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The Limits of Globalizing Basel Banking Standards[1]

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Abstract

Though designed by a selective group of regulators from the world's largest financial centres, Basel banking standards are being implemented far beyond the financial core, and this is often seen as confirmation of their global relevance. Yet we show that the implementation of Basel II and III is shallow and highly selective in most countries outside of the Basel Committee.

Drawing on the available evidence and regression analysis, we attribute shallow and highly selective adoption to the sheer complexity of the standards, and the fact that they need substantial modification before they can be fully implemented, particularly in developing countries. Implementation challenges are compounded by gaps in the financial market infrastructure, notably credit rating agencies, as well as shallow capital markets. Beyond this, we attribute cross-country variation in implementation to differences in the underlying political economy of the banking sector. Countries are likely to pursue relatively high levels of Basel II and III implementation when large foreign and internationally active domestic banks operate in their jurisdiction and when they have a market-oriented approach to the financial sector. Conversely countries are likely to pursue relatively low levels of implementation when they have few internationally active banks and a more interventionist approach.

Keywords:
Banking standards; financial regulation; political economy of regulation; supervisory capacity; financial integration; Basel banking standards

1. Introduction

Regulators from the world's largest financial centres have long dominated global financial governance, including in international banking. The Basel Committee on Banking Supervision, which sets international banking standards, has a select membership drawn from the world's largest financial centres. These 'standard-setting' regulators "control the rules of the game for global finance" including through the Basel Concordat and the Basel Accords and "the prowess of the financial intermediaries they house" (Pistor 2013). The majority of the world's regulators are 'standard-takers' with regards to international banking standards, exerting little influence over the standard-setting process.

Although countries outside of the Basel Committee are under no formal obligation to implement Basel standards, many are implementing them nonetheless. By 2005, regulators from more than 120 countries were implementing Basel I (Stephanou and Mendoza 2005), and as we discuss below more than 70 jurisdictions recently reported that they are implementing elements of Basel II, of which 41 jurisdictions reported they are also implementing elements of Basel III.

While scholars have extensively studied the negotiation and implementation of Basel banking standards among the relatively small number of standard-setting countries, much less attention has been paid to the ways in which countries in the rest of the world are responding. Scholars have identified several reasons for the adoption of international standards by regulators in 'standard-taking' countries. International banking standards provide regulators with off-the-rack guidance, which is particularly welcome as designing *sui generis* regulation is daunting and costly (Brummer 2010). Regulators are often conservative in their approach to regulation, and following 'international best practices' and the practices of successful peers can help insulate them from attribution and attendant costs in the event of a financial crisis (Romano 2013). Adopting the standards can facilitate the operations of foreign banks in the jurisdictions of non-member states and can help domestic banks access the markets of Basel Committee members (Simmons 2001, Walter 2010, Chey 2014). Moreover, non-member countries have been strongly encouraged by the World Bank and IMF to implement international financial standards, notably the Basel Core Principles and Basel I (Drezner 2007).

In this paper we contribute in two ways to the literature on Basel standards and standard-taking countries. First we scrutinise in detail the level of Basel II and III adoption by countries outside of the Basel Committee and show that, despite perceptions that the standards have been widely adopted, this is only partly true. Although many countries have made moves to implement Basel II and III, when we disaggregate the data, we find that adoption is typically shallow and highly selective. More than ten years after Basel II was agreed, non-members report that they are, on average, only implementing four of the ten key components. Although Basel III is more recent so implementation is understandably more limited, four years after Basel III was agreed, non-members report that they are, on average, only implementing one of the eight key components. Implementation is particularly limited with regards to the internal model-based approaches for assessing risk under Basel II, and the macroprudential elements of Basel III. We also find a high level of cross-country variation.

Our second contribution is to explain why the adoption of Basel II and III is highly selective and varies across countries. To do this we draw on the available primary evidence and the existing literature to identify possible explanations for the patterns of adoption that we see, and then explore their plausibility with a series of statistical tests. Given the small sample size, we estimate simple regressions that offer proofs of concept for our different explanations.

