Market Forces or International Institutions? The Under-Emphasized Role of IFIs in Domestic Bank Regulatory Adoption

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Abstract

The 1988 Basel Capital Accord coordinated an increase in twelve signatory countries' bank regulatory stringency. By 2001, in the absence of legal obligation to do so, more than 100 non-signatories also adopted the accord's terms. Why? While existing explanations argue that countries adopted to prevent a reputation as weakly regulated, this is inconsistent with limited public information about adoption status. I argue instead that international organizations played a systematic role in broad adoption. Using an original dataset that codes Basel I status for 167 countries over the period 1988 to 2015, I analyze those factors that correlate with country adoption of Basel I. I find that International Monetary Fund (IMF) programs are robustly correlated and market forces hold little explanatory power. Further, IMF program effects are strongest immediately following 1997, the year that Basel I was embedded in new international best practices that entailed public reporting by the IMF. For an important bank regulation where adoption can be meaningfully compared across countries, this paper shows that the conventional understanding overstates the role of market forces and understates the role of international organizations. Further, this case illustrates how, even without a strong hegemonic preference for worldwide adoption, international agreements may evolve in unintended ways.

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Under what conditions do states adopt international rules and regulations? Existing work argues that *market forces* are often a key driver of national policy adoption. Governments may seek to *build a reputation* with international investors to ensure continuous portfolio flows and to attract future capital from abroad. States accrue material benefits from favorable reputations; through adoption and compliance with international commitments, governments, therefore, send positive signals to the global community (Lipson, 1991; Simmons, 2000). Alternatively, where international agreements exist to level the playing field (Oatley and Nabors, 1998; Kaczmarek and Newman, 2011), multinational enterprises (MNEs) may *directly* implore home and host country governments to adopt and comply with international rules. As international markets expand, MNEs accumulate capital and operate in more locations abroad; simultaneously, MNEs have a greater interest in home and host country policies – which may include international rule adoption – and a greater ability to articulate those interests. Reputation building mechanisms and direct MNE pressure are both types of market forces but posit very different channels of policy adoption, including distinct actors that drive the process.

To what degree do market forces shape state behavior? This paper clarifies alternative logics to explain national adoption of an important international banking rule, the Basel Capital Accord. It distinguishes among multiple types of market logics (Mosley, 2003, 25; Mosley and Singer, 2008) and emphasizes the important role of international institutional arrangements – in particular, how the agreement became embedded into institutional processes of the encompassing International Monetary Fund (IMF) in the second half of the 1990s. Distinct from market forces and under-emphasized in existing explanations, the deeper institutionalization created the a systemic context within which states make decisions (Oatley, 2011).

The Basel Capital Accord is a 1988 international agreement among a small group of advanced

economy governments within a financial regulatory network, the Basel Committee on Banking Supervision (BCBS). Many non-BCBS countries subsequently adopted the core terms of the agreement into national banking regulations. What is interesting is the very widespread adoption (more than 140 countries as of 2004) in the absence of any legal treaty obligation.

Widespread adoption is commonly explained as countries seeking to avoid a reputation for weakly regulated banks (Tarullo, 2008; Simmons, 2001; Ho, 2002). These arguments address the benefits of reputation without addressing the costs of adoption, which may be significant. Once one considers the costs of regulatory adoption, it becomes clear that – separate from reputation mechanisms – *owners* of internationally active banks have direct economic interest in the details of home and host country bank regulations. The interests of different special interest groups – foreign-headquartered banks' ("foreign banks") interest in host country policies, domestic-headquartered banks' ("domestic banks") interest in home country policies, and the interest of domestic-headquartered banks that operate abroad ("internationally active banks") in home country policies – are derived from cross-jurisdictional (i.e. home- and host-county) bank regulatory differences.[1]

Finally, both variations of market force explanations – reputation and economic special interests – leave little room for the role of international organizations. It is well documented that the late 1990s Asian Financial Crisis led to reconsideration of the international financial architecture (Eichengreen, 1999) and the emergence of financial standards and codes aimed at affecting developing country financial practices (Walter, 2008, ch.1). Further, a rich literature emphasizes the important role of the IMF to explain patterns of country *compliance* with standards and codes (Walter, 2008; Mosley, 2010), such that it would be surprising if there was little role for the IMF only

[1] I use the above conventions to emphasize bank-government logics. Though, note that, if Bank 1 were a foreign bank headquartered in country A and operating in abroad country B, and if Bank 2 were an internationally active bank headquartered in country B and operating abroad in country A, then Bank 1 would be viewed as an "internationally active" bank by its home country A (headquartered in A and operating abroad in B) and Bank 2 would be viewed as a "foreign bank" by the citizens of country A (headquartered abroad in country B and operating abroad in A).

after, and not prior to, adoption.

This paper argues that Basel I's ever greater embeddedness into international institutions helps explain widespread Basel I rule adoption. In September 1997, Basel I was included as a best practice for developing country bank supervision within the Basel Core Principles (BCP) document, written and released by the BCBS; the BCP was subsequently incorporated into the 1999 Compendium of Standards, which entailed IMF reporting of member country practices. Thus, though countries did not have treaty obligations to adopt, there were ever more reminders of best practice, and this process influenced countries to adopt that may otherwise have not been persuaded through market force – reputation or international bank ownership – logics. Furthermore, the IMF's annual, bilateral surveillance is an important source of ongoing discussions with each member country. During surveillance meetings, both the Fund and the member country can share policy expectations and priorities.

Utilizing an original dataset of Basel I adoption status for 167 countries over the period 1988 through 2015, this paper statistically analyzes correlates of national rule adoption.[2] I test whether adoption timing most indicates that countries seek reputational benefits, that countries express preferences of foreign-, domestic- or internationally active- banks, or that countries are pressured through international organizations. Evidence for the role of market forces – either reputation or bank preferences – is limited to direct banking interests. Countries with internationally active banks (banks that operate abroad) are likely to adopt more quickly. While IMF program years are correlated with higher likelihood of adoption for the full sample, I find that there is an especially large IMF effect for late joiners – those who had not yet adopted by 1997 and beyond; this is consistent with the timing of Basel I became more institutionally embedded into international agreements.

[2] Adoption, as will be discussed later, means that a country incorporates the terms of Basel I into national banking regulations.

Findings imply that adoption is especially widespread because Basel I is embedded into a larger set of standards that are partially monitored by the IMF reporting. Existing explanations overstate the role of market forces to promote diffusion and understate the important role of international organizations. 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 globalization and financialization. It complements existing literature that examines second-image reversed perspectives of the international financial system, of which existing work examines how country policy adoption sometimes occurs in response to international pressures (Bach and Newman, 2010; Kaczmarek and Newman, 2011) and how external changes in the international environment create opportunities for countries to select beneficial national policies (for example, Lavelle (2001) and Posner (2009)).

The paper proceeds as follows. Section 1 describes widespread adoption of Basel I, why it represents a puzzle, and introduces alternative explanations and hypotheses. Section 2 contains statistical analysis of Basel I adoption timing using a new dataset. I find strong evidence that international organization programs were associated with adoption and that market forces are limited to internationally active banks. Section 3 concludes.

1 The Basel Accord, and Logics of Adoption

Though finance has become ever more international, regulation of international financial flows remains regulated at the national level and with a moderate amount of international coordination. Pertinent details about the Basel Capital Accord are introduced before discussing the market force logics – including reputation and special interest versions – and institutional logic that may lead

states to adopt.

1.1 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 implement an internationally-harmonized approach to bank regulatory capital.[3] The 27-page Basel Capital Accord (or, Basel I) set minimum capital adequacy levels at "8% risk-weighted assets" and contained guidelines to define capital and to determine risk-weights.[4] 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.[5] Implementation was decentralized, and each country's implementation was completed when the terms of Basel I (or more stringent terms) were codified into the country's official, national financial regulations. Once a national banking regulation, regulated banks headquartered in that country would be obligated to comply with the terms. Bank-level compliance would be monitored on an ongoing basis through the regular process of bank supervision between bank supervisors and each regulated bank.

Prior to 1988, there existed wide variation in countries' regulatory approaches to monitor bank

[3] BCBS membership in 1988 comprised the G10 states (Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, the United Kingdom, the United States) and Luxembourg. Spain joined BCBS membership in 2001, and further membership expansions occurred in 2009 following the global financial crisis and G20 response.

[4] Basel Committee on Banking Supervision (BCBS) (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`. 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.

[5] On detailed lack of legalization, see Zaring (1998) and Hayward (1990, 787–788). The BCBS was established in 1973 as an emanation of the Bank for International Settlements (BIS). The twelve original members were representatives of the G10 countries plus Luxembourg (see footnote 3). Between 1973 and 1987 the BCBS published numerous "concordats", which were agreed-upon principles that national bank regulators were responsible to regulate its domestic banks that operated abroad, and the manner in which national bank regulators would interact with each other in the oversight of internationally active banks. On the BCBS's history, see Braithwaite and Drahos (2000) for historical context and Goodhart (2011) for a detailed history of BCBS through 1997.

capital such that it was difficult to compare stringency across countries. Though differences across countries would still exist even once the Basel Accord was implemented, it greatly narrowed differences and created a unified approach. Basel I represented an increase in regulatory stringency, and BCBS-headquartered banks around the world soon undertook capital issues to increase high quality capital.[6]

By the early- to mid-1990s, it was clear that the Basel Accord would be a mainstay agreement for BCBS member countries. BCBS countries successfully implemented the agreement on time by the end of 1992, including the European Commission implementing Capital Adequacy Directives for all its member countries. In January 1995, the BCBS published the Market Risk Amendment that increased the usefulness of the agreement by adding additional risk categories into capital calculations.

