyzed at the country and systemic levels. Some scholars claim the removal of capital controls has been accompanied by strong deregulation trends, while others view a strong trend toward re-regulation. Substantive disagreement exists between scholars who view globalization as a force that undermines state capacity to govern while others point out that governments are building regulatory capacity to govern new realities of globalization. A country that moves toward independent bank supervision increases its bureaucratic capacity and is an instance of re-regulation. At the same time, independent bank supervision does not necessarily increase the stringency of regulations that banks are required to uphold.

**Broad International Trends**

The broad, upward trend in independent bank supervision, shown in Figure 2.1, may be explained by international best practices established during this period, and international financial organizations that were slightly more inclusive toward developing countries than in the past. International standards, established by technocrats in regulatory networks, set clear focal points for developing country policies. Once established, developing countries had, for the first time, benchmark policies that could be demanded and justified as “best practice”. The first focal point policy was the 1988 Basel Capital Accord, a rule-based agreement establishing minimum levels of bank regulatory capital. Many countries, despite a lack of any formal obligation, stated their intentions to comply with the standard. The September 1997 Basel Core Principles for Effective Banking

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17 Among an immense literature, correlates of financial liberalization at the country level, often operationalized as capital account openness, are analyzed by Goodman and Pauly 1993; Quinn and Inclan 1997; Li and Smith 2002; Simmons and Elkins 2004; Pepinsky 2008; and Mukherjee and Singer 2010. For a broad, international perspective of financial liberalization, Helleiner 1994; Abdelal 2007; and Chwieroth 2010.

18 On the limits of states due to globalization, see Cooper 1968; Strange 1988; Cerny 1995. On re-regulation trends, see Vogel 1996; Majone 1994; Levi-Faur and Jordana 2004; 2005; Gilardi, Jordana, and Levi-Faur, 2006. Additional disagreement between whether the trend is toward deregulation or re-regulation is semantic. Government withdrawal from financial market operations (such as allowing interest rates to float or removing barriers to foreign bank entry) is “deregulation” but is substantively different than the lowering of prudential standards that regulate banks, which is also considered “deregulation”. On liberalization of interest rates, see Loriaux et al. 1997. On the opening of domestic banking markets to foreigners, see Pauly 1988; Rosenbluth 1989; Martinez-Diaz 2009.

19 The agreement and related information may be found on the BIS website, [http://www.bis.org/publ/bcbs04a.htm](http://www.bis.org/publ/bcbs04a.htm). (Accessed June 15, 2013.)

20 Ho 2002; Barth, Caprio and Levine 2006; Simmons 2001; Walter 2008 provides detailed evidence of how the Basel Capital Accord may be adopted in name while implementation details fall short of meeting the standard.
Supervision provided twenty-five principles of bank supervision specifically developed as a best practice guide for developing country bank regulators. Finally, the Financial Stability Forum, established in 1999 among G7 finance ministers, introduced the “Compendium of Standards” in 2000. The Compendium includes 12 sets of standards reflecting international best practice for financial stability. The Basel Core Principles, itself comprised of 25 principles of bank supervision, is one of the 12 standards within the Compendium of Standards.

The establishment of new and slightly more inclusive international financial organizations began in 1996, more than a year before the height of the Asian Financial Crisis. In September 1996, the Bank for International Settlements (BIS), a long-established organization of central bankers that ensure central bank liquidity, invited nine new countries to join the organization as formal members. Additional membership invitations were extended in 1999, 2003, and 2011, and the BIS nearly doubled in size, increasing from 32 countries’ central banks in 1990 to 55 central banks as of 2012. BIS membership provides access to a range of BIS services for central bank reserve management. As both a discussion forum and by providing tangible benefits and obligations for members, the BIS may be viewed as a socialization institution where both sticks and carrots may be used within repeated interactions to nudge developing countries’ central bankers towards adopting certain policies. The G20, created in 1999, included a number of developing countries into high-level, multilateral executive consultations for the first time. Although dormant throughout the 2000s, it quickly became the forum for international cooperation to respond to the 2008 global financial crisis. BIS membership expansion and the establishment of the G20 expanded developing countries’ access to technical resources and deepened informal advice networks.

Thus, international standards and inclusive international organizations created independent standards and institutions, that the Basel Core Principles is itself comprised of 25 principles provides an idea of the “sea of standards” that emerged by the early 2000s. The other 11 Compendium topics range from data transparency to accounting to anti-money laundering. List of standards available at [http://www.financialstabilityboard.org/cos/key_standards.htm](http://www.financialstabilityboard.org/cos/key_standards.htm).

The nine countries were Brazil, China, Hong Kong, India, Mexico, Russia, Saudi Arabia, Singapore, and South Korea. [Agence France-Presse](http://www.bis.org/about/chronology.htm) and publicly available press releases on September 9, 1996, November 8, 1999, June 30, 2003, and June 26, 2011. (Accessed March 16, 2013.)

This is from the BIS Chronology ([http://www.bis.org/about/chronology.htm](http://www.bis.org/about/chronology.htm)) and publicly available press releases on September 9, 1996, November 8, 1999, June 30, 2003, and June 26, 2011. (Accessed March 16, 2013.)

[21 BCBS 1997](http://www.bis.org/about/chronology.htm) [22 While financial regulations are not governed by strong formal agreements and institutions, that the Basel Core Principles is itself comprised of 25 principles provides an idea of the “sea of standards” that emerged by the early 2000s. The other 11 Compendium topics range from data transparency to accounting to anti-money laundering. List of standards available at [http://www.financialstabilityboard.org/cos/key_standards.htm](http://www.financialstabilityboard.org/cos/key_standards.htm).]


bank supervision as a focal policy. While this explains the broad upward trend, it cannot explain variation across countries or across time. The next section begins to examine country-specific calculations.

**Conceptual Problem of Moving from Cronyism to Independence**

The costs and benefits of politicians’ decisions regarding bank supervision run parallel to the key problem identified by the central bank independence (CBI) literature. Political independence of a key institution increases credibility that appropriate policies will be maintained, leading to macroeconomic benefits at the cost of politicians being unable to use the institution toward personal ends.\(^{27}\) Central bank independence arrangements are associated with outcomes that include inflation levels, likelihood of central bank governor replacement, and how monetary commitments (through CBI) extend the length of time in office.\(^{28}\) The key outcome of independent bank supervision is the equal implementation of bank regulations. This creates conditions for a competitive banking system. Within such an environment, banks compete based on operational efficiency and corporate strategy rather than relying upon government favors. Instead of looking at effects of independent bank supervision, I am interested in the prior question of what leads countries to move toward independence.\(^{29}\)

Government involvement in the banking system itself does not preclude a country from having independent bank supervision.\(^{30}\) Every country has a banking system and government involvement is widespread.\(^{31}\) Governments set regulations and may use the financial system for development purposes (such as channeling money to specific industrial sectors) or to create public goods (such as state owned banks ensuring rural access to credit). Governments may pass legislation to lead the direction of regulations while leaving regulators to set the detailed rules that banks must follow. In sum, government involvement in banking and independent bank supervision are distinct concepts and may be compatible if a government sets policies and subsequently allows bank supervisors to

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\(^{27}\) North and Weingast 1989; Cukierman 1992; Maxfield 1997; Lohmann 1998; Keefer and Stasavage 2002, 2003; Clark 2003; Bodea and Hicks forthcoming.

\(^{28}\) Respectively, Cukierman, Web and Neyapti 1992 and Bodea and Hicks forthcoming; Keefer and Stasavage 2002 and Bernhard and Leblang 2002.

\(^{29}\) On change in central bank independence, Bernhard 1998 and Maxfield 1997.

\(^{30}\) Thanks to Christina Davis for emphasizing this point.

\(^{31}\) Zysman 1983 and Hall and Soskice 2001 each have typologies about the relationship between governments, banks, and the real economy. In both works, sources of financing (whether from banks or markets) and state alignment with banks and business (high or low) differ. For recent review and critique of these literatures, see Deeg and Jackson 2007.
Mechanisms of Moving toward Independence - New Executive Explanation

This paper argues that developing countries proactively opt into international benefits, distinct from minimizing costs incurred in reaction to international pressures. Specifically, political executives use adoption to signal to international finance their cooperative intentions. Sometimes actions are for overt outcomes, such as Turkey specifically courting an IMF loan, while other countries’ executives may seek general goodwill. General goodwill with international financial institutions (IFIs, referring to both the IMF and World Bank) matters because these institutions engage in continuous interactions with developing countries – even during non-program years. Literature focuses upon IMF and World Bank program-years with less work considering the ongoing relationship between IFIs and developing countries. Countries may rely upon IFIs both as a source of financing and for favorable reports about their economic policies. The IMF sends annual missions to most countries, and prior to the mission, the IMF prepares background reports of the country’s current policies. Pending approval from the country, the reports become public. For this reason, new political executives have reason to establish a cooperative stance with IMF staff. Drawing upon the insights of McGillivray and Smith, new leaders open the possibility of renewed bilateral international cooperation. Goodwill and reputation may lead to future loans or to favorable public reports. It also stands as a buffer against IMF or World Bank pressure to adopt especially sensitive policies. That is, by establishing independent bank supervision, a country signals movement towards international standards even if they will not implement a specific regulation due to domestic political sensitivity.

New executives hold policy levers to establish independent bank supervision, and their incentives and autonomy to do so is greatest at the beginning of their tenures. To establish independent bank supervision, policy levers range from formal presidential decree to informal encouragement. Because of the variety of policy levers available, an executive may select one appropriate to local

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32 A recent exception includes Lombardi and Woods 2008. IMF scholarship is focused upon crisis programs, and details of program design, program years, and program outcomes. This paper argues that the ongoing relationship creates possibility of programs in the future and affect country calculations.

33 Common reports include Selected Issues, Recent Economic Developments and Article IV Consultation Report.

34 McGillivray and Smith 2008. McGillivray and Smith are interested in state-to-state interactions but the insight is equally applicable to my interest in state-to-international organization interactions.
political and economic circumstances.

Second, a new political executive holds unique incentives at the beginning of his tenure to signal his type to international organizations. Political executives signal general international orientation and first steps toward adhering to international standards. The executive signals his desire to align with international financial sector norms and to establish more competitive domestic banking markets. Bureaucrats within international organizations and technocrats within regulatory networks certainly consider leadership change to be a potential fresh start. For incoming developing country executives, the cost of establishing a reputation is relatively low and reputation early on maximizes the length of any benefit.

Finally, although a new executive enters office with a selectorate’s support, it is at the beginning of an executive’s tenure during which he holds the most distance, and least accountability, to domestic interests. If appointed for a fixed term, the new executive does not have to worry about immediate reelection or reappointment. Separately, it may take time for vested interests to exploit their full power upon a new executive. Thus, the beginning of an executive’s term is the time during which the executive should face the least resistance to change the status quo.

Together, it is at the beginning of an executive’s tenure that he holds the policy levers, the incentives, and the political space to adopt independent bank supervision. Adoption is a signal of international orientation, even if it falls short of compliance with international financial standards (which may be more costly to implement). Thus emerges the key hypothesis.

**H1, New Executive Hypothesis**: The beginning of a new executive’s tenure should be associated with greater likelihood of adopting independent bank supervision.

An additional, observable implication of this hypothesis is that any effect is specific to a new executive and is distinct from elections generally and distinct from executive partisan change. Further, while executive turnover in democracies may be more frequent than within non-democracies (due to fixed terms and/or scheduled elections), the mechanism should apply equally to both types of regimes. “Democracy” comes in many forms, and many developing countries share elements

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35 McGillivray and Smith are interested in state interactions, while the current study is about the interaction between a state and an international organization. The logic that new leaders offer an opportunity for renewed international cooperation is the key insight that is relevant in the economic realm. McGillivray and Smith (2008)

36 Rajan and Zingales (2003)

37 This differs from Satyanath, who analyzes a slightly different outcome but identifies democracy institutional constraints as a
of both democracies and autocracies. My expectation is that it is the new executive, not a domestic institutional constraint, that affects likelihood of adoption.

**Mechanisms of Moving toward Independence - Alternative Explanations**

Two alternative explanations include international coercion, especially through IFIs, and competitive market diffusion. In contrast to the expectation that new executives are associated with independent bank supervision, coercion expects country interactions with IFIs will lead to change and competitive diffusion expects change in reaction to policies adopted by competitor states.

**Coercion.** Dominant theories of financial politics emphasize the hegemony of developed countries (especially the US and UK) to compel developing countries to adopt favored policies using both international organizations and market incentives. Developing countries are largely excluded from organizations that set best practices and, especially when a country faces funding issues, conditionality associated with IMF and World Bank programs helps compel program countries to adopt certain policies. For the case of anti-money laundering standards, Drezner nicely shows how strong states may forum shop to link regulatory issues of importance to hegemons to IMF and World Bank monitoring. This leads to the first alternative explanation, the international coercion hypothesis.

**H2, International Coercion Hypothesis:** Participation in international financial institution (IFI) programs should increase the likelihood that a country adopts independent bank supervision.

Although evidence indicates that hegemons interfere in setting IMF program terms, for my purpose I am able to take as given the endogenous, negotiated terms of the program. I ask, conditional upon a program or conditionality that specifically requires bank supervision reforms, does this correlate with greater likelihood of adoption?