We identify three over-arching explanations for the patterns of Basel II and III that we see empirically. First is politics within the banking sector. Implementation has distributive implications within the banking sector and we explain how large, internationally active banks typically gain from implementation, particularly from the implementation of internal-model based approaches, while small and weakly capitalized banks typically lose. We therefore expect higher levels of Basel II and III implementation in countries where assets are concentrated in a few politically powerful, internationally active banks. We also expect the government's wider policy approach to influence decisions over whether to adopt the standards, and expect higher levels of adoption among countries with relatively liberalized banking sectors and market-oriented approach to financial sector regulation.

Second, is the sheer complexity of the Basel II and III. Implementation requires that highly skilled supervisors with access to high levels of information, and a governance and legal environment that enables supervisors to use their judgement. In some instances, implementation may require new legislation that grants additional power to supervisors, particularly for the macroprudential elements of Basel III. Regulators in developing countries face particularly acute resource challenges and also need to recalibrate Basel standards to reflect their local contexts. Basel standards were developed primarily for the supervision of internationally active banks in countries with sophisticated financial markets and specific elements either have limited relevance or require substantial revision before they can be implemented in many developing countries. Complexity and resource constraints are a persuasive explanation for particularly low levels of implementation of the most complex components of Basel, including the internal model-based approaches of Basel II and the macroprudential elements of Basel III.

Finally, we explain why full implementation of Basel II and III requires well-developed financial market infrastructure, including from credit ratings and credit information agencies, and well-developed capital markets. Where these are missing, we expect to find lower levels of the standards. The development of a local credit ratings industry is particularly important for implementation of Basel II.

Our regression analysis provides initial support for many of these arguments. We consistently find that the level of financial sector depth is positively and strongly associated with the extent of Basel II and III adoption, as well as specific attributes of the wider financial infrastructure and depth of capital markets. We also find evidence that the internationalization of the banking sector, regulatory quality and the wider regulatory approach matter for the extent of Basel II and III adoption.

A word about data is necessary at the outset. We rely on reported implementation of Basel II and III as captured in surveys conducted by the Financial Stability Institute. The surveys from which the dataset is compiled are voluntary and not externally verified, raising concerns about potential inaccuracies in the data. Spot-checking of national legislation and guidelines suggests that the survey data is in fact generally an accurate reflection of the extent of adoption (Tabart 2015). However, the survey data is vulnerable to selection bias, as regulators that are implementing the standards are perhaps more likely to respond than regulators that are not, so the data may exaggerate the level of implementation of Basel II and III among non-members. The fact that we nonetheless find implementation of the Basel standards to be patchy suggests that this is a robust finding. Finally, as Walter (2008, 2010) and Chey (2014) show, even when domestic legislation and regulatory guidelines reflect international standards, this does not necessarily translate into an alignment of the behaviour of banks and supervisors with international standards. Therefore, we focus our analysis on adoption and draw no inferences about substantive compliance.

2. The Widespread Yet Highly Selective Nature of Basel Adoption

The first Basel standard (Basel I) was agreed in 1988 and set minimum capital requirements for internationally active banks. The minimum ratio of regulatory capital to total risk-weighted assets (RWA) was set at 8%, of which the 'core capital' element (a more restrictive definition of eligible capital defined as Tier 1 capital) would be at least 4%. In 1996, Basel I was amended to introduce an additional capital charge was introduced to cover market risk in banks' trading books. Although designed primarily for implementation by the members of the Basel Committee, by 1992, only four years after it was agreed, Basel I was being implemented by many non-member countries with internationally active banks (Tarullo 2008). By 2005 it was reportedly implemented by 120 countries (Stephanou and Mendoza 2005).

Basel II

Weaknesses in Basel I led to calls for reforms of the standards by the late 1990s. A concern with Basel I was that it did not sufficiently differentiate the risk associated with individual loans. This opened up opportunities for regulatory arbitrage, which banks capitalised on using a range of securitisation techniques (Tarullo 2008). In addition, Basel focused exclusively on credit and market risk, neglecting operational risk, and did little to strengthen supervisory institutions or improve corporate governance.