The Basel Accord's publicly stated purposes were to increase bank capitalization in order to increase financial stability, and to do so while simultaneously leveling the playing field among BCBS countries (Basel Committee on Banking Supervision (BCBS), 1988, 1). While the Accord does state, "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" (Basel Committee on Banking Supervision (BCBS), 1988, 1), this was not often subsequently addressed.[7] Historical accounts consistently note that widespread adoption by non-BCBS member countries was not a primary nor secondary intention of the original 1988 agreement (Goodhart, 2011, ch.6).

In September 1997, Basel I was one of the best practices included within a BCBS document

[6] *The Banker*, "No Time for Risks," January 18, 1993, p.24. Even US firms, such as Citigroup, had to make new capital issues.

[7] For example, any mention of non-BCBS adoption or actions is completely absent from US implementation reports such GAO, 1991).

called the Basel Core Principles (BCP) that lay out a set of twenty-one best practices to guide developing country bank regulators.[8] Best practice number six addressed capital adequacy, "[capital adequacy] must not be less than those established in the Basel Capital Accord and its amendments" (Basel Committee on Banking Supervision (BCBS), 1997, 4). The IMF began to incorporate Basel I into formal conditionality and into informal recommendations. In 1999, the Basel Core Principles were incorporated into an even broader set of standards known as the Compendium of Standards (Mosley, 2010). Official reporting, including Financial Sector Assessment Program (FSAP), Financial System Stability Assessment (FSSA), and Reports on the Observance of Standards and Codes (ROSCs) were overseen by the IMF.

In summary, widespread adoption of Basel I was officially promoted to developing countries beginning in late 1997. Figure 1 illustrates Basel I's terms have been widely adopted across countries, though 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, and, by 2015, that number more than doubled such that at least 82% of all countries in the world had adopted Basel I.

1.2 Logics of adoption

Prevailing wisdom is that countries adopted Basel I as the result of "market forces", where adoption maintains or boosts a country's international reputation for having a well-regulated banking sector. While plausible, market forces may also arise from special interests within international banking.

[8] The formal name of the document is *Core Principles for Effective Banking Supervision (Basel Core Principles)* and may be accessed at `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 itself identifies 16 non-BCBS countries that provided input (seven that 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.

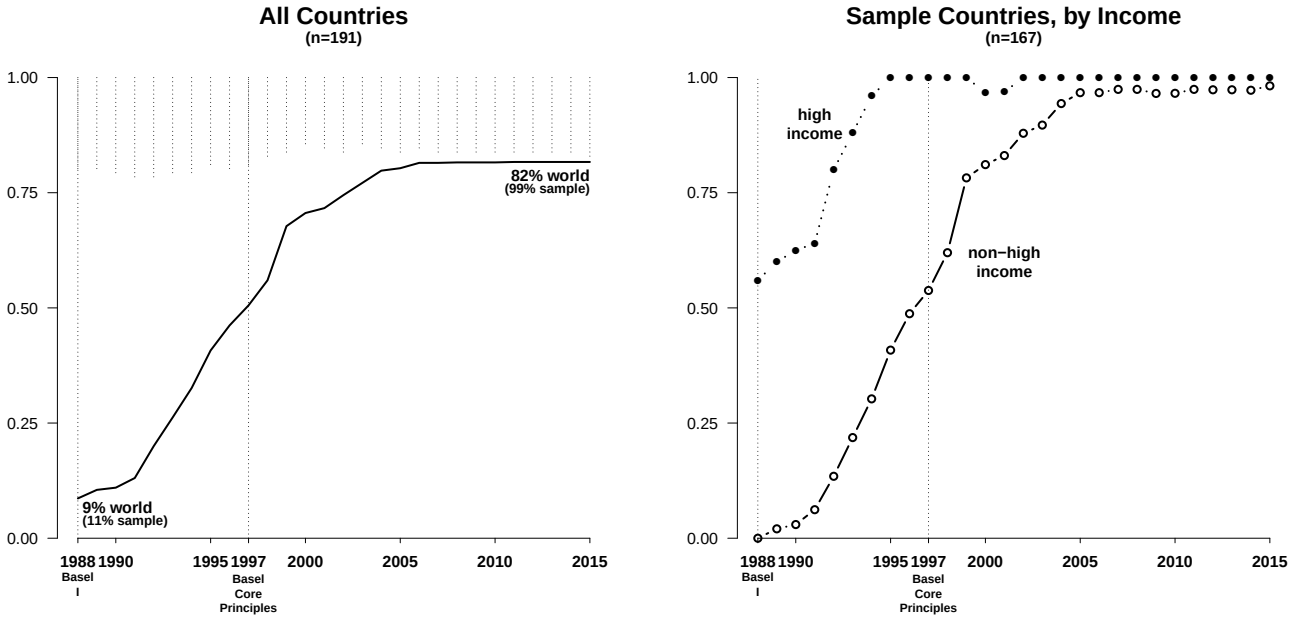

Figure 1: *Worldwide Basel I Adoption Status, 1988–2015*: The left graph shows annual worldwide adoption of Basel I into national regulations for 191 jurisdictions. Dotted lines each year in the left graph indicate the percent of jurisdictions for which Basel I status was unclear or unknown. For 167 countries for which Basel I status is known for one or more years,the right graph displays annual percent adoption separately for high income and non-high income countries. Income classification reflects annual, World Bank classification. In 1996, just prior to the 1997 publication of *Basel Core Principles*, 100% of 27 high-income countries and 49% of 119 non-high income countries had adopted Basel I. By 2004, 94% of 124 non-high income countries, had adopted Basel 1, increasing to 98% by 2015. In both graphs, dotted lines at 1988 and 1997 mark the publication of Basel I and the Basel Core Principles, respectively.

This section identifies the logics and observable implications of these two arguments.

I then move to the broader institutional context, where I argue that international organizations played a crucial role to encourage states – especially laggard countries – 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.

Market forces – reputation and direct bank interests

National adoption of Basel I is often explained as a function of reputational mechanisms (Tarullo, 2008; Simmons, 2001; Ho, 2002). The existence of the agreement is thought to lead states to adopt, seeking a reputational boost and avoiding a reputational lag from non-adoption.[9] Public statements show that this was certainly on the mind of some country decision-makers. Malaysia's central bank governor noted, in 1993, that Malaysia was the first country to fully implement Basel I and "in terms of supervision 'we are above the top in the world.'"[10] In an archival history of the BCBS, Goodhart (2011, 186) notes that the Gulf Cooperation Council (GCC) formally commented early on to the BCBS that the GCC "wanted their banks... to adhere to the standards identical to the ones observed by the G-10 banks."[11]

If reputation is a general driving force of adoptions, to the extent that countries vary in the degree

[9] Simmons (2001, 62) states, "once the dominant financial center has adopted a clear standard [such as the Basel Capital Accord], there is very little incentive [for countries] to reduce standards and risk developing a reputation as 'poorly regulated.'" Ho (2002, 647) arrives at a similar conclusion after empirical analysis using World Bank (Barth, Caprio and Levine (2006)) data, "Market forces partially explain national decisions to implement the Basle Accord, lending support to the interpretation of international law as a reputational mechanism". Finally, Tarullo (2008, 65–66) concurs, "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."

[10] *The Banker*, "Too Clever By Far," August 17, 1993, 58.

[11] Goodhart (2011, 186) continues, "So, right from the outset the BCBS found that recommendations and standards developed and intended only for large G10 international banks became regarded by all other countries, and their banks, as *reputationally binding* [emphasis added]."

of their orientation toward international markets, one should observe countries most interested to create a reputation – such as Malaysia and the GCC member states – as those that adopt first.

Hypothesis 1a, Market forces through reputation*: Higher demand for a positive international reputation should be associated with higher likelihood of adopting international rules.*

There are two reasons to question the reputation mechanism as a general explanation of adoption. First, not only do emerging market countries vary in degree of financial policy openness, but capital flows are concentrated in a subset of these countries (Prasad, Rogoff and Kose, 2003) with the implication that not all countries may care about reputation with international investors.[12] While reputation may operate for a subset of countries, additional evidence is necessary to reach this conclusion.

Second, reputation arguments are silent about the economic costs of adoption for a country. Reputation arguments implicitly assume that reputational benefits of adoption will outweigh adoption costs, without addressing what those costs might be.