**Competitive Market Diffusion.** Competitive diffusion occurs when a country’s competitor state changes a policy, which in turn affects the competitiveness of the first country, leading the first country to adopt a similar policy. This and the new executive argument are both second image key explanatory variable explaining miscommunication and lax bank supervision among democracies. Satyanath [2006].

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38 On the empirical dominance of US and EU, see Oatley, Winecoff, Pennock and Bauerle Danzman [2013]. On the multiple ways that developed countries create constraints upon developing countries, Simmons [2001] and Drezner [2007].

39 Drezner [2007], chapter 5.


41 This is just one of multiple types of diffusion. Simmons and Elkins [2004].
reversed arguments, where international pressures create domestic incentives. However, the actors and mechanisms differ in each scenario. Where competitive diffusion is adoption in reaction to competitor states, new executive incentives are to signal cooperation to specific international organizations.

**H3, Diffusion (Competitive Market) Hypothesis:** Close competitor adoption of professional bank supervision increases a country’s likelihood of adopting independent bank supervision.

To test these competing hypotheses, the next section provides the first systematic statistical analysis of developing countries’ decisions to adopt independent bank supervision.

### 2.3 Empirical Analysis

Under what conditions do countries abandon bank supervision marked by cronyism and move toward independent bank supervision? Empirically, countries decide at some point to adopt independent bank supervision through formal means (such as presidential decree or passing a Banking Law through a legislature), or through informal support. Statistical analysis of time to adopt independent bank supervision enables a test of broad patterns that underlie the general phenomena of increased adoption.

**Data**

Table 2.1 lists the subset of 62 middle-income countries that are part of the analysis, the largest sample of countries for which bank supervision data is available. I define middle income countries as those whose World Bank Country Income Classification is non-low income and non-high income for at least one year between 1980 and 2005. This maintains the largest subset of relatively similar countries that face the decision of whether to increase bank supervisory capacity. Statistical analysis controls for specific level of country wealth in a given year to account for variation within the group.

The sample is selected under the assumption that middle income countries can implement independent bank supervision if they so desire. Low income countries are excluded from analysis.

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[^1]: Gourevitch 1978.
[^2]: The World Bank defines countries based on Gross National Income (GNI) per capita, and definitions affect the lending capacity of the World Bank. Thus, I include countries that began as low income countries and have become richer middle-income countries, such as India and China, as well as middle income countries that have become richer high-income countries, such as South Korea and Singapore.
Table 2.1: *Middle Income Countries in Sample*: Countries in empirical sample are listed alongside the year that the country adopts independent bank supervisory capacity. A country that does not adopt independent bank supervisory capacity as of 2005 is indicated with “n/a”. Countries are classified by regime type over the sample period (1991 to 2005) based on Cheibub et al’s dichotomous coding of democracy (including “type II” democracies as democracies). A country is “Middle Income” if it is classified as non-low and non-high income by the World Bank Country Classification for at least one year between 1980 and 2005. SOURCE: Author classification based on World Bank income group definitions and World Bank Atlas method GNI per capita data. Available at [http://data.worldbank.org/about/country-classifications](http://data.worldbank.org/about/country-classifications) (December 22, 2012).

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<tr>
<td>Cameroon</td>
<td>n/a</td>
<td>Indonesia</td>
<td>n/a</td>
<td>Pakistan</td>
<td>1999</td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>n/a</td>
<td>Kenya</td>
<td>n/a</td>
<td>Tunisia</td>
<td>2003</td>
</tr>
<tr>
<td>PERSISTENT NON-DEMOCRACIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belarus</td>
<td>n/a</td>
<td>Jordan</td>
<td>1998</td>
<td>Vietnam</td>
<td>n/a</td>
</tr>
<tr>
<td>China</td>
<td>1997</td>
<td>Morocco</td>
<td>n/a</td>
<td>Zimbabwe</td>
<td>n/a</td>
</tr>
</tbody>
</table>
under the assumption that they face so many concurrent problems that it is unclear they are able to implement independent bank supervision even in the case that it is desired by the country. I likewise exclude high income countries, which face a different set of pressures and incentives to adopt these types of policies, and which, in contrast to the pervasive nature of IMF programs and conditionality among middle income countries, do not engage in IMF programs over this period. Robustness checks (discussed below) ensure that basic sample changes do not drive results.

**Dependent Variable**

Bank regulations and institutional arrangements vary such that it is difficult to find a meaningful measure of independent bank supervision that can be compared across-countries and across-time. Scholars often analyze bank supervision and regulation using case studies to capture nuance and some comparison at the expense of broad comparison.

Fortunately, the recently released IMF Financial Reforms Database provides a useful measure of bank supervision across countries and time.\footnote{Abiad, Detragiache and Tressel 2008} A country’s measure of bank supervision in a given year is based upon a set of objective actions. Specifically, the IMF lays out four actions – (1) formal independence of bank supervisors with no de facto political interference; (2) supervisor jurisdiction over all banks operating within the country; (3) annual evaluation of each bank through on-site and off-site supervision, and; (4) maintain minimum bank capital standards in line with the 1988 Basel Capital Accord – and looks for evidence of these actions in past IMF reports.\footnote{On the last criterion, note that, unlike the complex 2004 and 2010 Basel Capital Accord revisions, the original Basel Capital Accord is a relatively straightforward regulation to implement, requiring each bank to hold capital equivalent to 8% of total risk-weighted assets, using simple risk-weight categories.} The original reports were prepared for alternative purposes so that there is no reason for the reports to systematically misstate a country’s current policies and actions. Abiad, Detragiache and Tressel identify the first year in which each criterion was fulfilled by a given country. This information is aggregated into a measure between 0 (low bank supervision) and 3 (high bank supervision).\footnote{Specifically, Abiad et al assign between 0 and 2 points for executive independence and adequate bank inspections, and 0 to 1 point for encompassing jurisdiction and implementation of 1988 Basel Capital Accord, for a total of 6 possible points. They then collapse this 0 to 6 measure into a the coded scale of \{0,1,2,3\}. 0 to 1 out of 6 is coded “0” and is described as “Not Regulated”. A “1” coding reflects 2 or 3 out of 6 and is considered “Less Regulated”. A “2” coding reflects 4 or 5 out of 6 and the country is considered “Largely Regulated”. A “3” coding reflects 6 out of 6 and is considered “Highly Regulated”. Throughout the paper I use the terminology bank supervisory capacity or bank regulatory capacity, since the underlying criteria reflect capacity to regulate and minimum levels of prudent regulation rather than reflecting regulatory stringency. For further ease of substantive understanding, I describe “0” as reflecting weak capacity, “1” reflects low capacity, “2” reflects moderate capacity, and “3” reflects high capacity.}
measure is detailed, time-varying, based upon objective criteria, and available for a large number of developing countries. Thus, it is the best available measure appropriate for this paper’s research question. Substantively, the measure captures whether a country’s bank supervisor is politically independent and able to implement basic regulations.

The event of interest is the year that a country first achieves independent bank supervision. Using the IMF database, independent bank supervision is the first year that a country achieves a bank supervision score of “2”\(^{47}\) Figure 2.2 shows the distribution, by year, for countries achieving independent bank supervision. The left graph shows the number of countries that first achieve independent bank supervision in each year, while the right graph plots the cumulative number of countries that have achieved independent bank supervision. In each graph, the black bar shows that 19 of 64 countries did not reach independent bank supervision by the end of the dataset in 2005\(^{48}\) These graphs later inform model specifications, specifically the appropriate year in which to begin the analysis.

**Explanatory Variables**

The key hypotheses of interest include the role of new political executives (Hypothesis 1), international institutional coercion (Hypothesis 2), and competitive diffusion pressures (Hypothesis 3).

My key hypothesis is that political executives, at the beginning of their tenures, have the policy levers, incentives, and the political will to establish independent bank supervision. This is sometimes referred to as the honeymoon period where a new executive may set an agenda with the opportunity to change the status quo\(^ {49}\) Whether or not the presence of new political executives coincides with increased likelihood of adoption of independent bank supervision is the most direct test of Hypothesis 1. *New Executive\(_t\)* is a dummy variable coded “1” for the first full year that a

\(^{47}\) This generally means that a country has met 3 of the 4 actions that are the basis for coding.

\(^{48}\) The figure includes two middle income countries (failure of Hong Kong in 1996 and Russia as a censored observation) for which there is bank supervision data but missing explanatory variables and therefore do not enter into the model estimates.

\(^{49}\) Abiad and Mody 2005, 71–72. Honeymoon periods are typically associated with democratization, but I follow Abiad and Mody who operationalize the concept more broadly to capture new political executives’ first year in office, within any type of regime. Abiad and Mody emphasize that policies pursued within the honeymoon period may be unpredictable from the outset, citing contrasting findings of Krueger that honeymoon periods are generally utilized to lock in economic liberalization policies and Haggard and Webb’s observations of new Latin American democracies whose honeymoon periods generally broadened domestic expansion. Krueger 1993; Haggard and Webb 1993.
Figure 2.2: *Middle Income Country Independent Bank Supervision, Adoption and Cumulative Count*: Left graph shows annual count of countries achieving independent bank supervision for the first time. Right graph shows the cumulative number of middle income countries with independent bank supervision. The black bar in each graph indicates 19 countries that are right censored and do not achieve independent bank supervision as of 2005. The sample includes 64 middle income countries, including 2 (Hong Kong failure in 1996 and Russia as a censored observation) that do not enter into the estimated sample due to explanatory variable data limitations.

new executive is in office. It includes all types of leadership changes, including scheduled and unscheduled leadership turnover, and elected and appointed executives. The expectation is that this variable will be associated with increased likelihood of adoption.

Two additional measures ensure that the New Executive variable captures the distinct effect of a new leader and not a general election boost nor partisan turnover. My argument is that it is specifically the opportunity for new political executives to signal their cooperative type to the IMF that increases likelihood of adopting independent bank supervision.

First, I distinguish between new political executives and reelected executives. Both enjoy a selectorate mandate, but I expect only the new leader to be associated with faster adoption, while a reelected politician does not have the same opportunity to establish new relationships with international financial institutions. Therefore, I consider only those years immediately following an incumbent’s completion of the full length of his current term. For this set of years – which excludes

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50 This variable is coded 1 when Database of Political Institutions’ (DPI) “yrsoffic” is coded “1”, indicating it is an executive’s first full year in office. Keefer [2010]. Figure 2.4 in the Appendix graphs the frequency of new executives over the sample period. Each year, between 5% and 30% of countries that have not yet adopted independent bank supervision have new executives.
new executives that come into office because of strategic or unplanned government failures – I create an indicator for new executives \((\text{Incumbent Term End, New Executive}_{t})\) and a second indicator for reelected and reappointed executives \((\text{Incumbent Term End, Incumbent Reappointment}_{t})\). I expect that the subset of new executives that come into office following the full completion of the previous incumbent’s regular term will be associated with increased likelihood of adopting bank supervision while re-appointed or re-elected incumbent executives will not be associated with increased likelihood of policy change. This would add evidence that leadership change specifically, as opposed to electoral mandate or electoral cycles, drive the new executive finding.

Second, a measure that codes years of partisan turnover ensures that findings are specific to a new executive. I create an indicator that takes the value of “1” when the executive’s party changes \((\text{Partisan Change}_{t})\). If it is partisan change that reflects partisan preferences, then this measure should be associated with faster time to adopt.

Robustness checks include additional operationalizations of new executive to ensure there is no association between outgoing governments that wish to implement policies to tie the hands of incoming executives, and by extending the definition of new executive to include the first and second years of a new executive’s tenure. Together, these checks provide evidence that new executives are associated with increased likelihood of adopting bank supervision, consistent with the expectation that new political executives uniquely and systematically hold incentives and the political will to delegate bank supervision.

The second hypothesis of interest is whether or not international institutions exert coercive pressure upon countries to adopt independent bank supervision. I focus specifically on the International Monetary Fund (IMF), which is an international governmental organization with near universal membership, known for its institutional autonomy, and which operates in multiple capacities to exert coercive pressure. I expect that countries with IMF programs are more likely

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51 I identify these years using DPI data, defined as country-years where the executive has a finite term (DPI “finittrm” variable equals 1) and last year \((t-1)\) was the final year of the incumbent’s current, regular term (DPI “yrcurnt” variable equals 0 in year \((t-1)\)). To more precise identify the counterfactuals, I would ideally be able to discern when the final year of an incumbent’s current term is the end of his total term limit. This information was not readily available, so the described comparison is the most appropriate proxy.

52 This is based upon DPI coding.

53 Despite the large number of studies that establish how politics affect the likelihood, size, and conditionality associated with IMF programs, the IMF as an organization is staffed and operated by bureaucrats and is “autonomous” in comparison to the WTO, which houses a small secretariate and the bulk of its operations occurs through member state negotiations. Among others, on the
subject to coercive pressures. To test this, I code the existence of an International Monetary Fund (IMF) program in the previous year as a measure for international coercion \((IMF\ Program_{t-1})\)\(^{54}\). IMF programs are not uncommon to middle income countries, with more than 40 percent of all sample countries utilizing IMF programs in a given year, and 54 of the 62 sample countries engaging in an IMF program at least one year during the sample\(^{55}\) IMF programs are observable, and are associated with country-specific conditionality that is supposed to be met for the country to continue receiving IMF funding\(^{56}\).