Basel II standards were agreed in 2004 following intense and protracted negotiation. The aim of the new standards was to ensure that the regulatory capital held by banks better reflected the actual risks that banks were undertaking. Basel II left some basic parameters of Basel I in place, including the definitions of eligible capital and the 8% minimum capital adequacy requirement, but dramatically changed the system for risk-weighting assets. Basel II moved away from relatively simple compliance-based supervision to more complex risk-based supervision, and assigned a central role to market actors (banks and external credit rating agencies) in risk assessment. The innovation of Basel II was to allow banks to use their own models for assessing risk. Although banks must use metrics established by supervisors, banks typically have a comparative advantage over supervisors in resources, expertise and experience for the sophisticated assessment of risks, enabling them to calibrate the models to their advantage (Tarullo 2008).

We trace the variation in adoption of both Basel II and III using data from surveys conducted by the Financial Stability Institute (FSI), from which we code adoption of eighteen key components of the Basel standards over the period 2004-2015 for 100 jurisdictions. The survey is aimed only at jurisdictions outside of the Basel Committee, and asks respondents to indicate the extent of implementation for individual subcomponents of the banking standard and, if adopted, the date of first adoption.[2]

The FSI survey data shows that Basel II is being widely implemented by jurisdictions outside of the Basel Committee. By 2015 regulators from 71 of 100 responding jurisdictions reported that they were implementing at least one element of Basel II. A further 19 jurisdictions reported that they were in the process of implementing and had drafted rules in line with

[2] For Basel II, there are ten subcomponents: (1) standardized approach to credit risk; (2) foundation-internal ratings based approach to credit risk; (3) advanced-internal ratings based approach to credit risk; (4) basic indicator approach to operational risk; (5) standardized approach to operational risk, (6) advanced measurement approach to operational risk; (7) standardized measurement method for market risk; (8) internal models approach to market risk; (9) Pillar 2 (Supervision); (10) Pillar 3 (Market Discipline). Basel III is composed of eight subcomponents: (1) Liquidity coverage ratio; (2) definition of capital; (3) risk coverage (for counterparty credit risk); (4) Capital conservation buffer; (5) Counter-cyclical capital buffer; (6) Leverage ratio; (7) Domestic-systemically important banks; (8) Global-systemically important banks.

Basel II. Only 10 responding jurisdictions reported that they had not taken any steps to implement Basel II (Bhutan, Belize, East Caribbean Currency Union, Ghana, Laos, Madagascar, Moldova, St. Kitts and Nevis, Swaziland, and West African Monetary Union).

As the map in Figure 1 below shows, regulators reporting adoption of Basel II hail from all regions of the world. Overall, the highest level of adoption is in Middle Eastern and North African countries, with each of the 12 MENA jurisdictions in our dataset adopting at least one element of Basel II. The region with the lowest levels of adoption is Latin America and the Caribbean where only 13 of 28 responding countries adopted any component of Basel II. The map below indicates that jurisdictions adopting at least one component of Basel II tend to be geographically close to members of the Basel Committee. For instance, many of the jurisdictions adopting components of Basel II in sub-Saharan Africa are close to South Africa, the only African member of the BCBS. This suggests that the internationalisation of banking sectors, particularly connections to jurisdictions already adopting the standards, may be a driver of adoption.

[Insert Figure 1 here]

Figure 1: Map showing global uptake of Basel II

Yet, close inspection of the data shows that implementation has been highly selective. As of 2015, more than ten years after it was agreed, non-members were, on average, only implementing four of the ten components of the standards (mean=3.52). While 15 countries had adopted 8 or more components, 18 countries had implemented only 1 or 2, and 29 countries had adopted none. Figure 2 below shows the distribution of Basel II implementation among the 100 countries for which there is data. The rate of implementation of Basel II appears to have stabilised, suggesting that selective implementation will continue to be the norm.