Omitting discussion of adoption costs is especially puzzling because financial regulatory stringency increases are associated with higher operating costs for regulated firms; and, regulatory differences across jurisdictions are thought to open opportunities for regulatory arbitrage and distributional effects. For legal scholars, the intensity of distributional effects within financial regulation will lead states to want to cheat on obligations such that greater legalization is needed to monitor enforcement with financial regulatory agreements (Gadinis, 2008; Verdier, 2009). The political science literature argues that international agreement itself emerged as a more politically palatable to regulated firms than the alternative option of unilateral increases in regulatory stringency (Kapstein, 1989; Oatley and Nabors, 1998; Singer, 2004). Wilf (2016) provides empirical evidence that

[12] Also, Rodrik and Subramanian (2009) argue that developing countries are not necessarily doing everything they can to compete for capital.

increased regulatory stringency – even in the presence of an international agreement that may alleviate distributional effects of non-harmonization – can impose negative costs upon regulated firms.

More generally, country regulatory disparities – one jurisdiction having more or less stringent regulations than another – may boost or lessen the competitiveness of banks operating at home and abroad in any two countries. The logic of the regulator's dilemma – that an increase in regulatory stringency increases financial stability but decreases competitiveness of regulated firms – would expect that domestic banks headquartered in non-BCBS countries might economically benefit from their home countries maintaining status quo regulations (not adopting) while BCBS countries increased regulatory stringency through adoption.[13] An empirical example of host country incentive to delay adoption is found in the case of Vietnam. In 1993, the country that noted it held "no compulsion to meet [Basel I] capital adequacy ratios[; not adopting] puts foreign [banks that operate in Vietnam] at a distinct disadvantage [as compared to Vietnamese banks operating in Vietnam]."[14] Thus, countries that host foreign head-quartered banks may be expected to delay adoption for the benefit of their domestic banks; delayed adoption boosts domestic bank competitiveness as compared to foreign banks that operate within the host country.

Within that same host country, foreign banks (those headquartered abroad) would have opposite policy preferences from domestic banks. If a foreign bank's home country government adopts the international rule, then that foreign bank will undertake adjustment costs and comply with the more stringent regulation.[15] When that bank operates abroad – within the host country's retail market – the foreign bank would prefer that all banks in that market comply with the more stringent regulation codified in the international rule. In this way, foreign banks maximize their competitiveness in host

13 On regulator's dilemma, Kapstein (1989).

14 *The Banker*, "In the Vanguard," November 30, 1993, 83.

15 All banks are regulated by regulators within the jurisdiction where they are headquartered (Kapstein, 1994).

country markets. It is well known that international companies are the most productive and therefore these companies may have the ability to pressure home and host governments.[16] The literature on foreign direct investment (FDI) emphasize that foreign companies are affected by host country policies and may implore host countries to adopt favored policies (Kobrin, 1987; Jensen et al., 2012, Chapter 5). Thus, countries that host foreign headquartered banks may more quickly adopt international rules at the request of foreign banks operating within its borders; foreign banks would benefit from host country rule adoption because the foreign bank has to abide by the regulation through home-country rules and desires to be competitive within its markets abroad.

Since a country that hosts foreign banks may face domestic banks in favor of delay and foreign banks in favor of quick adoption, the aggregrate theoretical direction of a host-country effect is indeterminate. Countries that host foreign banks may expect foreign banks to lobby for adoption, while domestic banks in these same countries may lobby for the status quo and no adoption.

A third special interest group may be found in internationally active banks' interests in home country government policy. If an internationally active bank operates abroad in a host country that requires that bank to comply with the regulation in order to operate in that country abroad, to continue operations abroad this bank will incur adjustment costs to comply with the international rules. Subsequently, that internationally active bank may ask its home country regulators to adopt in order to level the domestic market (home country) playing field between itself and other banks operating in the home country market (which might include domestic banks and/or foreign banks). This incentive disappears, however, if the internationally active bank operates in host countries that do not require the bank to comply; in this case, the bank will not have an interest in its home country adopting. While the expected effect direction is theoretically ambiguous, the logic is important to

[16] 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."

flesh out and to examine using empirical data.

Hypothesis 1bi, Market forces through supportive economic special interests*: Countries that face special interests in favor of adoption are more likely to adopt international rules.*

Hypothesis 1bii, Market forces through opposing economic special interests*: Countries that face special interests in favor of adoption are less likely to adopt international rules.*

Separate from interest groups that derive from bank ownership, one additional test of Hypothesis 1bii is identified and included in the empirical section. Countries whose financial systems have relatively high levels of credit that go to the government and state-owned enterprises are likely to have embedded special interests who are invested in the domestic status quo (Rajan and Zingales, 2003). By maintaining the status quo (and not adopting), these countries special interests avoid costs of adoption; these countries should be the slowest to adopt, consistent with Hypothesis 1bii.

The role of international organizations

This paper argues that the increasingly embedded nature of Basel I into international organizational structures helps to explain its widespread adoption. This lies in contrast to both market force mechanisms – reputation and economic special interests – that leave little room for the role of international organizations.[17]

In particular, the Basel I agreement's credibility first increased among BCBS countries. From a novel 1988 agreement, all BCBS countries implemented on time. Subsequently, the January 1995 Market Risk Amendment indicated that the Basel I document would be a mainstay agreement.

Subsequently, for non-BCBS members, Basel I became embedded into best practices (Basel Core Principles) for non-BCBS countries beginning in 1997. It was further embedded into a moni-

[17] While Simmons (2000, 603-605) explicitly acknowledges a role for the BIS and IMF in supporting the spread of standards, she highlights the reputational logic. In her analysis, capital adequacy rules are a case that illustrate the relative light touch of international institutions in comparison to other issue areas with coercive institutions, such as anti-money laundering. While appropriate for her purpose to explain variation across institutional arrangements, it leaves as an open question alternative mechanisms to explain Basel I adoption.

Table 1: Institutional Context of Basel Capital Accord, 1988 – 2000

Datel	Detail
1988 July	BCBS agrees upon, releases Basel Capital Accord
1992 December 31	BCBS members implement 1988 agreement on-time
1996 January	BCBS writes a Market Risk Amendment to Basel
1997 September	BCBS releases Basel Core Principles (BCP)
1999 January	Compendium of Standards
1999 May	International monitoring (FSAP, FSSA, ROSC) begins

BCBS members implemented on time; non-BCBS members were affected only beginning in September 1997 with the introduction of Basel Core Principles for Effective Banking Supervision.

toring mechanism through 1999 Compendium of Standards and associated IMF data documentation of practices through FSAP, FSSA and ROSC reports and assessments. Table 1 notes the important dates that boost Basel I's credibility and deepening embeddedness.

Throughout the 1990s, the IMF engaged in bilateral surveillance with its member countries through Article IV consultations end with documentation of a country's policies. The IMF's official history identifies March 1996 as the moment when the IMF Board decided "that fund surveillance should be reoriented to focus more directly on bank soundness" (Boughton, 2012, 145).[18] The September 1997 Basel Core Principles "document provided guidelines for the [Fund] staff to follow in assessing the soundness of national banking systems" (Boughton, 2012, 146). In the history of the BCBS, (Goodhart, 2011, 294) notes that in September 1996, the BCBS "had been assured that the IMF has no wish to become involved in 'rule making' for supervisory policies *but felt it could play a role in encouraging and monitoring implementation of Basle guidelines in less developed countries* [emphasis added]. The Chairman said he planned to discuss how such 'complementarity' would work in practice." Finally, the IMF and World Bank launched the Financial Sector Assessment Program in May 1999 (Boughton, 2012, 146), a monitoring report of country practices as compared to international standards. For this paper's purposes, two items are notable. First, the Basel Capital

[18] This was in reaction not just to the Mexican Peso Crisis but also the Swedish 1992 banking crisis (Boughton 2012, 141–147).

Accord was embedded into the Basel Core Principles, which was then promoted to developing country governments through IMF surveillance. To the extent that the IMF suggested that countries adopt the Basel Capital Accord, it was promoted by the embedded nature of Basel I into the BCP. Second, it is worthwhile to note that increased interest in financial sector IMF surveillance occurred well before the Asian Financial Crisis.

While surveillance occurs on an ongoing basis for most countries, it is still during IMF program negotiations and program reviews when the IMF has the most bargaining power over country policy. Examples exist of overt IMF program conditionality regarding Basel I adoption. Bulgaria's April 1997 Stand-By Arrangement included adoption as part of conditions for completing review; the terms were implemented by December.[19] Similarly, Pakistan's October 1997 Exchange Credit Fund and Exchange Facility Fund programs both included a performance criteria to "Make all prudential regulations on capital adequacy... consistent with international norms," which was met by the December deadline. While these are overt cases of IMF policy influence, I expect that even in the absence of overt conditionality, IMF programs are a time when policy adjustments to this end may be made.