To more precisely identify the subset of IMF programs that should be associated with international pressure upon a country to increase bank supervisory capacity, I create an additional indicator for IMF programs with at least one conditionality that, if implemented, should increase bank supervisory capacity \((IMF\ Program\ with\ Bank\ Supervision\ Conditionality_{t-1})\)\(^{57}\).

Although IMF programs and IMF conditionality are not randomly assigned, any bias should make it more likely that middle income states with IMF programs and IMF conditionality should adopt bank supervisory capacity sooner. Countries with conditionality that address bank supervisory capacity are either (1) countries whose leaders are seeking to tie their own hands to implement these measures, consistent with logic of Vreeland, or (2) countries where the IMF or a major donor

\(^{54}\) IMF program dates are unambiguous and are taken from the IMF’s History Lending Arrangements for the period 1984 to 2012. http://www.imf.org/external/country/index.htm (December 15, 2012). Using the lagged value appropriately captures the first full year following IMF program initiation. IMF programs are coded by the calendar year and therefore this controls for programs that are initiated late in the previous year. For instance, it is unreasonable to think that an IMF program initiated in November of a given year should affect the likelihood of adopting adequate bank supervision. Many IMF programs are more than one year long and the lag more appropriately captures the years during which conditionality would likely be implemented. Results are unchanged when using an alternative measure indicating only the year an IMF program is signed.

\(^{55}\) Figure 2.5 in the Appendix graphs the distribution of IMF programs across the sample period. Although IMF programs are common among this sample of countries, there is rotation among, with variation both across countries and within countries across time.

\(^{56}\) Stone, among others, have pointed out that conditionality is often not met and that the IMF cannot credibly withhold funds if conditionality is not met. Gould studies the range of conditionality terms. Stone 2002 2008 Gould 2006.

\(^{57}\) Author coding from publicly available Monitoring of Fund Arrangements (MONA) database, available http://www.imf.org/external/np/pdr/mona/index.aspx. This shows all conditionality for all IMF programs from 1993 to the present. IMF Program with Bank Supervision Conditionality\(_{t-1}\) is coded by the author, taking the value of 1 for IMF program years where conditionality requires actions to increase the political independence or effectiveness of bank supervision (for instance, implementing Basel Capital Standards, increasing supervisor independence or decreasing legal liability for regulators). Whether or not a conditionality addresses bank supervisory capacity is fairly unambiguous. As a robustness check, I include an indicator for IMF programs including conditionality as part of the “Financial Sector” Program Strategy. Among 62 sample countries, 54 countries have at least one IMF program, 42 countries have at least one “financial sector” conditionality, and 31 countries have at least one bank supervisory conditionality. Figure 2.5 in the Appendix shows the distribution across years. Individual IMF programs range from less than one year (under some Stand-By Arrangements) to up to four years (under some Extended Fund Facility programs), and it is possible for countries to participate in successive IMF programs. Coding include both concessional and non-concessional programs, as both types of programs include participant conditionality.
of the IMF has strategic interests in the country’s policy adoption.\textsuperscript{58} In either instance, IMF bank supervision conditionality, if it compels developing country policy change, should be associated with increased likelihood of country adoption directly because of conditionality. It is also possible that countries with IMF bank supervision conditionality are those most likely to face unobserved, but additional, coercive pressure to adopt such policies.

The final hypothesis is that diffusionary pressures compel states to adopt independent bank supervision in reaction to competitor states adopting such a policy.\textsuperscript{59} As competitor states adopt policies that investors prefer, or that provide a competitive advantage to the state that adopts, then there are market pressures for the competitor state to similarly change its policy. A simple measure of regional diffusion (\textit{Regional Diffusion}_t) uses geographical regions to proxy for competitor countries and international pressures to adopt.\textsuperscript{60}

\textbf{Control Variables}

I control for other sources of heterogeneity that might affect a country’s likelihood to adopt independent bank supervisory capacity. In all specifications I control for income, measured as GDP per capita (Log(\textit{GDP per capita})_{t−1}).\textsuperscript{61} Wealthier countries may be more likely to adopt sooner because they have more resources to channel toward implementing institutional change and they also may have a higher percent of skilled professionals from which to build a team of professional and capable bank regulators. I also control for a country’s previous year’s economic growth, the percent change in GDP (\textit{GDP, % Change}_{t−1,t}), assuming that challenging economic conditions might make bank supervision less of a priority. Finally, I control for level of capital openness (\textit{Capital Openness}_{t−1}) across all models.\textsuperscript{62} It is reasonable that greater capital openness is associated with greater financial volatility and greater demand for bank supervision. Alternatively, capital openness creates more investment opportunities for domestic actors, changing domestic


\textsuperscript{59} This is just one of multiple mechanisms of diffusion. Simmons and Elkins 2004.

\textsuperscript{60} This is a simple measure of diffusion that calculates the percent of total countries within a region that have independent bank supervision.

\textsuperscript{61} This variable enters into the model as a natural log and is lagged one year to minimize possibility of reverse causality.

\textsuperscript{62} Capital openness is the continuous index measure of Chinn and Ito where higher levels indicate greater capital openness. The variable is lagged by one year. Chinn and Ito 2008.
interests. Under either circumstance, increased openness may affect likelihood of policy change.

All specifications include indicators for various types of economic crisis to ensure that explanatory variables are not confounded by variables that affect both likelihood of new executive and likelihood of independent bank supervision. First, it is straightforward that a bank crisis might increase domestic demand for bank supervision in order to avoid future bank crises. Therefore, I control for lagged bank crisis years \((Bank\ Crisis_{t-1})\)\(^{64}\). Second, I control for currency crisis in the previous year \((Currency\ Crisis_{t-1})\), although the significant literature analyzing the relationship between political change and currency crisis typical find that new political executives increase likelihood of currency crisis as opposed to currency crisis leading to new political executives.\(^{65}\) Finally, I control for years following sovereign debt crises \((Sovereign\ Debt\ Crisis_{t-1})\), which could lead to bank crises and general financial instability.\(^{66}\)

Domestic institutional arrangements that affect likelihood of policy change comprise a final set of controls.\(^{67}\) First, I add an indicator for democracy country-years \((Democracy\ Indicator_t)\).\(^{68}\) Additionally, I include a count of the number of veto players \((Veto\ Player\ Count_t)\), since greater institutional checks and balances indicate higher barriers to any policy change.\(^{69}\) Finally, I include a control for country-years with unified government \((Unified\ Government\ Indicator_t)\), which might

\(^{63}\) Rajan and Zingales 2003

\(^{64}\) Bank crises are notoriously difficult to define and date, leading to high variation across various codings of bank crisis. Claessens and Kose 2013. The empirical models use a broad measure that includes any lagged country-year identified as having a banking crisis by Demirguc-Kunt and Detragiache 1999. Laeven and Valencia 2012 and Reinhart and Rogoff 2009. It is important to note that results do not substantively change when using any individual indicator, nor if we use an indicators that include a measure for banking crisis within the past 2, 3, 4, or 5 years.

\(^{65}\) For example, Leblang 2003 and Walter and Willet 2012. Data from Glick and Hutchison who code currency crises for 69 developing countries over the period 1975 to 2006, using the seminal methodology from Frankel and Rose. Glick and Hutchinson 2011; Frankel and Rose 1996.

\(^{66}\) Sovereign debt restructurings and reschedulings are straightforward to code. I use Abbas’ IMF database covering 178 countries through 2007. Abbas 2011. Sovereign debt crises are also fairly correlated (0.33) with IMF programs (see correlation matrix in Appendix 2.4).

\(^{67}\) The three domestic institutional arrangements described below are fairly highly correlated (as may be seen in Table 2.4 in the Appendix, Democracy Indicator and Veto Player Count have 0.48 correlation, and Veto Player Count and Unified Government have -0.59 correlation). While the main models presented include all three controls, these variables and the explanatory variables of interest do not change significance when entered as three separate regression with one control apiece.

\(^{68}\) I use the dichotomous Cheibub et al. 2010 indicator, where democracies (including “democracy” or “type II”) are coded 1. Results are substantively unchanged when using just “democracy”, as well as using polity score as an alternative measure of democracy. Results are also stable when controlling for democratization years (as defined by Mansfield and Pevehouse 2006) as 5-year change from autocracy (Polity < -7) to anocracy (-7 < Polity < 7) or democracy (Polity > 7), or anocracy to democracy.

\(^{69}\) I use DPI’s “checks” measure, where higher levels of veto players indicate greater institutional checks and balances. To deal with the large left hand data skew and to create a more uniform data distribution and eliminate outliers, I also cap total “checks” at 4. Thus, if a country has more than 4 checks in a given year, it enters in as 4. This does not affect substantive results, which are the same by increasing max checks to 5, using the log of checks, or using absolute value of checks. I err on the side of ensuring input variables do not obviously violate distributional assumptions where outcomes may be driven by outliers. This is also justified by theoretical literature that suggests there are declining marginal returns to additional veto players.

61
be associated with less resistance to policy change and less resistance to adopting adequate bank supervision.\footnote{This variable is from DPI data and equals 1 when “allhouse” variable equals 1.}

**Model**

Survival analysis controls for pressures that affect all observations in a given year.\footnote{For the details of survival methodology, see Box-Steffensmeier and Jones 2004} The unit of analysis is the country-year, and each sample country enters the dataset in 1991 and remains in the data set through the first year it achieves independent bank supervision. The year it achieves independent bank supervision, the dependent variable is coded as “1”, and the country is excluded from the dataset in subsequent years. If a country does not adopt independent bank supervision by 2005, the final year of the dataset, the country is considered censored in 2005. To avoid making assumptions about the shape of the baseline hazard, I use a Cox proportional hazards model. Country-year observations are entered as time-varying covariates.\footnote{Results are estimated using Efron method of ties, and directly test to ensure each variable’s distribution does not violate the proportional hazard assumption at the 10 percent level.} Since Portugal and Spain are the first middle income countries to adopt independent bank supervision in 1992 (see Table 2.1), 1991 is an appropriate year to consider countries to be “at risk” for adopting independent bank supervision. It also is the first year of independence for successor states of the Soviet Union.

**Results**

Survival analysis of developing country time to adopt adequate bank supervision provides robust positive associations between the first year of an executive’s tenure and time to adoption. That is, years with new executives have higher likelihood of country adoption. Robustness checks indicate that this is due to the new executive specifically and not due to electoral or partisan pressures. Thus, evidence robustly supports Hypothesis 1, the New Executive Hypothesis. In contrast, IMF programs with bank supervision conditionality have some association with greater likelihood of country adoption, but this finding is not as consistent as the new executive finding. Thus, there is some support for Hypothesis 2, but it is highly variable. There is no evidence in support of Hypothesis 3, that diffusion drives independent bank supervision.

Table 2.2 displays detailed results of time to adopt bank supervisory capacity. The table presents hazard ratios (the exponential values of the estimated coefficients) and estimated 95 per-
cent confidence intervals. Hazard ratios greater (less) than 1 indicate that increases in the variable, holding all else equal, are systematically associated with increased (decreased) likelihood of failure, and faster (slower) time to adopt bank supervisory capacity.

Model 1 is the base specification, reflecting the experience of 62 countries for the period 1991 through 2005. It shows that, on average, a country with a new executive has a significantly increased hazard during the year. IMF programs, in contrast, have no systematic effect upon the hazard. Model 2 uses an alternative indicator for IMF programs, finding that the subset of country-years with IMF programs with one or more conditionality that specifically addresses bank supervision, \( IMF\text{ Program with Bank Supervision Conditionality}_{t-1} \), is associated with higher likelihood of adopting bank supervision in a given year. Country-years with new executives in office also enjoy increased likelihood of adoption.

Figure 2.3 shows the estimated effect magnitude for the base specification in Model 2. The graph shows the estimated increased likelihood of adopting adequate bank supervision capacity, holding all else equal, in country-years with a new political executive compared to country-years without a new political executive. The effect is always positive, and after 1996 the average effect is an increase in likelihood of adoption of more than 15%, increasing to a maximum of 23% in years 2000, 2002, and 2004. There is a persistent, positive and statistically significant association between country-years with new political executives and increased likelihood of adopting bank supervision conditionality.

Model 3 introduces additional controls for domestic institutional barriers to policy change (that is, democratic regimes, degree of veto players, and unified government) for 61 countries. Surprisingly, variation across countries and across time on all of these variables does not systematically affect independent bank supervision adoption. Country-years with new executives, and country-years with IMF programs that include bank supervision conditionality, continue to be associated

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73 Using the subset of sample observations that experience the phenomena of interest (i.e. observed new executive country-years), I use model estimates to calculate the estimated survival probability first assuming there is no executive change and then assuming that there is a new executive. The difference in estimated survival probabilities between the two groups is the estimated effect magnitude.