[Insert Figure 2 here]

Figure 2: Distribution of Basel II implementation over time

Regulators are being highly selective about which components they adopt. Basel II is divided into three 'pillars': Pillar 1 sets out the minimum capital requirements; Pillar 2 provides guidance on the supervisory oversight process; and Pillar 3 requires banks to publicly disclose key information on their risk profile and capitalization as a means of encouraging market discipline. While designed as a mutually reinforcing package, regulators can decide to implement any combination of these pillars they wish. Just over half (39 of 71) of the regulators that report adopting any of Basel II are indeed doing so as a package, having adopted components from all three pillars. Among the remaining jurisdictions, 16 adopted two pillars, and 14 adopted only one pillar. Of the latter, the vast majority adopted components only from Pillar I on capital requirements (12 of 14).

Pillar 1 provides regulators with different options for calculating credit risk (risk of default on a debt that may arise from a borrower failing to make required payments), operational risk (risk of loss resulting from inadequate or failed internal processes, people and systems or from external events), and market risk (risk of losses in on and off-balance sheet positions arising from adverse movements in market prices). The FSI survey data shows that within Pillar 1 regulators are more likely to adopt requirements for credit risk (59 of 66 jurisdictions adopting any element of Pillar 1) and operational risk (57 jurisdictions) than market risk (38 jurisdictions). In general, countries only adopted Basel II rules on market risk if they had already adopted Basel II standards for credit and operational risk.

[Insert Figure 3 here]

Figure 3: **Adoption of Basel II subcomponents from time of introduction**

Within each of these three categories of risk, Basel II provides regulators with different approaches to assess risk. There are four relatively simple approaches: the 'standardised' approach for assessing credit risk, the 'basic indicator' and 'standardised' approaches for assessing operational risk, and the 'standardised' approach for assessing market risk. The defining feature of these approaches is that while they are more complex than Basel I, key parameters for assessing risk are either given to banks by the supervisor or generated by third parties (private credit rating agencies as well as export credit agencies) (Powell 2004). Basel II also provides for a 'simplified standardised' approach for assessing credit risk, which is very similar to Basel I and is specifically designed for use developing countries.

The remaining four approaches[3] allow banks to use their own internal models for assessing risk and these are then used as the basis for calculating capital requirements. There are two approaches for assessing credit risk. Under the 'foundation approach' banks are allowed to estimate probabilities of default for each borrower, while under the 'advanced approach' banks also estimate other parameters, such as loss given default and exposure at default.

The most striking trend from the FSI data is that there is a clear split, revealed in Figure 3, between jurisdictions that do and do not allow the use of internal model-based approaches. While the majority of regulators have decided against allowing these approaches, regulators in 19 reporting jurisdictions do allow banks to use them to assess at least one type of risk. Regulators in about half of these jurisdictions do so across all three types of risk (credit, operational and market). Interestingly, the number of countries using internal model-based approaches has not increased since 2010, possibly reflecting the criticism attributed to these approaches in the wake of the 2008 financial crisis (see for instance Danielsson (2008))

Basel III

The global financial crisis of 2008 laid bare the weaknesses of the existing international regulatory regime for banking and led to further revisions of Basel standards (Lyngen 2012). The risk-sensitivity of Basel II capital requirements was criticized for exacerbating pro-cyclicality and increasing the likelihood of crisis (Persaud 2015). The crisis also highlighted the need to better address risks associated with securitisation, counterparty credit exposure stemming from derivatives, and repurchase and securities financing.[4]

Basel III was agreed in stages between September 2010 and late 2014 and aimed at addressing these shortcomings. Unlike Basel II, Basel III standards explicitly sought to increase the amount and quality of capital held by banks. Basel III also introduced liquidity standards and a series of macroprudential measures aimed at containing the build-up of systemic risk. Although a clear improvement on Basel II, Basel III standards have also been criticised for being too weak (See for instance Lyngen 2012, Romano 2014).