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

It is surprising that existing accounts of Basel I adoption attribute a minimal role to international organizations. Other scholars emphasize a significant role for the IMF to promote a broader financial standards regime but are interested in compliance rather than the the prior stage of adoption (Walter, 2008; Mosley, 2010). This paper is interested to establish the role of international institutional context as critical to widespread adoption. To answer the question of the IMF's motivations is

[19] IMF MONA Database, Arrangement 202. Specifically, the condition is to "Adopt legislation and regulations on supervision and capital adequacy," was met by, "Bulgarian National Bank adopted Reg. No. 8 on 7/15/97; minimum capital adequacy targets set at 8% by end-1997, 10% by end-1998, and 12% by end-1999."

beyond the scope of this study. The above dynamics could be consistent with the IMF as an earnest technocrat (Chwieroth, 2007), as a bureaucracy seeking to create work and ensure its own continuity (Barnett and Finnemore, 1999), as the IMF as a scapegoat for country government (Vreeland, 2003; Dreher, 2009), or the IMF as reflecting the preferences of strong member states (Copelovitch, 2010; Stone, 2011); adjudicating among these is outside the paper's scope. The next section presents a test of alternative channels of adoption.

2 Empirical Analysis

This paper uses a new, author-coded measure of Basel I adoption to analyze correlates of a country's likelihood to adopt a costly bank regulation. The theoretical mechanisms of reputation, direct interest groups, and international organization pressure are most relevant alternatives for countries that are less powerful,"rule takers" and have to optimize country policies in reaction to more powerful, "rule making" countries. I operationalize this by including only non-high income countries in statistical analysis.[20] In robustness checks, I show that including high-income country observations into analysis does not change the substantive findings.

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. 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. Across countries and across time, adoption of Basel I offers a unique opportunity to analyze correlates of a country's likelihood to adopt a costly bank regulation.

[20] I operationalize this by including only non-high-income countries in statistical analysis, using World Bank annual income classification.

This section first introduces new data of 167 countries' Basel I status for the period 1988 through 2015. 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. Hypotheses include two distinct channels of market forces – for reputation or as a reflection of special interest group preferences – and the role of international organizations. Analysis reveals strong systematic effects of IMF program years for adoption, less clear evidence that special interests systematically affected country adoption, and limited evidence that countries adopted in pursuit of reputation-building.

2.1 Coding Basel I status

As discussed above, a 1988 cooperative agreement among twelve countries' regulators was subsequently widely adopted by countries around the world. All countries that adopt – including the creators of the accord themselves – had to implement new regulations to be aligned with the accord.[21] While there existed sporadic mentions of widespread country adoption of Basel I, country-level data on country adoption was not collected nor reported throughout the 1990s.[22]

This paper uses a new, author-coded measure of Basel I adoption. 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 annual Basel I status – either not adopted ("-1"), adoption year ("0"), previously adopted ("1") or unclear ("NA") – for each of 167 countries between 1988 and 2015. Information was coded by the author and primarily based upon country policies as described in IMF report texts.[23] These IMF reports were prepared by IMF staff as background information

[21] Tarullo (2008, 65).

[22] Tarullo and Simmons both quote surveys undertaken by BIS staff about the widespread adoption of countries. See Tarullo (2008, 66) and Simmons (2001, 604). It is possible that countries informally adopted but did not adopt formally into national bank regulations.

[23] Common IMF document titles include "Selected Issues", "Recent Economic Developments" and "Article IV Consultation Staff

for routine IMF missions to individual countries. I supplement this information with additional evidence from country websites and regional development banks.

All 12 BCBS members adopt prior to the 1993 transition deadline, and adoption years are identified for 122 non-BCBS member countries.[24] An additional 35 countries have some information regarding Basel I status in one or more years though it was not possible to identify an exact adoption year. For example, Basel I is in place in South Africa by 1995, though exact adoption year is unknown.[25] A further example is Liberia, a country for which Basel I was not in place as of 2000 and was in place as of 2008, though it was not possible to code an exact adoption year.

This paper's new measure provides an (1) annual coding of Basel I adoption status (2) over the full period of Basel I's existence (3) for a large number of countries (4) using a precise definition of adoption. These four attributes enable statistical analysis for a broader set of emerging market economies and identify adoption year in a way than two existing datasets by a team of World Bank-affiliated economists (Barth, Caprio and Levine, 2006) and a team of IMF-affiliated economists (Abiad, Detragiache and Tressel, 2008). Table 2 provides a brief overview and a more detailed discussion may be found in Appendix A.

2.2 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

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.

[24] This includes 14 high income countries (at year of adoption) and 108 non-high income countries at year of adoption. For reasons described below, baseline statistical analysis includes only non-high income country-years (with "high income" countries coded according to World Bank annual income classifications).

[25] Additional examples include documentation that Qatar has Basel I in place in 1997 and Saudi Arabia in 1999; as GCC countries, these countries likely adopted in the early 1990s (reflecting the earlier GCC quote documented in Goodhart 2011), though there is a lack of public information before this time to confirm an exact adopt year.

	Wilf (2017)	**Abiad, Detragiache & Tressel** (2008 IMF)	**Barth, Caprio, & Levine** (2006 World Bank)
Data source	IMF reports (primarily)	IMF reports (primarily)	self-reported practices by bank regulators
Unit of observation	country-year	country-year	country
Year coverage	1988–2015	1970–2005	1999, 2002, 2006, 2010
Change year	yes	yes	no
Country coverage	167	91	118–151

Table 2: *Alternative codings of Basel I status*: Among three measures of Basel I adoption, the new data (Wilf (2017)) captures specific adoption year for a large set of countries for all years since Basel I establishment in 1988.

below, in each year the data includes all countries for which it is clear that Basel I is not in place. Figure 2 shows the number of countries that adopt each year. Many countries adopt both prior to, and after, the 1997 publication of the Basel Core Principles.

Given the highly concentrated nature of the international banking and the international financial system within a few countries[26], the likelihood of advanced countries adopting Basel I is overdetermined. To ensure that such observations do not drive statistical results, statistical analysis includes the sample of non-high income country-years only.[27] The right graph of Figure 1 shows that all high-income countries had adopted Basel I by 1995, while non-high income countries display greater variation.[28] Thus, the main statistical results reflect variation across non-high income countries only and creates a more clear interpretation of statistical results. I next discuss how I test the role of market forces and international organizations.

[26] Empirically, Oatley et al. (2013); Winecoff (2015).

[27] Using annual World Bank income classifications (available 1987-2015), the sample excludes all countries during years when the World Bank classifies that country to be "high income". This provides an objective criterion to identify the set of advanced countries.

[28] Regarding key explanatory variables, too, there are known differences between developed and developing countries. For example, until the 2007 Great Recession and its aftermath, no developed economy had an IMF program in place for more than twenty-five years. If we pool all countries, what might it mean if we find or do not find an effect of IMF programs?

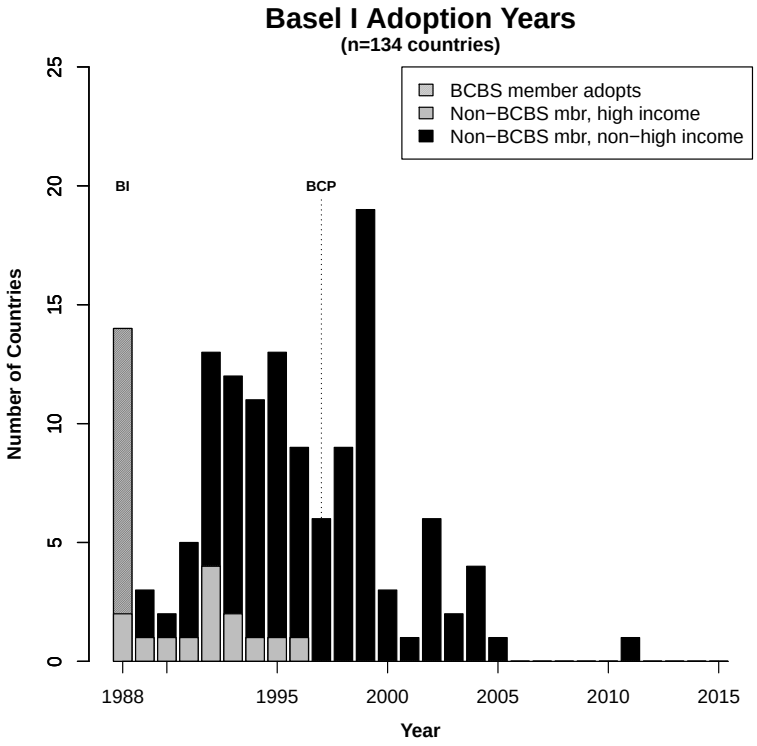

Figure 2: *Country Basel I Adoption Timing, 1988–2015*: The graph shows the number of countries that adopt Basel I in a given year. Unsurprisingly, BCBS members adopt first (dark grey bars) and non-BCBS members adopt by 1996. Among non-high income countries, many adopt both prior to and following the 1997 publication of the Basel Core Principles, with an especially high spike in 1998 and 1999. The data above includes clear adoption years for 134 countries, including 12 BCBS member countries, 14 non-BCBS member countries, and 108 non-BCBS, non-high income countries. Income is coded using World Bank annual income classification values.

2.3 Explanatory variables: market forces and international organizations

As laid out in Section 1, I test for evidence that countries seek reputations for highly regulated banking sectors (H1a), that countries face special interest pressures to adopt (H1bi) or to not adopt (H1bii), and that countries with closer interactions with international organizations face pressures to adopt Basel I (H2). Below I lay out proxies that operationalize each concept.