74 The number of observations drops because of data limitations across the three variables. It is worth reiterating that including each of these three controls in separate estimations does not change the statistical sign nor statistical significance of the control variable itself nor that of the explanatory variables of interest. For this reason, I err on the side of including all controls in the models for the substantive interest of the reader.
<table>
<thead>
<tr>
<th>H1: New Executive</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Executive, t</td>
<td>2.304***</td>
<td>2.206**</td>
<td>2.248**</td>
<td>[1.23, 4.31]</td>
<td>[1.16, 4.19]</td>
</tr>
<tr>
<td>Incumbent Term End, New Executive, t</td>
<td>2.099*</td>
<td>[0.93, 4.33]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incumbent Term End, Incumbent Reappointment, t</td>
<td>1.678</td>
<td>[0.54, 5.22]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partisan Change, (t−1, t)</td>
<td>0.761</td>
<td>[0.30, 1.91]</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>H2: International Coercion</th>
<th>IMF Program, t</th>
<th>IMF Program with Bank Supervision Conditionality, t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.171</td>
<td>[0.63, 2.18]</td>
</tr>
<tr>
<td></td>
<td>1.707*</td>
<td>[0.90, 3.24]</td>
</tr>
<tr>
<td></td>
<td>1.721</td>
<td>[0.87, 3.41]</td>
</tr>
<tr>
<td></td>
<td>1.816*</td>
<td>[0.93, 3.55]</td>
</tr>
<tr>
<td></td>
<td>1.880*</td>
<td>[0.92, 3.84]</td>
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<table>
<thead>
<tr>
<th>H3: Diffusion</th>
<th>Regional Diffusion, % Change, (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.002</td>
</tr>
<tr>
<td></td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>1.010</td>
</tr>
<tr>
<td></td>
<td>1.005</td>
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<td></td>
<td>1.007</td>
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<table>
<thead>
<tr>
<th>Controls</th>
<th>Institutional Barriers to Policy Change</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Democracy Indicator, t</td>
</tr>
<tr>
<td></td>
<td>[0.51, 8.69]</td>
</tr>
<tr>
<td></td>
<td>Veto Player Count, t</td>
</tr>
<tr>
<td></td>
<td>[0.39, 2.24]</td>
</tr>
<tr>
<td></td>
<td>Unified Government Indicator, t</td>
</tr>
<tr>
<td></td>
<td>[0.63, 1.37]</td>
</tr>
</tbody>
</table>

| Economic Conditions | Log(GDP per capita), t | 1.482* | 1.490** | 1.590** | 1.561** | 1.51* |
|                     | [0.98, 2.24] | [1.00, 2.21] | [1.04, 2.42] | [1.02, 2.39] | [0.96, 2.37] |
|                     | GDP, % Change, (t−1, t) | 1.010 | 1.010 | 1.010 | 1.006 | 0.999 |
|                     | [0.96, 1.07] | [0.96, 1.07] | [0.95, 1.08] | [0.95, 1.07] | [0.93, 1.07] |
|                     | Capital Openness, t | 1.026 | 1.019 | 0.987 | 0.967 | 0.952 |
|                     | [0.78, 1.35] | [0.78, 1.34] | [0.74, 1.32] | [0.72, 1.30] | [0.71, 1.27] |

| Economic Crisis | Sovereign Debt Crisis, t | 0.818 | 0.800 | 0.956 | 0.899 | 0.521 |
|-----------------| [0.23, 2.87] | [0.24, 2.69] | [0.27, 3.39] | [0.25, 3.21] | [0.36, 2.17] |
| Bank Crisis, t  | 0.932 | 0.864 | 0.921 | 0.933 | 0.922 |
| [0.48, 1.80] | [0.43, 1.72] | [0.45, 1.88] | [0.46, 1.91] | [0.45, 1.87] |
| Currency Crisis, t | 0.165* | 0.152* | 0.159* | 0.155* | 0.152* |
| [0.02, 1.18] | [0.02, 1.10] | [0.02, 1.16] | [0.02, 1.16] | [0.02, 1.14] |

| Country-year observations | 644 | 644 | 607 | 607 | 540 |
| Countries in sample | 62 | 62 | 61 | 61 | 58 |
| Country failures | 44 | 44 | 42 | 42 | 40 |
| Logrank p | 0.040 | 0.032 | 0.041 | 0.070 | 0.052 |

Table 2.2: Cox Proportional Hazards Model Results, Time to Adopt Independent Bank Supervision: Dependent variable is country adoption of independent bank supervision, where each country remains in the dataset through the year it first achieves independent bank supervision. Table presents hazard ratios. Values greater than 1 indicate the variable increases hazard (and increases likelihood of failure at a given time), while values less than 1 indicate the variable decreases hazard (and decreases likelihood of failure at a given time). Brackets contain 95 percent confidence intervals. Estimations are based on robust standard errors, clustered by country, and Efron method of ties. For all estimates, *** indicates significant at 1%; ** significant at 5%; * significant at 10%;
with faster time to adopt.

Models 4 and 5 test observable implications of the New Executive Theory. For those years following an incumbent who serves a full term, Model 4 uses two indicators to capture whether there is a new executive ($Incumbent\ Term\ End, New\ Executive_t$) or a re-appointed incumbent ($Incumbent\ Term\ End, Incumbent\ Reappointment_t$). Thus, the estimated coefficient on each indicator captures the likelihood of adoption in comparison to country-years where the incumbent executive has one or more years left in his current term or where a new executive comes to power prior to the end of the incumbent executive completing his full, expected term. If executives are the key actors that matter for delegation rather than the effect of a first year in office, then new executives should be associated with increased likelihood of adoption while incumbent re-appointments should not. Indeed, the estimated hazard ratio for $Incumbent\ Term\ End, New\ Executive_t$ is similar to coefficients in Models 1 through 3 and is statistically significant, indicating increased likelihood of adequate bank supervision adoption for new executives entering office following a predecessor’s
full legal term. In contrast, the first year of an incumbent’s reappointment (Incumbent Term End, Incumbent Reappointment, t) is not systematically associated with adopting independent bank supervision. Thus, this is evidence that the New Executive, t finding is not driven by general increased selectorate mandate that accompanies both new executives and reappointed incumbents.

Model 5 shows that Partisan Change, t is not systematically associated with faster or shorter adoption and thus does not drive the new executive finding. Together, Models 4 and 5 provide evidence of additional observable implications of the key argument that it is new executives specifically with incentives to adopt independent bank supervisory policies.

Overall, the results provide strong support for Hypothesis 1, that new political executives are associated with higher likelihood of adopting bank supervision. The broadest measure is statistically associated with higher likelihood of adopting adequate bank supervision in all specifications, and the estimated effect size may increase likelihood of adoption by more than 20 percent, on average, in some years. Two observable implications of the theory were tested in Models 4 and 5 and found support. Thus, there is initial statistical evidence consistent with my hypothesis that new executive leadership specifically, as opposed to electoral mandates, is most consistently associated with time to adopt adequate bank supervision.

I find some evidence in support of Hypothesis 2, that coercion through international institutions is associated with higher likelihood of adopting bank supervision. While IMF programs alone are not statistically associated with bank supervision adoption, the more specific subset of IMF programs with bank supervision conditionality is generally associated with systematically higher likelihood of adopting adequate bank supervision, although results are sensitive to sample and model controls.

Finally, while this paper only analyzes a simple diffusion measure, I find little evidence of a systematic relationship between diffusion and time to adopt independent bank supervision.

Robustness Checks

Table 2.5 in the appendix provides additional specification results that increase confidence in the above findings. Robustness checks use the base specification of Model 2 in Table 2.2 which includes the largest sample of observations. By changing the method of ties from Efron to Breslow...
(Robust Model 1), IMF Programs with Bank Supervision Conditionality loses statistical significance, while the New Executive finding remains.

Robust Model 2 considers an alternative coding of the dependent variable, which removes adherence with 1988 Basel Capital Accord (Basel I) from the index of bank supervision.

Basel I is a regulation, while the other index components specifically address de facto and de jure political independence and effective bank supervision. If the results are driven by Basel I implementation, the results may not capture the substantive phenomena of interest. New Executive remains statistically associated with faster time to apply using the alternative dependent variable, and there is also a statistically significant association between country-years with IMF Programs with Bank Supervision Conditionality and higher likelihood of adoption.

Robust Model 3 uses an alternative IMF program variable that codes the subset of IMF programs that include conditionality that is defined by the IMF as addressing a program country’s financial sector (IMF Program with Financial Sector Conditionality).

This tests whether IMF programs that target the financial sector broadly affect bank supervision. It is not statistically significant, while the estimated hazard ratio for New Executive remains greater than 1.0 and statistically significant.

Robust Model 4 and 5 add confidence that the New Executive finding is not driven by outgoing governments that seek to tie the hands of the new executive by putting in place policies that become active in the first year of the new executive’s tenure. Thus, Robust Model 4 extends the coding of New Executive to be an indicator for both the first and second years that a new executive is in office (New Executive), with the presumption that if the result is driven by outgoing governments, then the result may be limited to first year only. New Executive remains statistically associated with higher likelihood of adoption. Robust Model 5 includes the original indicator for country-year with a new executive (New Executive) and adds a control for the final year of an incumbent’s current term (Executive Term End).

There is no statistical association between the end of an executive’s current term and adoption of bank supervision, while New Executive indicator remains

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75 The author gratefully acknowledges Abdul Abiad’s willingness to share country chronologies that are the basis for bank supervision coding and enabled this robustness check. I remove Basel from the index and consider failure to be a raw score of “3” instead of “4”.

76 IMF programs with bank supervision conditionality is a subset of this measure, while the measure itself is a subset of all IMF programs.
positive and statistically significant.

Robustness Model 6 removes four “advanced” countries (e.g. Greece, Israel, Portugal, Spain) from the sample to ensure results are not driven by countries that may be outliers. Finally, Robust Model 7 includes an additional control for former USSR states that gained independence at the end of the Cold War. These states received lots of economic and technical support to accompany the transition, which may affect the systematic proclivity of these countries to adopt adequate bank supervision championed by development organizations that also funded these countries’ transitions. The New Executive, finding remains robustly associated with greater likelihood of adoption in Models 6 and 7, while IMF Program with Bank Supervision Conditionality,−1 loses statistical significance in both specifications.

Robustness checks reinforce the strong finding that new executives are systematically associated with bank supervision adoption, with mixed support for the role of IMF program conditionality.

2.4 Creating Independent Bank Supervision in Turkey - Ecevit and the BRSA

The previous section provided evidence of statistical associations between new executives and increased likelihood of adopting independent bank supervision in developing countries. I argued this is a function of executives’ flexible policy levers, and the incentives and political space to establish independent bank supervision at the beginning of a term in order to build goodwill with international finance. This section applies the theoretical argument to the case of Turkey as a plausibility probe, for the purpose of illustrating how the theoretical argument may be observed in practice.\footnote{Levy 2008, 6–7.} The case also offers the advantage of observing outcomes after 2005, the end of the statistical analysis.

Turkey is coded as achieving independent bank supervision in September 2000 when bank supervisory operations were actively transitioned from the Turkish Central Bank and Treasury to the newly-created Bank Regulatory and Supervisory Authority (BRSA).\footnote{The author is grateful to Abdul Abiad for generously sharing such information that underlies the IMF measure of bank supervision.} This occurred in the first years of the Ecevit government, who entered office as a caretaker government in January 1999.\footnote{Levy 2008, 6–7.}
and publicly prioritized bank reform with the explicit aim of attracting an IMF program. A key point is that Ecevit precipitated the process of establishing independent bank supervision in a proactive way, at the beginning of his tenure, to attract IMF and World Bank programs. Second, the BRSA’s jurisdiction was passed in June 1999 but did not go live until September 2000. The IMF program signed in December 1999 included conditionality that reinforced the likelihood of the BRSA coming to fruition. This is consistent with the dynamics identified in Vreeland’s work, where an executive negotiates IMF programs with conditionality aligned with his own preferences. Lastly, the long-term success of the BRSA was not guaranteed from its establishment, but the first government after Ecevit, which entered office in November 2002 as a single-party government, found it politically costly to reverse independent bank supervision once it was established.

The Undersecretariate of the Treasury and Central Bank of Turkey were joint bank supervisors throughout the 1990s. In 1990, Turkey liberalized its capital flows while maintaining a fixed exchange rate regime, and Turkey’s bank sector included a mix of private banks, state-owned banks, and a few foreign banks. Bank supervisors did not limit Turkish bank operations, and many banks moved away from deposit-taking and borrowed foreign funds against the Turkish lira’s fixed exchange rate. A Turkish currency crisis in early 1994 led to a bank crisis by April 1994 when Turkish banks could not pay back foreign loans. An unlimited deposit insurance fund, operated through the central bank, the Savings Deposit Insurance Fund (SDIF, similar to the US’s FDIC), was established to oversee failing banks requiring government intervention. The exchange rate remained fixed after 1994, and manufacturing conglomerates established their own banks as a way to cheaply fund operations. By 1998, the Yilmaz government focused upon fighting inflation, and Treasury and Central Bank remained complacent in supervising private banks. Further, the Turkish government was a large borrower of bank funds, leading to artificially high profits for banks, and unsustainable government debts. Prime Minister Mesut Yilmaz’s government fell in November 1998 amid scandal, and Prime Minister Bullent Ecevit led a caretaker government, beginning in

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79 Financial Times, Turkey’s New PM to Seek IMF Help, January 18, 1999.
80 BRSA 2012, 5.
83 Ibid.
January 1999, until April 1999 elections. From the first day on the job, Ecevit publicly stated two priorities of passing a budget and passing a bank reform law. Within a week, Ecevit publicly tied the passage of a bank law with Turkey’s ability to attract an IMF loan. Following general elections in April 1999, Ecevit was head of the Democratic Left Party (DSP) and in a coalition with the center-right Motherland Party (ANAP) and the right-wing Nationalist Movement Party (MHP). Ecevit continued to throw his political weight behind the objective of a bank law, and, in June 1999, the Turkish bank law passed. It included a transfer of bank supervision jurisdiction away from the Central Bank and Treasury and toward a new, semi-autonomous body, the BRSA. This legislation was the result of Ecevit’s focus upon passing new bank supervision to attract an IMF loan.