The FSI data shows that Basel III is being widely implemented by non-members of the Basel Committee. Although Basel III is relatively new, two-fifths of the jurisdictions in our dataset (41 of 100) reported that they were implementing at least one component by 2015. A further

[3] Foundation internal-ratings based approach to credit risk (F-IRB); advanced internal-ratings based approach to credit risk (A-IRB); advanced measurement method (AMM) to operational risk; and the internal model (IM) approach to market risk

[4] Note: In 2009, the Basel Committee did adopt a 'stop-gap' measure intended to address the immediate shortcomings of Basel II. Dubbed 'Basel II.5', it revised certain provisions of Basel II, but the new, post-crisis standards did not appear until the release of Basel III in 2010.

40 jurisdictions had started the process of implementation, leaving only 17 responding jurisdictions that had not taken any steps at all towards implementation.

As the map in Figure 4 below shows, jurisdictions in all regions have begun implementing components of Basel III. Once again, the region with the highest number of adopters is the Middle East and North Africa, where 9 of 12 reporting jurisdictions have adopted at least one component, while adoption is lowest in Latin America and the Caribbean (5 of 28 adopting) and sub-Saharan Africa (7 of 22 adopting).

[Insert Figure 4 here]

Figure 4: Map showing global uptake of Basel III

Although Basel III standards are spreading relatively quickly around the world, implementation is also highly selective. As at 2015, four years after the Basel III standards were agreed, non-members were, on average, only implementing one of the eight components (mean=1.34). Only five countries had adopted six or more, 16 had adopted only one or two components, and 59 jurisdictions had adopted none. Figure 5 below shows the distributions of Basel III adoption for the 100 countries for which there is data.

[Insert Figure 5 here]

Figure 5: Distribution of Basel III implementation over time

As Basel III is relatively new and the standards have been issued over several years, it is harder to discern trends in the data regarding the specific components that are being implemented. However the data indicates that macroprudential components and being implemented less frequently than other components.

Basel III sought to improve the quality and quantity of capital held by banks. It introduced stricter rules on the eligibility of instruments to be included in Tier 1 capital (definition of capital). Under Basel I and II, banks had to hold a minimum of 8% of risk-weighted assets, and this remains unchanged under Basel III. However, where Basel I and II stipulated that 4% risk-weighted assets had to be Tier 1, Basel III increases this to 6%. In addition, Basel III differentiates between 'common equity Tier 1' and other forms of Tier 1 capital, and stipulates that banks must hold at least 4.5% of the former at all times (Basel Committee on Banking Supervision 2011).

A new capital conservation buffer of 2.5% of risk-weighted assets is introduced, which is to be comprised of common equity Tier 1 capital. This is established above the regulatory minimum capital requirement and is designed to ensure that banks build up capital buffers outside periods of stress, which can be drawn down as losses are incurred (Basel Committee on Banking Supervision 2011). Total capital requirements are thus raised to common equity Tier 1 capital of 7% and Tier 1 capital of 8.5% of risk-weighted assets. While banks can hold less than this they face restrictions on pay-outs to shareholders and employees. Basel III also introduces measures to strengthen the capital requirements for counterparty credit exposures arising from banks' derivatives, repo and securities financing activities.[5]

Scrutiny of the FSI data reveals relatively high adoption of the Basel II microprudential capital components among non-members (Figure 6). Among the 41 jurisdictions that have

[5] These were introduced under Basel 2.5, and modified under Basel III.

adopted at least one element of Basel III, 34 have adopted the new definitions of capital and 24 have adopted the capital conservation buffer. However, the new standards for assessing counterparty credit risk have only been implemented by 10 jurisdictions.

[Insert Figure 6 here]

Figure 6: Adoption of Basel III subcomponents from time of introduction

Liquidity standards were introduced under Basel III for the first time. The objective of the liquidity coverage ratio (LCR) is to promote the short-term resilience of the liquidity risk profile of banks by ensuring that banks have an adequate stock of unencumbered high-quality liquid assets that can be converted easily and immediately in private markets into cash to meet their liquidity needs for a 30-day liquidity stress scenario (Basel Committee on Banking Supervision 2013). The net stable funding ratio (NSFR) complements the LCR. It is a longer-term structural ratio that requires banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities. This is intended to reduce the likelihood that disruptions to a bank's regular sources of funding will erode its liquidity position in a way that would increase the risk of its failure (Basel Committee on Banking Supervision 2014).