Three proxies test for adoption attributable to market forces at work to build a country reputation-building (H1a). The first variable (*International Banking*) is an indicator for whether a country *both* hosts one or more foreign-headquartered banks *and* has one or more domestically-headquartered

bank with a subsidiary abroad. Those countries that do are considered to engage in high levels of international banking, and are coded 1 (and 0 else).[29] The expectation is that countries with high levels of international banking might face higher demand to maintain a high quality banking reputation and thus adopt more quickly and for reputation-building purposes.

A second proxy reflects capital flows. If Basel I would provide a reputational indicator to capital markets, then a country with large amounts of international debt might have high demand to adopt; these countries should have greater incentives to take publicly observable actions to display credit worthiness to current and future international creditors and investors.[30] 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.[31] 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 and should be associated with greater importance of international financial reputation to a country.[32]

Distinct from actual flows or bank interests, some countries might be externally oriented and publicly seek to adopt best practices to establish a positive country reputation in a multitude of realms. For instance, do countries adopt other domestic arrangements – for example, high levels of central bank independence (CBI) – as a signal to capital markets about the country's type and creditworthiness? Thus, the third proxy measures the level of a country's central bank indepen-

[29] Bank level data from Claessens and Van Horen (2014) identify the nationality of bank ownership for 5324 commercial banks headquartered within 137 host countries. While bank ownership data is coded annually from 1995 through 2014, the start year for many banks is available such that I can create annual measures for the period prior to1995.

[30] It is worthwhile to note that external debt (credit from abroad) necessarily complements and may substitute for domestic financing. Thus, countries with high external debt and small domestic financial sector loans might be those with greatest demand to import capital and greatest demand for a positive international reputation.

[31] This variable is common in studies of IMF financing, including Copelovitch (2010); Pop-Eleches (2009); Stone (2011).

[32] 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. The data are logged to arrive at a relatively normal sample distribution.

dence (CBI). Higher levels of CBI may have real effects upon inflation, among other outcomes,[33] is orthogonal to commercial bank sector outcomes and is also seen as a domestic institution that signals a country's type. The expectation is that countries with higher levels of CBI might be those that pro-actively adopt international best practices to build their public, international reputations. To capture this concept, (*Central Bank Independence*) measures the *distance* between a country's level of CBI and the continental median value for that given year.[34] In this way, the measure is a continuous value of the country being above regional median (positive values) or below (negative values). If high levels of CBI are systematically associated with faster adoption, this is evidence that supports hypothesis 1a.

To test the hypothesis that special interests might create pressures for quick adoption (H1bi) and for slow- or non-adoption (H1bii), I first re-visit the Claessens and Van Horen (2014) data and disaggregate the existence of different bank operational locations. Specifically, countries with one or more foreign-headquartered banks (*Host Foreign Banks*) *or* countries with one or more domestically-headquartered banks that operate abroad (*Banks Abroad*) each face pressures to adopt from distinct special interests.[35] Countries with purely domestically-headquartered and domestically-operated banks may have strong interest to maintain the status quo.[36] As of 1987, the year prior to Basel I establishment, 44 countries in the dataset both hosted foreign-owned banks and had banks abroad that were owned by their countries' nationals. Figure B.1 shows that countries are much more likely to host foreign-headquartered banks (left graph, grey and black bars) than to have domestic banks operating abroad (right graph, grey and black bars). Further, among countries that

[33] For recent examples, see Bodea and Hicks (2015*a*,*b*) and for a recent overview of the large literature, Fernandez-Albertos (2015).

[34] Annual data from Garriga (2016).

[35] *Host Foreign Banks* and *Banks Abroad* are each indicator variables. *Host Foreign Banks* takes a value of 1 when a country has one or more foreign-headquartered banks operating within its borders in a given year, 0 else. *Banks Abroad* takes a value of 1 when a country has one or more domestic-headquartered banks operating in a foreign country within a given year, 0 else.

[36] Rajan and Zingales (2003).

host foreign-headquartered banks, it is common (more than seventy-five percent of host countries) for one or more foreign banks to be headquartered in BCBS member countries (left graph, black bars); in contrast, among the smaller set of countries that have domestic banks operating abroad, only a small subset (less than thirty percent of countries with banks abroad) of these countries have one or more banks that are abroad in BCBS member countries (right graph, black bars).

To operationalize the relationship between a country and international development organizations, I use month-level IMF program data to create an indicator variable for country years with an IMF program, and a measure of the average months under an IMF program in the previous two-years.[37] I am able to use statistical analysis to estimate the effect of current versus previous programs. Related, I control for country-years with systematic bank crises, as defined by Laeven and Valencia (2012). 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.[38] Figure B.2 shows annual distributions of IMF programs and systemic bank crisis years.

2.4 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 and higher demand for formal institutions.[39] Thus, in all specifications I control for country wealth,

[37] Specifically, IMF Program$_t$ equals 1 if a country is under an IMF program for six or more months in a given year. For the previous two years $(t-2, t-1)$, I measure the average number of months a country is under and IMF program to arrive at a non-binary measure of IMF program intensity for a given country.

[38] Gandrud (2013) and Kleibl (2013) each find an association between the establishment of new financial supervision arrangements in the aftermath of crisis.

[39] Respectively, Levine (2005) and La Porta, Lopez-de-Silanes and Shleifer (2008).

operationalized as GDP per capita (*GDP per capita*), and an indicator variable for countries with a Common Law legal system (*Common Law Legal Origin*).[40] 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.[41] I also control for OECD member countries (*OECD member country*) in a given year.[42] OECD member countries should be associated with faster adoption of Basel I, as OECD countries' government loans are treated favorably under Basel I rules.[43] Regional differences are addressed through stratification, discussed in the model specifications.

Further, I control for capital openness (*Capital openness*), the degree of capital controls and general openness to financial inflows and outflows.[44] The variable's theoretical 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.

The next section presents model specifications and then results.

2.5 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,

[40] 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 (2008).

[41] 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 (1986) and Woll (2014) 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.

[42] `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. I also add an indicator for BCBS member countries (*BCBS member*); however, there is only variation in samples that include high-income country years.

[43] Claessens, Underhill and Zhang (2008).

[44] The measure is the Chinn and Ito (2006) standardized openness index (ka_open) that ranges from 0.00 (low levels of capital openness and many capital controls) to 1.00 (high levels of capital openness and few capital controls).

does not occur. As described above, the sample of observations in the main specifications include non-high income countries (that have not yet adopted Basel I). All country-year observations begin in 1988 (or, if established after 1988, the year that a state becomes an independent country), and countries remain in the dataset until they adopt Basel I.[45] That year is coded as country adoption and the country then leaves the dataset.

I use a cox proportional hazards model which models time to adoption as a function of time-specific, baseline hazard. The model estimates the degree to which explanatory variables are systematically associated with faster or slower adoption. It does so by considering the set of observations that begin the year without Basel I in place and analyzing variation of adoption and non-adoption during that year. Thus, the model simultaneously controls for a common 'baseline hazard' that exist each year and is able to leverage across-year patterns of adoption and non-adoption for the set of countries that have not yet adopted. Through this process, the model is able to estimate the degree to which explanatory variables systematically correlate with higher or lower likelihood of adoption. Logrank tests confirm that it is appropriate to stratify the sample by continent, such that all models include stratification by continent. Reported point estimate values greater than 0.0 indicate *faster* time to adopt and point estimates less than 0.0 indicate *longer* time to adopt.

2.6 Results

Table 3 presents reduced-form regressions for each set of hypotheses before combining measures to test hypotheses against one another. Model 1 maximizes sample size, capturing the experience of 106 non-high income countries with 95 failures in the dataset. Countries with higher levels of capital openness, common law legal systems, and large economies are all associated with faster

[45] Country start years are based on COW States in the System. Excluding the countries that are established after 1988 (mostly part of former USSR) do not change any of the substantive results presented in Table 3.

adoption.[46]

Models 2, 3, and 4 provide an initial test of Hypothesis 1a. Model 2 shows that countries with international banking – that is, host foreign banks and have domestic banks that operate abroad – indeed are associated with faster Basel I adoption. However, countries with larger levels of external debt (in Model 3) and higher levels of CBI (in Model 4) display high variation and are not statistically significant meaning there is high variation in levels of external debt and Basel I adoption timing, and high variation in CBI level and Basel I adoption timing.

Models 5, 6, and 7 test for evidence associated with Hypothesis 1bi, that special interest pressures might be associated with faster adoption. Model 5 shows that countries with banks that operate abroad are systematically likely to adopt Basel I more quickly, though Model 6 shows that countries that host foreign-headquartered banks display high variation in timing of Basel I adoption. Model 7 includes separate indicators together, and we find that countries with banks abroad continue to be associated with systematically faster Basel I adoption. Tying this back to Model 2, because *International Banking* includes countries that both host foreign banks and send banks abroad in comparison to all other observations (including countries that only send banks abroad, countries that only host foreign banks, or countries that neither host foreign banks nor send banks abroad), the highly significant indicator may be driven by interests of domestic banks that operate in international jurisdictions.