Turkey and the IMF signed a standby arrangement in December 1999. Two performance criterion, the most binding type of conditionality included (1) appointment of the Board of the BRSA by March 31, 2000, and (2) full operation of BRSA by August 30, 2000. Thus, as Ecevit entered office, he took actions to attract an IMF loan. Terms of the resulting IMF loan reinforced the establishment of the BRSA through strong conditionality. This could be consistent with Vreeland’s argument that executives use conditionality to lock-in their preferred policies against domestic opposition.

The success of the BRSA, which did become operational on September 1, 2000, was not assured at its outset. Its immediate task was to privatize eight state-owned banks under the supervision of the SDIF. Almost immediately, in November 2000, Turkey endured a bank crisis, followed by a currency crisis in February 2001. However, the BRSA took an active and assertive role in the bank crisis, placing failing banks under its responsibility. Political changes that began in the central bank in February 2001 led to the resignation of the head of the BRSA, Zekeriy Temizel, in March 2001. This was another period of uncertainty, but Temizel was replaced by Engin Akcakoca, who maintained the active role of the BRSA in the manner of his predecessor.
A single-party coalition led by Abdullah Gul replaced the Ecevit government, after landslide elections, on November 19, 2002. Gul was part of a right-leaning party, the Justice and Development Party (AKP). A single-party coalition meant he had fewer constraints upon his actions than if he had additional coalition partners. It was unclear whether Gul would intervene in the independence established by the BRSA between September 2000 and November 2002. Just days after taking office, a Turkish court, the Council of State, suspended BRSA actions to take over an ailing bank, Pamukbank, owned by a rich and powerful conglomerate elite\textsuperscript{91} Essentially, this was a power play by the head of the Pamukbank to throw political weight against the BRSA. Prime Minister Gul could have interfered on behalf of Pamukbank. However, by mid-December, Gul publicly acknowledged his intention to uphold BRSA independence, stating,

In the past, politicians, media, business people, and bank owners were friendly with each other. Because of that, corruption was widespread, financial resources were used in an inefficient way, and the burden is today being carried by the Turkish people. We criticise all those links. If we were to intervene in this case, we would return to the old days\textsuperscript{92}

Subsequently the BRSA has consolidated its professionalism and power as a bank supervisor. As stated in the opening paragraph of this paper, in the aftermath of the 2008 global financial crisis, the BRSA worked side-by-side with the Central Bank to implement regulations to ensure the Turkish economy did not overheat, with the BRSA in charge of regulating (setting rules) and supervising (overseeing) bank loans. All indications are that the BRSA is a quite independent and capable bank supervisor. Turkey has evolved from having ineffective, dysfunctional bank supervisors to a professional group that is largely independent of government interference.

Overall, the BRSA evolved from de jure independence in June 1999, upon passage of bank reform, to de facto independence in September 2000 into a substantively independent and strong bank supervisor through the present day. During the fall 2000 bank crisis, just two months after its establishment, the BRSA asserted its powers to take over failing banks and worked to further privatize state-owned banks. The BRSA continued to actively use its powers throughout 2001 to 2003. It took over banks of some of the most powerful conglomerate families and won court cases

\textsuperscript{91} \textit{Financial Times}, Turkish Court Halts Takeover of Bank, November 23, 2002.
\textsuperscript{92} \textit{Financial Times}, Sector Beset by Confusion, December 10, 2002.
brought against the BRSA.

The Turkish case illustrates one example of a political executive who precipitated Turkey’s transition from bank supervision marked by cronyism to independence. It occurred through the new executive’s proactive priorities, rather than coercive pressures (through the IMF or other states), and rather than competitive diffusion. This establishes a minimum level of plausibility for the posited mechanism and provides details about a certain high-level case of establishing independent bank supervision. It is worthwhile to note that Turkey established bank supervision through formal legislation. This is the most demanding policy lever, while more unilateral methods, such as presidential decrees, are often utilized.

2.5 Conclusion

Common wisdom would assume that the large increase in developing country adoption of independent bank supervision is attributable to coercion from international organizations or powerful states, or competitive diffusion driven by market competition. Despite the large increase, countries had very different experiences and timing if they embraced change. Some countries established independence through formal legislation while others through presidential decree; some adopted early, some late, and some still do not meet the threshold to be considered an independent bank supervisor.

The timing of country adoption of independent bank supervision allows for a test of different mechanisms that underlie country decisions. I find that neither international organization program involvement nor competitor state actions are systematic driving forces behind this trend. Instead, the ongoing interaction between international organizations and countries during both program years and non-program years create international incentives for executives to signal cooperative policies to these organizations. Because the cost of establishing a reputation will be lowest and the benefits will be greatest if established early on, new executives are associated with systematically higher likelihood of adopting independent bank supervision.

Empirically identifying variation in bank supervisory capacity informs developing country compliance with international financial standards. Scholarship posits that a lack of compliance may occur due to the lack of a country’s bureaucratic capacity to implement or due to domestic
interests blocking implementation. Further work to compare bureaucratic capability may enable a direct test of these theories.
Figure 2.4: *Sample Distribution of Executive Change Variable:* Left panel shows the number of observed Executive Changes in the sample by year. Right panel shows the number of countries with a new executive as a percent of all countries in the sample in a given year. It does not seem that the Executive Change result is driven by outliers.
Figure 2.5: Sample Distribution of IMF Programs: The percent of countries in the sample each year with an active IMF program (boxes with an x), an active IMF program with at least one financial sector conditionality (white circles) and an active IMF program with at least one bank supervision conditionality is plotted.
<table>
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<tr>
<th>Variable</th>
<th>Number of Observations</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Number of Instances</th>
<th>Source</th>
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<td>New Executive</td>
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<td>0.39</td>
<td>119</td>
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<td>0</td>
<td>1</td>
<td>0.119</td>
<td>0.32</td>
<td>72</td>
<td>DPI [Keefer, 2010]</td>
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<td>Bank Assets as % GDP</td>
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<td>5.14</td>
<td>173.38</td>
<td>39.26</td>
<td>26.85</td>
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<td>Cihak et al. [2012]</td>
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<td>Bank Assets as % GDP, Change</td>
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<td>-83.98</td>
<td>387.58</td>
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<td>52.92</td>
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<td>62.40</td>
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<td>SOE Credit as % GDP, Change</td>
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Table 2.3: Descriptive Statistics: Descriptive statistics for the largest sample of observations used in estimations.
Table 2.4: Correlation Matrix: Correlation matrix for all variables included in empirical analysis. Sample is 468 observations with no missing information. Correlation matrices for individual regressions are not substantially different from this sample.
Table 2.5: Robustness Checks, Cox Proportional Hazards Model Results: Failure is country adoption of adequate bank supervision capacity. Table presents hazard ratios. Values greater than 1 indicate the variable increases hazard (and increases likelihood of failure at a given time), while values less than 1 indicate the variable decreases hazard (and decreases likelihood of failure at a given time). Brackets contain 95 percent confidence intervals. Estimations are based on robust standard errors, clustered by country, and Efron method of ties. For all estimates, *** indicates significant at 1%; ** significant at 5%; * significant at 10%. 

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<td>2.337**</td>
<td>2.274**</td>
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<td>1.713*</td>
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<td>[0.90, 2.09]</td>
<td>[1.12, 2.41]</td>
<td>[1.04, 2.19]</td>
<td>[1.08, 2.32]</td>
<td>[0.87, 1.85]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.96, 1.06]</td>
<td>[0.96, 1.06]</td>
<td>[1.09, 1.08]</td>
<td>[0.96, 1.07]</td>
<td>[0.95, 1.08]</td>
<td>[0.95, 1.08]</td>
<td></td>
</tr>
<tr>
<td>Economic Crisis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sovereign Debt Crisis$_{t-1}$</td>
<td>0.799</td>
<td>0.690</td>
<td>0.863</td>
<td>0.804</td>
<td>0.649</td>
<td>0.782</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.26, 2.49]</td>
<td>[0.21, 2.29]</td>
<td>[0.25, 3.04]</td>
<td>[0.24, 2.66]</td>
<td>[0.16, 2.66]</td>
<td>[0.23, 2.61]</td>
<td></td>
</tr>
<tr>
<td>Bank Crisis$_{t-1}$</td>
<td>0.914</td>
<td>7.814</td>
<td>0.982</td>
<td>0.877</td>
<td>0.826</td>
<td>0.911</td>
<td></td>
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<tr>
<td></td>
<td>[0.50, 1.66]</td>
<td>[0.27, 223.58]</td>
<td>[0.53, 1.82]</td>
<td>[0.46, 1.68]</td>
<td>[0.42, 1.63]</td>
<td>[0.45, 1.84]</td>
<td></td>
</tr>
<tr>
<td>Bank Crisis$_{t-1}$ x log(year count)</td>
<td>0.378</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.08, 1.887]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currency Crisis$_{t-1}$</td>
<td>0.161*</td>
<td>0.301</td>
<td>0.156*</td>
<td>0.152*</td>
<td>0.176*</td>
<td>0.164*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.02, 1.11]</td>
<td>[0.02, 1.29]</td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
<td>[0.03, 1.12]</td>
<td>[0.02, 1.15]</td>
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<td></td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
<td>[0.02, 1.12]</td>
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</tr>
</tbody>
</table>

| country-year observations | 654         | 635         | 648         | 654         | 593         | 638         | 654         |
| countries in sample       | 62          | 60          | 61          | 62          | 58          | 58          | 62          |
| country failures           | 44          | 42          | 43          | 44          | 40          | 40          | 44          |
| logrank p                  | 0.012       | 0.0080      | 0.016       | 0.013       | 0.034       | 0.057       | 0.011       |
Financial Globalization and Domestic Regulatory Adoption of Basel I

Abstract:

In 1988, twelve countries collectively published a document, Basel I, that lay out coordinated increases in bank regulatory stringency. In the absence of any obligation to do so, many other countries also adopted Basel I’s costly terms. Why? Existing theories argue that countries adopt to prevent a reputation as weakly regulated, yet this is inconsistent with limited public information about adoption status. I consider this explanation alongside alternatives that country adoption reflects bank preferences or the pressure of international organizations. Using original data that codes Basel I adoption for 143 countries over the period 1988 to 2013, I find strong period effects from before and after Basel I was embedded into international best practices in 1997. Prior to 1997, there exists some evidence for the role of market forces and little association between a country’s relationship with the International Monetary Fund (IMF) and adoption. However, for the full range of years, IMF programs are robustly correlated and market forces hold little explanatory power. For an important bank regulation where adoption can be meaningfully compared across countries, the conventional wisdom of what drives diffusion overstates the role of market forces and understates the role of international organizations. This case illustrates how international agreements evolve in unintended ways, and sometimes without a strong hegemonic preference for such an outcome.
3.1 Introduction

Within an anarchic international system, countries must voluntarily opt into cooperative arrangements such that benefits of cooperation – broadly construed – must outweigh costs. While a few powerful countries are able to mold the system’s shape, most countries optimize policy choices taking the shape of the international system as given.\footnote{Gruber 2000; Drezner 2007; and Simmons 2001} To achieve their objectives, powerful countries have options. They can let market forces work to their advantage in some cases, or intervene with bilateral and multilateral penalties or incentives.

For this reason, when countries adopt policies that are priorities of powerful countries, it is not a surprising outcome. For instance, the US-led initiative for worldwide adoption of anti-money laundering (AML) legislation was supported by the establishment of a new multilateral organization (the Financial Action Task Force), compliance monitoring by the International Monetary Fund (IMF), and bilateral pressure on (even rich) countries such as Switzerland. Perhaps unsurprisingly, this arrangement led to near ubiquitous adoption of AML within a decade.\footnote{Drezner 2007; Hsu 2014}

Yet in the area of banking regulations, it is surprising that many countries have adopted terms of a 1988 document, Basel I, which was agreed upon by twelve advanced countries within the Basel Committee on Banking Supervision (BCBS), an organization of regulators. This agreement was not intended for widespread adoption and had weak formal characteristics in that it relied upon decentralized implementation and lacked monitoring and enforcement powers. While there was no obligation for non-BCBS countries to adopt, many countries have adopted since the early 1990s. Widespread adoption is commonly explained as countries seeking to avoid a reputation for weakly regulated banks.\footnote{Tarullo 2008; Simmons 2001; Ho 2002} Existing arguments are not rigorously tested against alternatives, however, and this explanation prioritizes benefits of adoption without addressing costs associated with implementing terms of the accord, which can be substantial for both regulators and regulated banks.

This paper undertakes an observational study of rule adoption utilizing a new dataset of Basel I adoption status for 143 countries over the period 1988 through 2013.\footnote{Adoption, as will be discussed later, means that a country incorporates the terms of Basel I into national banking regulations.} I test whether adoption tim-
ing is correlated with indications that countries seek reputational benefits, that countries express preferences of foreign-headquartered banks, or that countries are pressured through international organizations. Evidence for the role of market forces – either reputation or bank preferences – is limited to the period prior to 1997, the year that Basel I was embedded into international best practices. Driven by the experience of countries in 1997 and after, IMF program years are consistently correlated with adoption when considering the full analysis period of 1988 through 2011.

The findings imply that adoption is widespread because Basel I is embedded into a larger set of standards that are enforced by the IMF. Yet it is not just the IMF’s enforcement power that drives adoption. There is initial evidence that the IMF affects countries’ calculations in both program and non-program years, implying that countries adopt in consideration of a broad relationship between their country and the IMF. This is distinct from the focus within existing literature on the dispersement of programs and conditionality.

Thus, existing explanations overstate the role of market forces to promote diffusion and understate the important role of international organizations. From all indications, incorporating Basel I into international best practices was done through technocratic initiative (consistent with arguments such as Chwieroth and Barnett and Finnemore), rather than as a US political priority.

This paper contributes to understanding of international cooperation in banking, of mechanisms of diffusion, and of the degree to which country policy choices are constrained by ever higher levels of globalizations and financialization.

The paper proceeds as follows. Section 3.2 describes widespread adoption of Basel I, why it represents a puzzle, and introduces alternative explanations. Section 3.3 contains statistical analysis of Basel I adoption timing using a new dataset. I find evidence that market forces were possibly at work prior to 1997 but not after, and that international organization programs were associated with adoption after 1997. Some initial evidence suggests that the role of international organizations may not be constrained to program years only, but also through an ongoing relationship between the international organization and a country. Section 3.4 concludes.

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5There are too few observations to test the post-1997 period independently.
6Chwieroth 2010, Barnett and Finnemore 1999
3.2 Theory

3.2.1 Emergence of “8% risk-weighted assets”

In July 1988, the Basel Committee on Banking Supervision (BCBS) – a group of twelve advanced countries’ bank regulators – announced its members’ commitment to require regulated banks to maintain high capital levels under a new, internationally-harmonized approach toward bank capital regulation. Specific cooperation terms were revealed in a 27-page BCBS document, known as the Basel Capital Accord or Basel I, which set minimum capital adequacy levels at “8% risk-weighted assets” and contained guidelines for how countries would define capital and determine risk-weights. Prior to 1988, there existed wide variation in countries’ regulatory approaches to monitor bank capital such that it was difficult to compare stringency across countries.

When Basel I was published, it was unclear whether and how BCBS and non-BCBS countries would react. While BCBS members previously published documents of agreement regarding principles of banking supervision, it was unprecedented for the group to agree on a specific regulation. Basel I was a public pledge among BCBS member regulators to adopt certain national banking regulations, yet it did not obligate member countries under international law. Non-BCBS countries faced no obligation to adopt and any reaction was even more uncertain.

Basel I set relatively high minimum levels, and BCBS-headquartered banks around the world soon undertook capital issues to increase high quality capital. The agreement did not decrease regulatory stringency in any BCBS country and required other countries (especially Japan) to increase required regulatory minimums upon their banks.

In retrospect, Basel was a shock to the international financial regulatory system because, as

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7BCBS 1988 The accord is formally titled International Convergence of Capital Measurement and Capital Standards and is available at [http://www.bis.org/publ/bcbs04a.pdf](http://www.bis.org/publ/bcbs04a.pdf). It has been twice renegotiated, with “Basel II” finalized in 2004 and “Basel III” finalized in 2010. Basel II and Basel III introduce complexity to the definition of capital and set of risk-weights such that countries would typically implement Basel I before implementing Basel II or Basel III.

8On detailed lack of legalization, see Zaring and Haward. Zaring 1998; Hayward 1990, 787–788. On the role of public agreement to create reputation cost for noncompliance, see Lipson and Simmons. Lipson 1991; Simmons 2000. The BCBS was established in 1973 as an emanation of the Bank for International Settlements (BIS). The twelve original members were representatives of the eleven (sic) G-10 countries (Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, the United Kingdom, the United States) plus Luxembourg. Between 1973 and 1987 the BCBS published numerous “concordats”, which were high-level principles of agreement for how a national bank regulator would regulate its domestic banks that operated abroad, and how national bank regulators would interact with each other in the oversight of internationally active banks. On the BCBS’s history, see Braithwaite and Drahos for historical context and Goodhart for a detailed history of BCBS through 1997. Braithwaite and Drahos 2000; Goodhart 2011.

9The Banker, “No Time for Risks,” January 18, 1993, p.24. Even US firms, such as Citigroup, had to make new capital issues.
Figure 3.1 illustrates, over the next twenty-five years its terms have been widely adopted across countries. As of 2013, 92% of all countries in the world had previously adopted Basel I. Minimum regulatory levels only increased over time and there are no examples of backsliding.

Basel I diffused widely across countries, but adoption timing differed across countries and over time. At least 62 non-BCBS member countries had adopted this regulation as of 1996, the year before it was incorporated into international best practices. Daniel Tarullo explains prevailing wisdom about why non-BCBS members adopted:

The voluntary implementation of an arrangement to which [non-BCBS member] states were not party appears to have been motivated by the expectation that both capital markets and other banks would look less favorably upon banks that did not meet the Basel minimum ratios. Thus... domestic regulatory standards elaborated in a non-legally binding international arrangement among a dozen countries have been adopted by more than 100 countries that did not participate in the formulation of the standards.\(^\text{10}\)

Yet, creating a worldwide standard was not the BCBS’s primary intention when it established Basel I. The agreement’s publicly stated purposes were twofold\(^\text{11}\) First, consistent with public goods provision, it sought to increase bank capitalization in order to increase financial stability. Second, it sought to create a more level playing field across countries. The history of the agreement is well-documented such that this intention was motivated by United States preferences vis-a-vis Japan\(^\text{12}\). While the accord does state that, “this document is being circulated to supervisory authorities worldwide with a view to encouraging the adoption of this framework in countries outside the G-10 in respect of banks conducting significant international business,” this was not subsequently mentioned\(^\text{13}\). Further, a 1991 US Government Accountability Office (GAO) report documenting implementation of the accord does not mention anything about developing country adoption\(^\text{14}\).

If signatory countries were interested in developing country adoption, they could have, at a minimum, created a public list of countries that had adopted (or a list of countries that had not adopted) in order to encourage widespread adoption.

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\(^{10}\) Tarullo 2008, 65–66.

\(^{11}\) BCBS, 1988, 1.


\(^{13}\) Quote from BCBS, 1988, 1.

\(^{14}\) GAO 1991.
Figure 3.1: Worldwide Adoption of Basel I, 1988–2013: Of 143 countries, the percent of countries each year that have adopted Basel I into national regulations. During the period 1988 through 1996, 53% of sample countries had adopted Basel I, and the percent increased sharply following publication of the Basel Core Principles in September 1997.

In September 1997, Basel I was embedded within a BCBS document, called the Basel Core Principles, which lay out a set of twenty-one best practices to guide developing country bank regulators.\footnote{The formal name of the document is Core Principles for Effective Banking Supervision (Basel Core Principles) and may be accessed at \url{http://www.bis.org/publ/bcbsc102.pdf} It was made public in September 1997 and formally was the result of a 1996 G-7 meeting among bank regulators. The document was finalized with the input of at least 16 non-BCBS countries (seven countries are listed as having helped prepare the document (Chile, China, the Czech Republic, Hong Kong, Mexico, Russia and Thailand) and nine countries were “closely associated” (Argentina, Brazil, Hungary, India, Indonesia, Malaysia, Poland, Singapore, and South Korea)). BCBS[1997] 1.} Best practice number six addressed capital adequacy, “[capital adequacy] must not be less than those established in the Basel Capital Accord and its amendments.”\footnote{BCBS[1997] 4.} The IMF began to incorporate Basel I into formal conditionality and into informal recommendations, especially once the Basel Core Principles were incorporated into an even broader set of standards known as the the
Compendium of Standards\textsuperscript{17}

In summary, widespread adoption of Basel I was officially promoted beginning in late 1997. While many countries adopted prior to 1997, country-level lists were never made available and there is reason to believe much formal adoption occurred in 1997 and after.

3.2.2 Explaining regulatory diffusion

Basel I has diffused worldwide, and yet the channel of diffusion is not obvious. Prevailing wisdom is that Basel I spread as the result of “market forces”, where countries adopt in order to maintain an international reputation for a well-regulated banking sector. While this is one possibility, it is not clear cut that this is the driving mechanism. While an individual \textit{bank} may have an incentive to establish a reputation for being well-regulated, it is not obvious why \textit{countries} would adopt the standard at the level of national regulations. The ability of a bank to meet Basel I regulations is not limited by national regulations, nor is the existence of national regulations sufficient for banks to be compliant with Basel I\textsuperscript{18} The leading bank industry publication, \textit{The Banker}, began reporting banks’ capital as of July 1993\textsuperscript{19}

Rather than a clear preference towards adoption of Basel I, I argue that countries face a trade-off. While adoption may confer reputational benefits to a country and its banks, adoption is costly for a country’s regulators and for regulated firms. While some states may adopt for reputational benefits, I find that this explanation is limited to certain countries and is exaggerated as a general cause.

Further, I argue that international organizations played a crucial role to encourage states to adopt Basel I. Beginning in 1997 with the publication of international best practices, international organizations monitored country policies to report capital adequacy policies and incorporated Basel I terms into formal conditionality for countries that had not yet adopted. I argue that international organizations were crucial to promulgate the standard within laggard countries. There is initial evidence that the role of international organizations was not limited to program condition-

\textsuperscript{17}Mosley 2010
\textsuperscript{18}This statement does not imply that noncompliance is widespread. Generally, in countries with professional, independent bank supervision, banks will generally comply with their country’s bank regulations. When bank supervisors observe noncompliance, they are obliged to work with the bank to bring it back into compliance with the country’s rules. In the United States, for instance, Prompt Corrective Actions are bank regulators’ tools for banks that are out of compliance with some regulation.
ality, and that more interactions with international organizations may help diffuse policies, even in non-program years. This is a distinct, yet under-theorized channel of diffusion within international relations.

**Market forces – reputation and competition**

I first explain the logic of reputation (the lead existing explanation) and then the logic of competition (informed by the regulator’s dilemma). Existing studies explain Basel I adoption as the result of market forces that work through international reputation.\(^{20}\) While the explanation is plausible, studies do not directly test reputation against alternative explanations. Further, this interpretation posits benefits of adoption (that is, reputation) without considering associated costs. Competitive concerns across countries are an obvious and significant source of costs. Such costs are the basis for the regulator’s dilemma, the common way to conceptualize the international cooperation problem to set bank regulations.

Simmons asserts, “once the dominant financial center has adopted a clear standard [i.e. the Basel Capital Accord], there is very little incentive [for countries] to reduce standards and risk developing a reputation as ‘poorly regulated.’ ”\(^{21}\) Similarly, Ho summarizes his empirical findings, “Market forces partially explain national decisions to implement the Basle Accord [sic], lending support to the interpretation of international law as a reputational mechanism.”\(^{22}\) While the explanation is plausible, neither study directly tests reputation against alternative explanations. This paper will be the first to do so.

Empirically, if reputation gains are the mechanism of diffusion, then the BCBS should publish lists of those countries that have and have not adopted Basel I standards, but this did not occur. Further, adopting countries should actively promote that they are Basel I compliant. While some countries made adoption known, such as Malaysia whose central bank governor claimed in 1993 to be the first country to fully implement Basel I, and “in terms of supervision ‘we are above the top in the world,’ ” this is unusual rather than typical.\(^{23}\) In sum, the BCBS agreement does not seem to *a priori* lead to non-BCBS countries’ voluntary adoption of high regulations, and it is far

\(^{20}\)Simmons 2001; Ho 2002; Tarullo 2008.
\(^{21}\)Simmons 2001, 62.
\(^{22}\)Ho 2002, 647.
from clear-cut that country reputation gains or country signaling are the primary drivers of Basel I adoption.

Should this mechanism be at work, Basel I adoption should vary to the extent that a country is or is not engaged in international banking. Higher engagement in international banking would lead a country to value reputational gains and to adopt Basel I. This leads to the first of two hypotheses that decompose the role of market forces in countries’ decisions to adopt Basel I.

*Hypothesis 1a, Market forces through reputation:* Higher levels of international banking are associated with higher likelihood of adopting international rules.

The logic of reputation contradicts the “regulator’s dilemma” conception that national bank regulators view higher regulatory stringency to be associated with lower bank competitiveness, and that banks are sensitive to regulatory differences across jurisdictions. National regulators face a tradeoff when they select and require a level of regulatory stringency for banks. Higher levels of regulatory stringency lead to higher financial stability but lower competitiveness of domestic banks.

For the case of Basel I, banks in non-BCBS member countries may prefer to free ride off of BCBS members’ cooperation and specialize in low regulatory banking in order to attract banks and bank business from abroad. Thus, one might reasonably expect non-signatory countries to continue to not adopt regulations in order to advantage their countries’ banks against equivalent foreign banks.

From a competitive standpoint, foreign-headquartered banks, if they are required by their home country regulators to abide by Basel I minimums, would hold a clear preference for host country governments to adopt Basel I. For example, as Vietnam opened its banking sector to foreign-headquartered banks for the first time, Vietnam held “no compulsion to meet [Basel I] capital adequacy ratios [which] puts foreign branches at a distinct disadvantage.”