Model 8 provides an indicator of level of domestic financial credit allocated to government and state-owned enterprises. There is no systematic association between this variable and Basel I adoption timing, and the positive point estimate is the opposite of the theoretical expectation was that higher levels of credit to government would be associated with higher levels of entrenched

[46] While OECD member countries and wealthy countries are not systematically faster or slower to join, there is high correlation among all these control variables.

special interests and slower adoption.

Together, Models 2 through 8 provide some limited evidence that market forces to build reputation gains (Models 2 through 4) or market forces that reflect special interest preferences (Models 5 through 8) systematically affect Basel I adoption timing. The strongest evidence is found in countries where there exist domestically-headquartered banks that operate abroad (Models 2, 5, and 7).

Table 3, Models 9 through 15 provide reduced-form tests of Hypothesis 2, that country interactions with international organizations might affect adoption timing. Model 9 shows that IMF program years are systematically associated with faster adoption. Is it possible that this is a spurious correlation? To show that this can be attributed to IMF programs, Models 10 and 11 control for past IMF programs. Model 10 adds a control variable for IMF programs in the previous two years, and Model 11 provides the interaction effect of current IMF Program and past IMF programs. In Model 11, the positive and statistically significant point estimate for IMF Program is interpreted as follows: country-years where there is an IMF program in place this year *and* where there were no IMF program months in the previous two years, these country-years are statistically associated with faster Basel I adoption.[47] This makes it less plausible that the positive and statistically significant point estimate on IMF Program in Model 9 reflects a spurious correlation; indeed, *new* IMF programs in the absence of recent IMF programs are associated with faster adoption.

Models 12 through 15 consider the possibility that IMF programs may be spuriously correlated with bank crises. Model 12 and 13 show that country-years with bank crises (Model 12) and country-years that experienced a bank crisis in the previous year (Model 13) have no statistically significant correlation with Basel I adoption (that is, there is high variation in the experience of these observations). Models 14 and 15 introduce indicators for both bank crisis in the previous year and

[47] See Brambor, Clark and Golder (2006) for details on interaction model interpretations. Table B.1 in the appendix shows that results are not sensitive to alternative ways of identifying IMF program years.

current year IMF programs. In Model 15, the interaction term between a current year IMF Program and a previous year Bank Crisis indicates that country-years with an IMF program that may address a bank crisis (e.g. there was a previous year Bank Crisis) is *not* statistically associated with faster Basel I adoption. In contrast, the current year IMF Program constituent term is positive and statistically significant; this indicates that, a country-year with an IMF program in place and the absence of a bank crisis in the previous year is statistically associated with faster adoption. The overall interpretation is that IMF programs are associated with systematically faster Basel I adoption, and this is independent from the country's experience with a banking crisis. Thus, IMF programs may be suggesting Basel I adoption to program countries in a manner *unrelated* to countries "learning" that they need to implement Basel I.

Together, Table 3 provides lots of evidence that IMF program years are associated with faster Basel I adoption, which is consistent with Hypothesis 2. Further, this shows that there is surprisingly little correlation between bank crises and Basel I adoption, either independent from, or in coordination with, IMF programs.

Results of one, unified model specification in Table 4 reinforces the patterns found in the reduced form specifications in Table 3. Models 1 through 4 show different combinations of the hypotheses. Model 1 considers H1b hypotheses and H2 hypotheses, and we find statistically significant results for countries with banks that operate abroad and country-years with IMF programs. Model 2 finds that countries that both host foreign banks and sent banks abroad, and country-years with IMF programs are associated with faster Basel I adoption. Model 3 and 4 show no systematic effect between higher levels of external debt and central bank independence, respectively, while countries with banks abroad and country-years with IMF programs are systematically associated with faster adoption. Models 5 through 8 includes both high income and non-high income country observations,

without a change in results between Model 1 and 5, Model 2 and 6, and Model 4 and 7.[48]

Together, there is greatest evidence that country years with IMF Programs are associated with faster adoption, all else equal. We also find strong indications that countries that have domestically-headquartered banks abroad are most likely to adopt Basel I more quickly. Other indicators of market forces – that might be associated with country adoption for reputation gain, or in reaction to special interest pressures – do not provide strong correlations that might be associated with adopting Basel I. This runs counter to the existing narrative that countries adopt for reputational gain.

2.7 Additional Analysis - early adoption logits and IMF program effect years

Survival analysis estimates explanatory variable effects across the full range of country years. Could it be that market forces were indeed at work but that the survival analysis does not capture early indicators of such market forces? We might expect that countries that are most financially open in 1987, and those with the most developed domestic financial systems, might be the ones that adopt Basel I early due to market forces.

I run an additional statistical test to ensure this is not the case. I run a series of reduced, logistic regressions where the dependent variable is Basel I in place in 1994 (1 if yes, 0 if no) and explanatory variables take country values in 1987 (the year just prior to Basel I adoption). While maximum country sample is 121 non-high income (in 1987) countries, explanatory variable data limitations limit the analysis range from 71 to 96 observations. Given the small sample size, Figure B.3 displays plots of the underlying data that enter into each logit. Countries that, in 1987, had higher GDP, that had domestic banks operating abroad, and that hosted foreign-headquartered banks were those most likely to have adopted early. While we might expect international banking to be associated with

[48] There is no external debt information for high-income countries such that Model 3 and Model 7 specifications are identical.

wealthier countries, the systematic effect persists when additionally controlling for GDP and GDP per capita. However, 1987 levels of financial sector depth, financial sector size, external debt, GDP per capita, and central bank independence were not systematically associated with higher or lower likelihood of adoption. Surprisingly, countries with higher levels of capital openness in 1987 were *less* likely to adopt Basel I as of 1994.

Related, I test for year-specific effects of IMF programs. In a series of annual logits,[49] where in each logit the dependent variable is whether or not Basel I is in place in a given year (for years 1995 through 2000), I control for whether or not Basel I was in place the previous year, the presence of an IMF program in the previous years, and the interaction effect. Together, the statistical estimate of IMF program will have the following interpretation: If Basel I was not in place in the previous year and there is an IMF program during that year, is there a systematic association with adoption? Thus, we are looking at the IMF program constituent term for statistical significance. I am able to isolate IMF program effects that are clearly present in 1998 and some evidence of 1997. That is, countries with IMF programs in place in 1998 that did not have Basel I in place in 1997 were statistically more likely to adopt Basel I. This is an additional evidence that there is a systematic role of the international financial governance system, as the IMF effect is concurrent with the publication of Basel Core Principles. While 1997 and 1998 is also the height of the Asian Financial Crisis, results hold when controlling for the presence of systemic crisis.

Together, the findings imply that, to the extent that Basel I diffused through market forces, it did so through banking system arrangements rather than appeal to general capital markets. That is, countries that have banks involved in international banking are those that might be pressured by domestic or international banks to adopt Basel I. In contrast, countries in the late 1980s that were

[49] Results to be included in the next paper revision.

financially open (higher levels of capital openness) and had high levels of central bank independence were not necessarily adopting Basel I as a continued appeal to market forces.

Further, the most consistent finding within the analysis is the role of the IMF to support country adoption. We see this through persistent statistical association between IMF program years and faster adoption in survival analysis. Furthermore, there is little evidence that bank crisis is related to adoption such that IMF programs do not merely reflect country learning that is concurrent with IMF programs. Overall, then, I find some limited support for reputation but more consistent associations between international organizations and adoption.

3 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.

This paper establishes strong correlations between IMF programs and country adoption. This is surprising in that it goes against existing explanations of Basel I adoption as country appeals to market forces. However, this paper complements other work in the second-image reversed perspective that shows how international organizations create contexts that leads to policy adoption in many different countries.[50] Future research can and should probe *why* the IMF promoted Basel I adoption

[50] On second image reversed, Gourevitch (1978). A good example of broad national policy diffusion whose origins may be traced back to informal international organizations, see Bach and Newman (2010) on how IOSCO created conditions that led to broad adoption of insider trading legislation.

and what this says about the interaction among international financial governance organizations. Does this reflect special interest preferences (of international banks or the US, perhaps) or does it reflect the nature of the global financial regime where the IMF is the gatekeeping organization that has the ability to provide centralized enforcement of terms that are created in non-IMF international bodies (for instance, the BCBS in this case)?

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.[51] 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 (Stone, 2011; Finnemore and Sikkink, 1998). 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.

[51] On compliance in name but not in practice, see Walter (2008).