It is well known that international companies are the most productive and therefore these companies may have the ability to pressure local host governments. This leads to an observable implication based on competitive

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26 Helpman, Melitz and Yeaple 2004, 300, “Only the most productive firms engage in foreign activities... [and] of those firms that serve foreign markets, only the most productive engage in FDI.”
market forces.

**Hypothesis 1b, Market forces through foreign-headquartered banks:** Countries that host foreign banks are more likely to adopt international rules.

### The role of international organizations

Existing accounts of Basel I adoption attribute a minimal role to international organizations, even though international organizations are commonly associated with the promulgation of hegemonic preferences. A number of scholars do emphasize the large role of the International Monetary Fund (IMF) to promote a broader financial standards regime – of which Basel I is embedded – following the Asian Financial Crisis, but scholars do not tie this to widespread adoption of Basel I.

Once Basel I was embedded into the financial codes and standards efforts, this promoted adoption. A detailed account of why the IMF was chosen as the locus for this task is unclear and outside the scope of the paper. However, it is notable that, prior to 1997, countries did not adopt as broadly as one might think, leaving a significant role for the IMF, and other financing international organizations, to play in the adoption of Basel I. Thus, a second hypothesis emerges.

**Hypothesis 2, International organizations:** Countries engaged with international development organizations are more likely to adopt international rules.

The next section presents a test of alternative channels of adoption.

### 3.3 Empirical Analysis

While it is possible to collect data about a country’s regulations across time, there are few opportunities to observe country reactions to focal point policies. Across countries and across time adoption of Basel I offers a unique opportunity to observe how a country’s international orientation and the role of international organizations are associated with a country’s likelihood to adopt a costly bank regulation.

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28Walter 2008; Mosley 2010.  
29Walter argues that outright noncompliance is basic, but this is still something that needs to be measured. Walter 2008.
Country adoption of Basel I – by which I mean the insertion of “8% risk-weighted assets” into national regulations – represents an observable action that countries take in reaction to the creation of Basel I.

This section first introduces new data of 143 countries’ Basel I status for the period 1988 through 2013. I explain how it overcomes limitations of two alternative, existing measures to meaningfully analyze adoption timing. I then use survival analysis to analyze the conditions under which countries are more or less likely to adopt Basel I. My hypotheses include two distinct channels of market forces – general openness to international banking and the existence of foreign-headquartered banks – and the role of international organizations.

The analysis reveals strong period effects. For the early period of adoption – prior to 1997 – there exists some evidence that market forces drive adoption and there is no clear association between IMF programs and adoption. For the full period, however, systematic associations between market forces and Basel I disappear. Further, there is a statistically significant association between IMF program years, and past experience with the IMF, and Basel I adoption.

3.3.1 Coding Basel I status

As discussed above, widespread adoption of Basel I represents countries’ reactions to a 1988 cooperative agreement among twelve countries’ regulators that was incorporated into a set of international best practices in 1997. As of 1988, no country had existing regulations in place written in this way and all countries – including the creators of the accord themselves – had to implement new regulations to be aligned with the accord. While there existed sporadic mentions of widespread country adoption of Basel I, country-level data was not collected nor reported throughout the 1990s.

Basel I is considered adopted if a country requires its banks to maintain “8% [or greater] risk-weighted capital” within its national banking regulations. The new data codes Basel I’s status for each of 143 countries each year between 1988 and 2013 as either not adopted (“-1”), adoption year (“0”), previously adopted (“1”) or unclear (“NA”). Information was coded by the author and

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31 Tarullo and Simmons both quote surveys undertaken by BIS staff about the widespread adoption of countries. See Tarullo 2008, 66; Simmons 2001, 604. It is possible that countries informally adopted but did not adopt formally into national bank regulations.
based mostly upon reported country policies from IMF reports. These reports were prepared as background information for routine IMF missions to individual countries. Information about Basel I adoption was supplemented with data from country websites and regional development banks. Figure 3.3 in the appendix graphs the full distribution of the new data. All 12 BCBS members adopt prior to the 1993 transition deadline, and Table 3.1 lists the adoption years for 106 non-BCBS member countries. An additional 25 countries’ exact adoption year was too ambiguous to code, but are coded for some years as having either not adopted or previously adopted. Even if exact adoption year is missing, for those years that the countries have definitely not adopted yet, they may enter into the dataset.

This paper’s analysis provides annual measures of Basel I adoption over the full period of Basel I’s existence for a large number of countries using a precise definition of adoption. These attributes make this data significantly better than two existing datasets for purposes of analyzing correlates of adoption and diffusion. Table 3.2 compares this paper’s data to that of past measures collected by a team of World Bank-affiliated economists and a team of IMF-affiliated economists. The former study uses self-reported data by each country’s banking regulators to code whether or not a country required its banks to abide by Basel I minimums as of specific years (2000, 2003, 2007, 2011). The latter measure codes Basel I adoption through IMF reports and other publicly available sources for the period between 1970 and 2005. Both measures capture Basel I status for a large number of countries. The major limitation to World Bank data for analysis purposes is the lack of change year identification. In the first World Bank survey in 2000, only ten of 101 country respondents report not requiring their banks to abide by Basel I minimums as of specific years.

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32 Common IMF document titles include “Selected Issues”, “Recent Economic Developments” and “Article IV Consultation Staff Report”. Countries that are the subjects of these IMF reports must agree for them to be made publicly available. Other IMF reports prepared in conjunction with IMF country programs – such as Letters of Intent or Executive Board Reviews – were less commonly useful as a source of Basel I adoption status. Other sources listed were used if available.

33 Respectively, Barth, Caprio and Levine 2006 and Abiad, Detragiache and Tressel 2008.

34 The new data uses this same approach as the IMF data but narrows the definition of Basel I adoption. The author is grateful to Abdul Abiad for generously sharing his team’s coding notes.

35 Further, bank regulators that answer the World Bank survey may have incentives to report that they meet an international standard even if not completely implemented. However, this concern is secondary.

36 Ho reports 10 countries – Bahrain, Bhutan, Burundi, Cambodia, Ghana, Kenya, Lesotho, the Philippines, Rwanda, and St. Kitts – although there are even fewer “noncomplying” countries listed in the publicly available Barth et al data, accessible at http://econ.worldbank.org/ Ho 2002.
Table 3.1: Year of Non-BCBS Member Basel I Adoption: For 106 non-BCBS members, the year of adoption of Basel I terms into national bank regulations is listed above. 25 non-BCBS member countries had adoption patterns that were too ambiguous to attribute to one year. Because OECD government debt was treated favorably under Basel I, I identify OECD member countries as of Basel I creation in 1988 with one star (*), and countries that joined the OECD later with two stars (**). For countries that join the OECD after 1988, most countries adopt Basel I prior to becoming an OECD member (Mexico joins the OECD in 1994, Czech Republic joins the OECD in 1995, Hungary, Poland, and South Korea join the OECD in 1996; Estonia and Chile join the OECD in 2010.
Table 3.2: **Alternative codings of Basel I status**: Among three measures of Basel I adoption, the new data (Wilf (2014)) captures adoption year for a larger set of countries for broader year coverage since Basel I establishment in 1988.

late (after 1997) under IMF pressure may be quite different than those that adopt early because of domestic country preferences. Parsing out these effects helps to clarify mechanisms of diffusion.\(^{37}\)

While the IMF data does use annual observations, their coding of Basel I adoption introduces noise because it is sometimes coded as the adoption of the regulation but other times is coded as the first year of observed compliance.\(^{38}\) While the former is consistent with the new data, the latter is not. The new data thus minimizes noise in the coding of Basel I adoption, and expands the available country and year sample.\(^{39}\)

### 3.3.2 Dependent Variable: Time to adopt regulation

The dependent variable is the number of years between publication of Basel I in 1988 and the year that a country adopts the terms of Basel I into its national bank regulations. As will be discussed below, in each year the data includes all countries for which it is clear that Basel I is not in place. The left graph of Figure 3.2 shows the number of observations per year (that is, the number of countries that do not have Basel I in place and the number of countries that adopt in a given year).

One can see that many countries adopt both prior to, and after, the publication of the Basel Core

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\(^{38}\)The Abiad et al team does this because it collects data for a different analytical purpose where Basel I adoption is one of multiple inputs into an index measure of the rigor of country banking supervision each year.

\(^{39}\)In addition to expanded year and country coverage, the new data considered the Abiad et al coding notes and re-codes those countries’ adoption years for which the new adoption does not meet the definition of the new data.
Principles. I next discuss how I test the role of market forces and international organizations.

3.3.3 Explanatory variables: market forces and international organizations

As laid out in Section 3.2.2, I test for evidence that countries seek reputations for highly regulated banking sectors (H1a), that countries face pressures from foreign banks to adopt (H1b), and that countries with closer interactions with international organizations face pressures to adopt (H2). Below I lay out my operationalization of each mechanism.

Countries that engage in high levels of international banking and that are most exposed to foreign capital should be most likely to seek reputations for highly regulated banking sectors. First, I identify countries that both host foreign-headquartered banks and that send banks abroad. These are the countries that engage in high levels of international banking.

I use bank level data from Claessens and Van Horen that identify the nationality of bank ownership for 5324 commercial banks headquartered within 137 host countries. I create an indicator variable, International Banking, that equals 1 when, as of 1987, the year prior to the establishment of the Basel Capital Accord, a country meets this criterion. As of 1987, 44 countries in the dataset both hosted foreign-owned banks and had banks abroad that were owned by their countries’ nationals.

Second, I measure the degree of a country’s indebtedness to international investors. External debt – the sum of sovereign debt and private debt owned by foreigners – is a measure of the degree to which a country relies upon international financing. Higher levels of external debt as a percent of GDP (External Debt) in a given year captures flows of investment to both a country’s government and to the real economy. Higher levels should be associated with greater importance.

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40Claessens and Van Horen 2014. While bank ownership data is coded annually from 1995 through 2009, the start year for many banks is available such that I can identify many banks that were in operation as of 1987, the year prior to the establishment of Basel I.

41A smaller set of 24 countries as of 1987 owned at least one foreign-owned bank from OECD owners and had nationals that owned at least one bank abroad in an OECD country. This group would include countries with the highest likelihood of adoption and I would expect this measure to be associated with fast adoption. However, results do not change when using this alternative measure.

42This variable is common in studies of IMF financing, including Copelovitch, Pop-Eleches, and Stone. Copelovitch 2010, Pop-Eleches 2009, and Stone 2011.
Figure 3.2: Sample distributions: At risk (left) and adoption distribution (right): These graphs include all 143 countries in the Basel I status dataset. Year of adoption is available for 118 of 143. In each graph, the dashed lines indicate Basel I publication (in 1988) and when Basel I becomes embedded into Basel Core Principles (in September 1997). The left graph plots the number of countries that have not yet adopted Basel I (in grey) and the number of countries that adopt Basel I (in black) in a given year. The right graph plots the number of countries that adopt in a given year, separating out adoption by BCBS member countries (in red) and non-BCBS member countries countries (in black). Many non-signatory countries adopt Basel I both prior to, and after, 1997.
of international financial reputation to a country. To test the role of foreign banks, I again use data from Claessens and Van Horen and identify those countries that host foreign banks. Foreign Bank Host Country is an indicator variable for countries that, as of 1987, had at least one foreign-owned bank operating within its jurisdiction. In 1987, 91 countries in the dataset hosted at least one foreign-owned bank.

To operationalize the relationship between a country and international development organizations, I use two measures of a country’s ties to the International Monetary Fund (IMF). First, I create an indicator variable for country-years under an IMF program (IMF program). As an initial proxy for my argument that international organizations’ ongoing relationships with countries – both inside and outside of active program years – may support adoption, I identify a broader measure of country history in the IMF in non-crisis years. While IMF crisis financing programs are most well known, a number of countries are eligible for concessional, development loans through the IMF. The specific measure is a count of the number of years in the past decade that a country has been under a PRGF program (PRGF year count). This measure captures those countries that have ongoing relationships with the IMF, which may be associated with higher likelihood of general adoption.

3.3.4 Controls for demand of regulation

The regression models control for a number of other factors that might accelerate or slow a country’s adoption of Basel I. An established association exists between wealthier countries and higher demand for property rights, and between countries with a history of English Common Law origins.

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43 Data is from the World Bank’s World Development Indicators and is the sum of Private non-guaranteed debt (foreign financing to toward the private sector) and public guaranteed debt (foreign financing to a government) as a percent of GDP. Results are robust to using an alternative measure of gross imports and exports of insurance and financial services (either logged values or as a percent of GDP). I choose external debt as a more direct measure of a country’s interest in international reputation.

44 Claessens and Van Horen 2014.

45 Results do not change when using an alternative measure of foreign-owned banks only in OECD countries, which is a smaller set of 74 countries.

46 Data is from Dreher, and the indicator variable equals 1 for those country-years in which a country is under an active IMF program for five or more months in a given year. Dreher 2006.

47 For explanation of differences between concessional programs and non-concessional, crisis programs, see Copelovitch. Copelovitch 2010, 68–69.