	Baseline (1)	H1a (2)	H1a (3)	H1a (4)	H1bi/H1bii (5)	H1bi/H1bii (6)	H1bi/H1bii (7)	H1bii (8)	H2 (9)	H2 (10)	H2 (11)	H2 (12)	H2 (13)	H2 (14)	H2 (15)
H1a															
International Banking Country		0.664**													
		(0.319)													
External Debt (% GDP)			−0.086												
			(0.185)												
Central Bank Independence				0.528											
				(0.671)											
H1bi and H1bii															
Banks Abroad					0.518*		0.537*								
					(0.323)		(0.320)								
Host Foreign Banks						0.256	0.294								
						(0.300)	(0.301)								
H1bii															
Credit to Govt, SOEs								0.029							
								(0.087)							
H2a															
IMF Program$_t$									0.602**	0.474	0.943**			0.602**	0.585**
									(0.260)	(0.303)	(0.440)			(0.260)	(0.275)
INTX: IMF Program$_t$											−0.074				
x Avg Past Program Mos$_{t-2,t-1}$											(0.052)				
INTX: IMF Program$_t$															0.126
x Bank Crisis$_{t-1}$															(0.677)
Avg Past Program Mos$_{t-2,t-1}$										0.023	0.058				
										(0.028)	(0.037)				
Bank Crisis$_t$												−0.100			
												(0.350)			
Bank Crisis$_{t-1}$													0.081	0.079	−0.001
													(0.333)	(0.332)	(0.544)
Controls															
Capital Openness	0.919**	0.696	0.741	0.839*	0.777*	0.842*	0.679	1.087**	0.898**	0.923**	0.891*	0.921**	0.914**	0.892**	0.897**
Common Law Legal Origin	0.566*	0.570**	0.615*	0.580*	0.575**	0.575*	0.589**	0.488	0.580*	0.553*	0.622*	0.569*	0.566*	0.580*	0.584*
OECD Member	−0.116	−0.454	0.289	−0.177	−0.330	−0.150	−0.373	−0.207	0.079	0.137	0.156	−0.131	−0.092	0.101	0.106
Ln(GDP)	0.214***	0.123	0.189**	0.158**	0.138*	0.179**	0.096	0.221***	0.196***	0.193***	0.192***	0.216***	0.212***	0.193***	0.195***
Ln(GDP per capita)	0.117	0.142	0.094	0.117	0.121	0.145	0.154	0.128	0.213*	0.216*	0.237*	0.116	0.119	0.214*	0.211*
N	920	920	785	738	920	920	920	873	920	920	920	917	918	918	918
Countries in sample	106	106	86	96	106	106	106	102	106	106	106	106	106	106	106
Country adoptions	95	95	78	87	95	95	95	91	95	95	95	95	95	95	95
Years	1988-2014	1988-2014	1988-2014	1988-2012	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2011	1988-2012	1988-2012	1988-2012

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 3: *Cox Proportional Hazards Models of Time to Basel I Adoption, Reduced Form*: Dependent variable is time to Basel I adoption. Point estimates and clustered standard errors are presented for reduced form versions of hypothesis indicators. Point estimates greater than(/less than) zero and statistically significant indicate an explanatory variable associated with systematically faster(/slower) time to adoption. Models include stratification by continent.

	Non-high Income	Non-high Income	Non-high Income	Non-high Income	All Countries	All Countries	All Countries	All Countries
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
H1a								
International Banking		0.726**				0.613**		
		(0.327)				(0.290)		
External Debt			−0.081				−0.081	
			(0.211)				(0.211)	
Central Bank Independence				0.478				−0.008
				(0.710)				(0.656)
H1bi and H1bii								
Banks Abroad	0.646**		0.787**	0.647**	0.538*		0.787**	0.549*
	(0.331)		(0.366)	(0.342)	(0.300)		(0.366)	(0.323)
Host Foreign Banks	0.279		0.441	0.169	0.302		0.441	0.102
	(0.326)		(0.372)	(0.343)	(0.296)		(0.372)	(0.311)
H1bii								
Credit to Govt, SOEs	0.032	0.017	0.081	0.131	0.010	−0.0002	0.081	0.108
	(0.093)	(0.093)	(0.109)	(0.114)	(0.083)	(0.083)	(0.109)	(0.099)
H2								
IMF Program$_t$	0.549**	0.565**	0.557*	0.504*	0.564**	0.590**	0.557*	0.498*
	(0.273)	(0.269)	(0.308)	(0.287)	(0.269)	(0.265)	(0.308)	(0.283)
Bank Crisis$_{t-1}$	0.209	0.175	0.093	0.274	0.291	0.261	0.093	0.334
	(0.344)	(0.346)	(0.404)	(0.346)	(0.338)	(0.340)	(0.404)	(0.340)
Capital Openness	0.812*	0.816*	0.672	0.827	0.841**	0.848**	0.672	0.887**
Common Law Legal Origin	0.537	0.546*	0.554	0.431	0.516**	0.516**	0.554	0.292
OECD Member	−0.283	−0.333	−0.298	−0.287	0.311	0.279	−0.298	0.151
Ln(GDP)	0.065	0.102	0.025	0.022	0.062	0.099	0.025	0.049
Ln(GDP per capita)	0.276**	0.263**	0.205	0.214	0.267***	0.257**	0.205	0.165
BCBS Member					3.000***	3.058***		19.793***
N	871	871	743	706	935	935	743	765
Countries in sample	102	102	83	93	124	124	83	111
Country adoptions	91	91	74	83	114	114	74	102
Years	1988-2012	1988-2012	1988-2012	1988-2012	1988-2012	1988-2012	1988-2012	1988-2012

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 4: *Cox Proportional Hazards Models of Time to Basel I Adoption, Combined Hypothesis Tests*: Dependent variable is time to Basel I adoption. Point estimates and clustered standard errors are presented for reduced form versions of hypothesis indicators. Point estimates greater than(/less than) zero and statistically significant indicate an explanatory variable associated with systematically faster(/slower) time to adoption. Models include stratification by continent.

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A Basel I Data Coding Details

The Barth, Caprio and Levine (2006) 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 Abiad, Detragiache and Tressel (2008) measure codes Basel I adoption through IMF reports and other publicly available sources for the period between 1970 and 2005.[52] 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.[53] In the first World Bank survey in 2000, only ten of 101 country respondents report not requiring their banks to abide by Basel I.[54] The data do not distinguish whether adoption occurred in each country prior to, or after, the 1997 release of the Basel Core Principles that embedded Basel I into a set of international best practices. Countries that adopt 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.[55] 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.[56] 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.[57]

[52] 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.

[53] 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.

[54] Ho (2002) 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/`.

[55] Linos (2013); Jacoby (2004); Simmons and Elkins (2004).

[56] 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.

[57] 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.

B Additional Figures and Tables

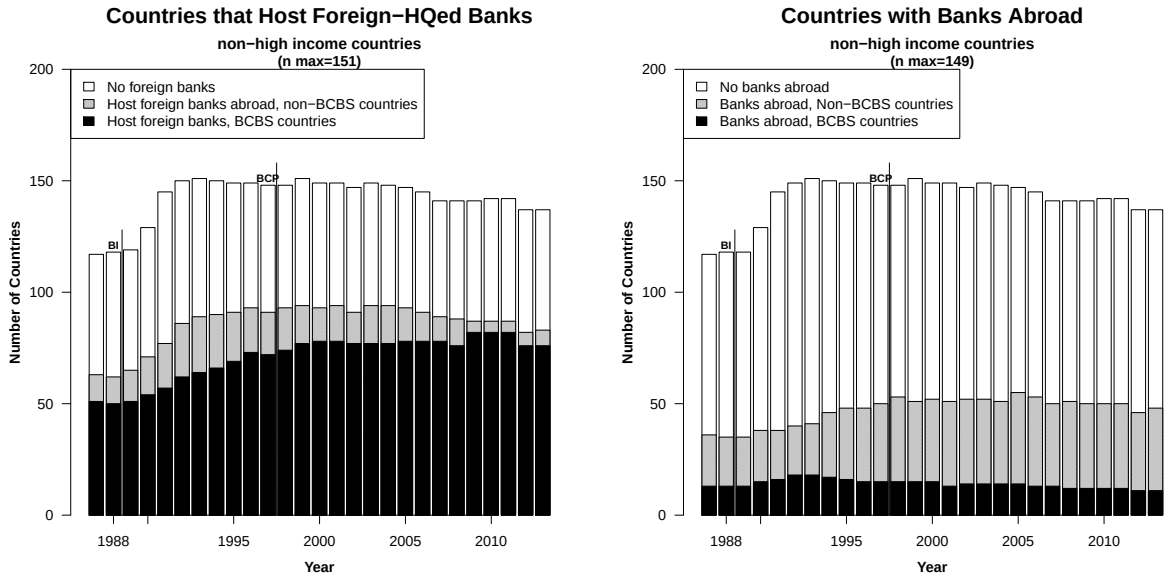

Figure B.1: *International Banking, Incorporation Locations Trends, 1987-2013*: The left graph displays the number of non-high income countries that host foreign banks each year and the right graph displays the number of non-high income countries that have domestically-headquartered banks that have subsidiaries abroad in non-BCBS countries only (dark grey) and in BCBS countries (black bars). Consistently across the full period, it is more likely for a non-high income country to host one or more foreign-headquartered banks than they are to have one or more domestic banks that operate abroad. A country that hosts one or more foreign banks is more likely to have one or more banks that are headquartered in a BCBS country (left graph, black bar) versus hosting foreign banks from all non-BCBS countries (left graph, dark grey bars) as compared to countries with domestic banks that operate abroad, where it is more common for banks to be located in non-BCBS countries (right graph, grey bars) and only a small number of non-high income countries have domestically-headquartered banks that operate abroad in BCBS countries (right graph, black bars). World Bank income classifications begin in 1987.

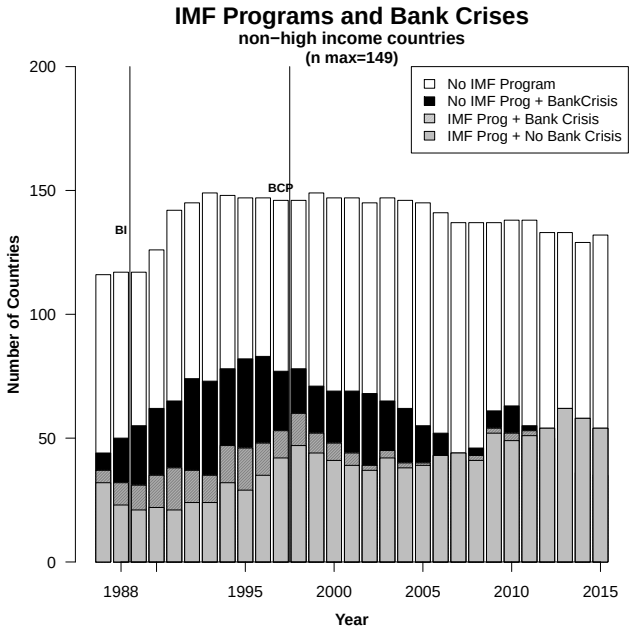

Figure B.2: *IMF Programs (1987-2015) and Systemic Banking Crises (1987–2011)*: For 149 non-high income countries, this graph shows incidences of systemic bank crises (black bars and dark grey bars) and IMF programs (dark grey and light grey bars) in a given year. Most countries experience no bank crisis and no IMF program in a given year (white bar), most countries that do experience banking crises do so without an IMF program in place (black bars), a minority of countries experience both bank crisis and IMF programs (dark grey bars), and many countries have IMF programs in place in the absence of bank crises (light grey bar). IMF program years reflect author coding from IMF website, and systemic bank crisis from Laeven and Valencia. World Bank income classifications begin in 1987.

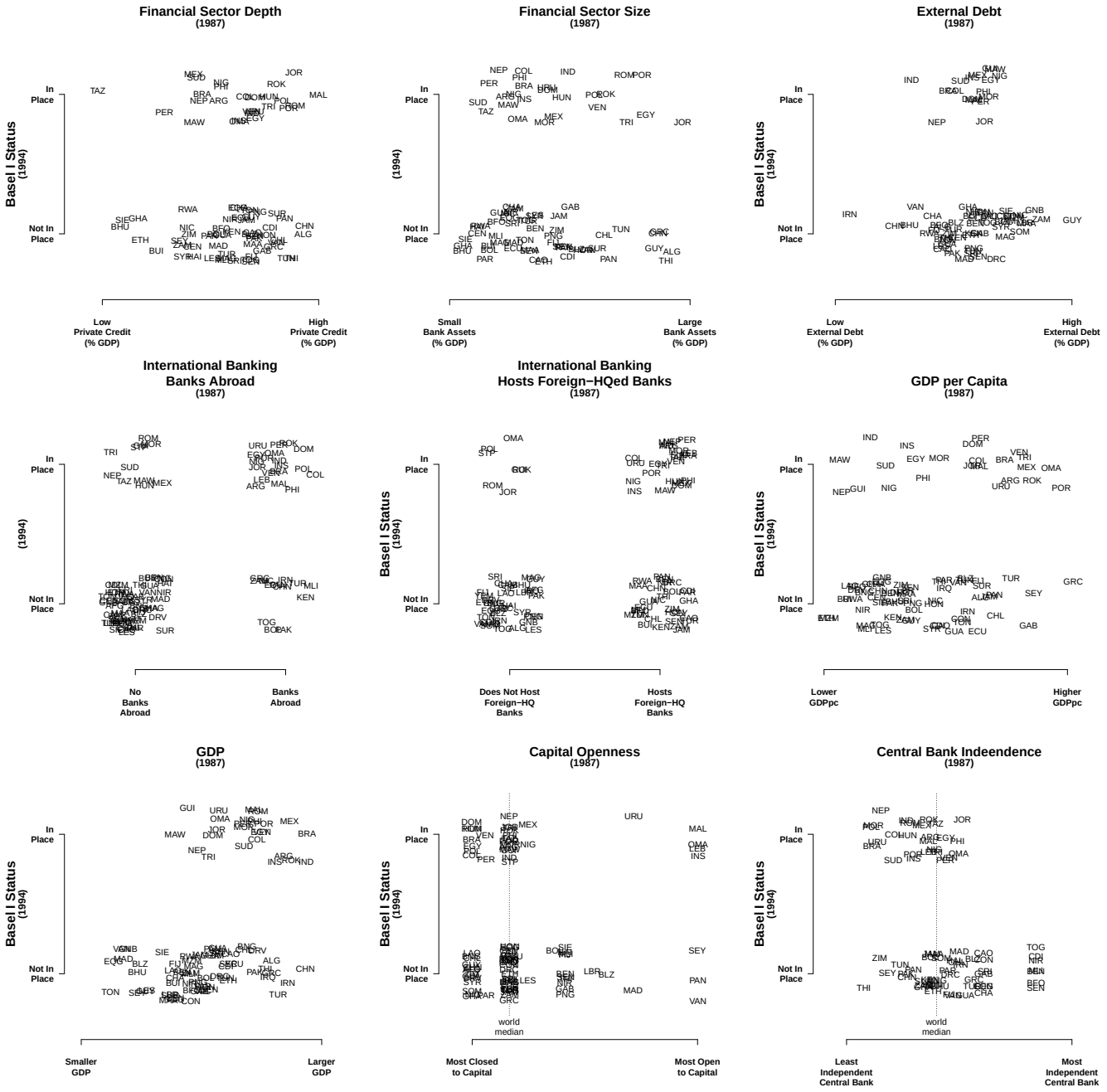

Figure B.3: *1987 Explanatory Variables versus 1994 Basel I adoption*: The above graphs show how 1987 (pre-Basel I) values of certain variables correlate with early (1994) Basel I adoption. Most values show high variation with the exception of banks abroad (countries with banks abroad are likely to adopt early and countries without banks abroad are likely to not adopt early) and GDP (small countries are likely to not adopt). Particularly interesting is that countries with high capital openness and central bank independence in the late 1980s are not systematically associated with more likely early adoption

	Program Year	Previous Yr Prog	3+ Mos Indicator	3+ Mos Indicator	6+ Mos Indicator	6+ Mos Indicator	9+ Mos Indicator	9+ Mos Indicator	12 Mos Indicator	12 Mos Indicator
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Current Year IMF Program (any)	0.575**									
	(0.243)									
Last Year IMF Program (any)		0.619***								
		(0.242)								
Avg Past Program Months$_{avg\{t-2,t-1\}}$			0.020	0.090**	0.016	0.058	0.023	0.047	0.025	0.041
			(0.029)	(0.042)	(0.027)	(0.036)	(0.027)	(0.032)	(0.026)	(0.029)
Current Year Program (3+ Mos)			0.459	1.004***						
			(0.303)	(0.379)						
INTX: Avg Past Program Months				−0.115**						
x Current Year Program (3+ mos)				(0.053)						
Current Year Program (6+ mos)					0.649**	1.107***				
					(0.284)	(0.388)				
INTX: Avg Past Program Months						−0.080*				
x Current Year Program (6+ mos)						(0.048)				
Current Year Program (9+ mos)							0.534*	0.977**		
							(0.273)	(0.432)		
INTX: Avg Past Program Months								−0.065		
x Current Year Program (9+ mos)								(0.051)		
Current Year Program (12 mos)									0.576**	1.008**
									(0.259)	(0.475)
INTX: Avg Past Program Months										−0.056
x Current Year Program (12 mos)										(0.053)
Common Law Legal Origin	0.653**	0.600**	0.608**	0.676**	0.591**	0.655**	0.550*	0.607**	0.582**	0.607**
OECD Member	0.370	0.337	0.361	0.326	0.287	0.302	0.289	0.315	0.260	0.246
Ln(GDP)	0.155***	0.148***	0.151***	0.145***	0.143**	0.141**	0.142**	0.143**	0.145**	0.144**
Ln(GDP per capita)	0.216*	0.224*	0.223*	0.273**	0.282**	0.295**	0.262**	0.270**	0.262**	0.273**
N	1,023	1,023	1,023	1,023	1,023	1,023	1,023	1,023	1,023	1,023
Countries in sample	113	113	113	113	113	113	113	113	113	113
Country adoptions	102	102	102	102	102	102	102	102	102	102
Years	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014	1988-2014

Notes:

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table B.1: *Cox Proportional Hazards Models of Basel I Adoption, Different IMF Program Operationalizations*: Dependent variable is time to Basel I adoption. Point estimates and clustered standard errors are presented for reduced form versions of hypothesis indicators. Point estimates greater than(/less than) zero and statistically significant indicate an explanatory variable associated with systematically faster(/slower) time to adoption. Models include stratification by continent.