48 Data is from Dreher, and is coded as the number of PRGF program years within the past decade, lagged by one year. PRGF is a recent designation and were often the ESAF programs. There is a significant left skew in the data, yet results are robust to using either count or the natural log of count data. Results do not change when using an alternative measures of PRGF program year count within past 5- or 7-years. Dreher 2006.
and higher demand for formal institutions. Thus, in all specifications I control for country wealth, operationalized as GDP per capita (GDP per capita), and an indicator variable for countries with a Common Law legal system (Common Law legal origin). The size of a country’s economy (GDP) is likely to be associated with adoption time insofar as larger economies are more attractive locations for foreign retail banking, and may face more pressure to take preventive measures against financial crises. I also control for countries that are BCBS member countries (BCBS member) and OECD member countries (OECD member country) as of 1988. Both measures should be associated with faster adoption of Basel I, as BCBS countries have the highest level of obligation to implement the accord and OECD countries’ government loans are treated favorably under Basel I rules. Further, I control for capital openness (Capital openness), the degree of capital controls and general openness to financial inflows and outflows. The variable’s association with Basel I adoption is unclear. Capital openness is associated with globalization, but globalization can bring pressures from foreign-headquartered banks to adopt or from domestic banks to protect.

In some specifications, I add additional control variables mentioned in association with adoption, including the percent of regional adoption, level of democracy, degree of political constraints, and years of systematic bank crisis. Percent regional adoption is the percent of countries on each continent, according to World Bank classifications, that have adopted Basel I in a given year (Continental adoption). Higher levels are associated with higher likelihood of joining through competitive pressures. Ho found a strong association between higher levels of democracy and Basel I adoption, but other scholars argue that autocrats may be associated with higher financial stability

50 GDP per capita data is from World Bank World Development Indicators. The values enter into the model as a natural log so that the data distribution is approximately normal, and lagged by one year to minimize possibility of reverse causality. Common Law legal origins is coded at the country level and is based upon coding from La Porta, Lopez-de-Silanes, and Shleifer. La Porta, Lopez-de-Silanes, and Shleifer 2008.
51 Data are from the World Bank World Development Indicators in constant 2000 US dollars. Values are expressed as a natural log to approximate a normal distribution and lagged by one year to minimize risk of reverse causality. While this is a basic proxy, both Cohen and Woll both establish that the pattern of bank concentration, banks’ interactions with governments, and the flow of credit and debt affects the degree of moral hazard that banks and countries face. Cohen 1986; Woll 2014.
52 Claessens, Underhill and Zhang 2008. Basel I signatories identified from BCBS, and OECD countries from the OECD website http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm. All BCBS countries are OECD members. OECD expansion began in 1994 with Mexico. All new OECD members – with the exception of Portugal – adopt Basel I prior to joining the OECD.
53 The measure is the Chinn and Ito openness index which varies from $-1.86$ (low levels of capital openness and many capital controls) to $+2.14$ (high levels of capital openness and few capital controls). Chinn and Ito 2006.
54 Results do not change when using an alternative measure of percent adoption at the regional level.
55 Simmons 2000.
Thus, I control for level of democracy (Democracy level). \(^{57}\) Controlling for political constraints considers variation across countries in the difficulty of policy change due to veto players. \(^{58}\) Gilardi argues that higher levels of veto players is associated with lower likelihood of delegation but high policy stability. \(^{59}\) Finally, I control for country-years with systematic bank crises, as defined by Laeven and Valencia. \(^{60}\) Gandrud and Kleibl each find an association between the establishment of new financial supervision arrangements in the aftermath of crisis, yet, theoretically, bank crises could be associated with windows of opportunity for policy change, or they could be associated with addressing crises such that longer term policy changes are unlikely in the immediate period of a crisis. \(^{61}\) The next section presents model specifications and then results.

### 3.3.5 Model Specifications

Survival analysis is an appropriate tool to model the relationship between country covariates and the timing of country Basel I adoption. Adoption occurs once per country and backsliding, in practice, does not occur. I use a cox proportional hazards model which models time to adoption as a function of time-specific, baseline hazard. All country-year observations begin in 1988, and countries remain in the dataset until they adopt Basel I. That year is coded as country adoption and the country then leaves the dataset.

### 3.3.6 Results

Table 3.3 presents the main analysis findings. Reported point estimates are hazard ratios (the exponential value of the coefficient) such that values greater than 1.0 indicate faster time to adopt and point estimates less than 1.0 indicate longer time to adopt. Model 1 maximizes sample size, capturing the experience of 120 countries with 112 failures in the dataset. Countries with common law legal systems, OECD member countries, and large economies are all associated with...
faster adoption. BCBS members and wealthy countries are not systematically faster or slower to join. Model 2 includes an additional control for capital openness and considers only the period through 1996. Higher levels of capital openness are associated with faster time to adopt, and this is highly correlated with OECD member countries such that the OECD member control variable loses significance. This makes sense since OECD members have a Code of Liberalization where they pledge to maintain open capital accounts, which would be associated with consistently high levels of capital openness.\textsuperscript{62}

For the period between 1988 and 1996, Model 3 and Model 4 establish some limited evidence in favor of market forces and no evidence of IMF program associations.\textsuperscript{63} Model 3 shows that countries with high levels of external debt as a percent of GDP – those with high foreign debt financing – are associated with faster time to join for a sample of 72 countries. This is some evidence in support of the market forces, as these countries should be highly vulnerable to international creditors. IMF program years are not systematically associated with joining. In Model 4, I use the alternative measure of international orientation and whether a country hosts foreign banks. Neither measure is systematically associated with time to join.\textsuperscript{64} Again, IMF programs have no systematic association with time to adopt for the period through 1996. Countries that host foreign banks have no systematic association with adoption of Basel I.

Models 5 through 7 consider the full period between 1988 and 2013, and reveal different dynamics, with consistent associations between IMF programs and adoption, and little evidence of market forces.\textsuperscript{65} Model 5 shows no systematic association between external debt and time to adopt for the full set of country-years. IMF program years continue to be systematically associated with adoption. By comparing Model 3 to Model 5, it is clear that the IMF program year association is driven by the period after 1997. That is, IMF program years were systematically associated with adoption for countries that had not adopted as of 1997. Model 6 uses the bank data to consider

\textsuperscript{62}Abdelal 2007.

\textsuperscript{63}In additional checks not presented in the paper, all results are generally the same when including 1997 in the models.

\textsuperscript{64}However, in additional results not presented in the table, there is some evidence that countries with high international banking – those that both host foreign banks and that send banks abroad – is associated with faster time to apply for the subset of countries that are neither BCBS nor OECD countries.

\textsuperscript{65}Ideally I would run separate analyses for the period before 1996 and 1997 and after. However, the small sample size for the period 1997 and after does not allow the model to converge and I therefore consider the full sample period.
### Table 3.3: Cox Proportional Hazards Estimates, Time to Adopt Basel I: Failure is country adoption of Basel I terms into national bank regulations.

Table presents hazard ratios. Values greater than 1 indicate the variable increases hazard (and increases likelihood of adoption at a given time), while values less than 1 indicate the variable decreases hazard (and decreases likelihood of adoption at a given time). Brackets contain 95 percent confidence intervals. Estimations are based on robust standard errors, clustered by country, and Efron method of ties. For all estimates, *** indicates significant at 1%; ** significant at 5%; * significant at 10%.

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>sample period</td>
<td>all years</td>
<td>pre-1997</td>
<td>pre-1997</td>
<td>all years</td>
<td>all years</td>
<td>all years</td>
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<tr>
<td>H1a: International orientation</td>
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<td></td>
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</tr>
<tr>
<td>External debt (% GDP)</td>
<td>1.0026*</td>
<td>1.0004</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>[1.00, 1.01]</td>
<td>[1.00, 1.00]</td>
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<tr>
<td>International banking</td>
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<td>1.3915</td>
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<td></td>
<td>[0.81, 3.42]</td>
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<td>[0.80, 2.61]</td>
<td>[0.78, 2.49]</td>
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<td>H1b: Domestic competition</td>
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<tr>
<td>Foreign bank host country</td>
<td>1.0942</td>
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<td>0.9559</td>
<td>0.9286</td>
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<tr>
<td></td>
<td>[0.51, 2.34]</td>
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<td>[0.53, 1.73]</td>
<td>[0.50, 1.71]</td>
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<td>IMF program year</td>
<td>1.0244</td>
<td>1.3101</td>
<td>1.9478 **</td>
<td>1.9164 **</td>
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<td>[0.50, 2.11]</td>
<td>[0.66, 2.59]</td>
<td>[1.10, 3.44]</td>
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<td>PRGF year count</td>
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<td></td>
<td>1.1475 **</td>
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<td></td>
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<td>[1.05, 1.26]</td>
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<tr>
<td>Capital openness (index)</td>
<td>1.2290*</td>
<td>1.1693</td>
<td>1.2194*</td>
<td>1.1909</td>
<td>1.2471 ***</td>
<td>1.2594 ***</td>
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<tr>
<td>Common Law legal origin</td>
<td>1.6335 **</td>
<td>2.0790 **</td>
<td>2.1492 **</td>
<td>2.3176 ***</td>
<td>1.5105</td>
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<td>1.5347*</td>
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<td>BCBS member</td>
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<td>0.7317</td>
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<td>1.2985</td>
<td>1.5762</td>
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<tr>
<td>OECD member country</td>
<td>2.8948 *</td>
<td>2.0455</td>
<td>2.1482**</td>
<td>3.1019 **</td>
<td>2.0365</td>
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</tr>
<tr>
<td>Ln(GDP)</td>
<td>1.3869 **</td>
<td>1.5167 **</td>
<td>1.6377 **</td>
<td>1.4948 **</td>
<td>1.5111 ***</td>
<td>1.4473 **</td>
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<td></td>
<td></td>
<td></td>
<td>1.4568 **</td>
</tr>
<tr>
<td>Ln(GDP per capita)</td>
<td>1.0971</td>
<td>1.1089</td>
<td>1.6096 **</td>
<td>1.1923</td>
<td>1.2112</td>
<td>1.1806</td>
</tr>
<tr>
<td>Continental adoption (%)</td>
<td></td>
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<td>Democracy level</td>
<td>0.9543</td>
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<tr>
<td>Political constraints</td>
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<td>Systematic bank crisis</td>
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<tr>
<td>country-year observations</td>
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<td>678</td>
<td>526</td>
<td>678</td>
<td>686</td>
<td>765</td>
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<tr>
<td>countries in sample</td>
<td>120</td>
<td>104</td>
<td>72</td>
<td>104</td>
<td>75</td>
<td>101</td>
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<tr>
<td>country failures</td>
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<td>60</td>
<td>34</td>
<td>60</td>
<td>69</td>
<td>94</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1991-2010</td>
</tr>
</tbody>
</table>
Variables that proxy for market forces are not associated with adoption, while IMF program years are again systematically associated with adoption. In Model 7, I introduce an alternative to the IMF program year measure, which is the count of PRGF years in the past decade in which a country has been under a PRGF (i.e. IMF development) program. This variable captures the degree of ongoing relationships between the IMF and broader influence of the IMF on that country. More years under PRGF programs is systematically associated with faster time to adopt.

Thus, overall, three findings emerge. First, there are strong period effects that reflect the timing of Basel I adoption into international best practices in September 1997. Second, prior to 1997, there is some (limited) evidence that higher levels of international orientation – associated with market forces through reputation – is associated with faster adoption. There is no evidence that countries that host foreign banks are associated with faster adoption, and no association between IMF programs and adoption during the early adoption years. Finally, considering the full period, there is little overall association between market forces and adoption, but there is a persistent statistical association between IMF program years, and IMF development programs and faster adoption. The IMF association is more consistent than the role of market forces. Overall, then, I find some limited support for reputation but more consistent associations between international organizations and adoption.

### 3.4 Conclusion

This paper has examined the puzzling, nearly worldwide adoption of Basel I, which increased regulatory stringency for an important banking regulation. The study is unique in its ability to compare adoption, across countries and across time, countries’ reactions to a costly focal point policy. In contrast to prevailing wisdom, I find that countries do not seem to adopt as a function of market forces but rather through association with international organizations. Further, international organizations may affect country policies even in non-program years.

Consistent with Chapter 2, I again find that the IMF promotes standards and upgrading of financial sector regulation. The IMF surely has interests in countries avoiding bank crises, and it

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66 Model 6 sign and significance results are identical when excluding additional controls.
is true to this preference even in the absence of formal IMF institutional mandate and absent of pressure from hegemons such as the United States or other powerful states.

While Basel I adoption in name may not guarantee compliance, Basel I represents a basic regulation upon which banks’ progress in developing bank supervisory institutions can be measured. While economic studies have found little association between higher levels of capital and less likelihood of crisis, it is nonetheless important to be able to regulate banks.

In addition to Stone’s argument that powerful states may strategically violate international organizations’ norms, international organizations may, themselves, be used as promulgators of norm cascades. The nature of why countries seek to cooperate with the IMF, even in the absence of programs, is a fascinating open area for research. The IMF does not only reply to crisis, but it also offers development programs, some of which are coordinated with the World Bank and other development banks. Future work will focus upon establishing this association more firmly and then diving into the micro-foundations of these relationships.

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67 On compliance in name but not in practice, see Walter. Walter 2008.
68 Stone 2011; Finnemore and Sikkink 1998.
Figure 3.3: Basel I Data: This graph shows the frequency of annual Basel I status for 143 countries as coded by the author using IMF reports and central bank information. Each year, a country either has Basel I as part of its national regulations (red), does not have Basel I as part of its national regulations (grey), adopts Basel I into national regulations in a given year (black), or it is unclear (white). SOURCE: Coded by author based on IMF reports, country central banks.
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