The FSI data shows a relatively rapid take-up of the liquidity coverage ratio, with 21 of the 41 jurisdictions adopting it as at 2015 (Figure 6). Data is not yet available on the NSFR as it was only introduced towards the end of 2014.

The final element of Basel III we examine is the introduction of macroprudential measures. A countercyclical buffer aims to ensure that banking sector capital requirements take account of the macro-financial environment in which banks operate. It enables regulators to require banks to increase the regulatory capital they hold by up to 2.5% of common equity Tier 1 when they judge credit growth to be resulting in an unacceptable build-up of system-wide risk. Basel III also introduced a simple leverage ratio of capital to non-risk-weighted assets of 3%, to act as a 'back-stop' to the risk-based capital framework, seeking to restrict the build-up of excessive leverage in the banking sector (Basel Committee on Banking Supervision 2011).[6]

Specific additional standards are introduced for systemically important banks, based on the negative externalities they create that other regulatory policies do not fully address. Banks that are assessed by the Basel Committee as being systemically important on a global level (G-SIBs) face higher loss absorbency requirements of up to 3.5% of risk-weighted assets, comprised exclusively of common equity Tier 1 capital (Basel Committee on Banking Supervision 2013). Basel III also introduces measures for banks that are systemically important in the domestic market (D-SIBs), although it adopts a much less prescriptive approach than for G-SIBs, simply issuing a series of principles that national authorities should follow in assessing which banks are systemically important and in establishing the higher loss absorbency requirements (Basel Committee on Banking Supervision 2012).

In general, macroprudential components of Basel III have been adopted less frequently than other components. There has been a relatively rapid take-up of the leverage ratio, which has been adopted by 13 of the 41 jurisdictions implementing at least one element of Basel III, even though it was only introduced in 2013. 15 jurisdictions have adopted the new standards on D-SIBs, and 16 have adopted the counter-cyclical buffer. Only one of the reporting jurisdictions, Liechtenstein, had adopted the G-SIB standard by 2015, reflecting the fact that

[6] Where this has been adopted at the domestic level in developed countries, it has often taken the form of a much more methodologically complex 'supplemental' leverage ratio.

almost none of the regulators outside of the BCBS are home regulators of globally systemically important banks.

3. Explaining Shallow and Selective Implementation of Basel II and III

These patterns of implementation can be explained, we argue, with reference to politics within the banking sector; supervisory capacity, legal powers and the government's regulatory approach; and development of financial infrastructure and the wider financial market. These can account for the fact many countries outside of the Basel Committee are moving to implement Basel II and III, but that implementation is generally shallow and highly selective.

3.1 Banking Sector Politics

A substantial body of literature shows how the interests of large banks have shaped regulatory decisions, including through direct lobbying, revolving institutional doors, and intellectual and cognitive capture (Baker 2010, Pagliari and Young 2014). Moreover, because of the strategic importance of the financial sector in the economy, even in the absence of such mechanisms of direct influence, regulators may be wary of introducing regulations that could disrupt the 'golden goose' of financial sector accumulation. Where governments have been able to introduce regulations that impose substantial costs on large banks this has often come about in the wake of a financial crisis. While regulatory capture is relatively easy during boom times when banking regulation has little political salience, it has been much harder in the wake of a financial crisis as public anger provides a political counterweight that makes redistributive reform possible (Baker 2010).

The design of Basel II and III has in many ways followed this logic. Basel II regulations were designed during a period of high growth and 'derived directly from an agenda set by proposals from the private sector' (Underhill and Zhang 2008). Arguably as a direct consequence of the influence they had over the decision-making process, Basel II lowered the amount of capital that the largest banks in Basel member countries were required to hold, by close to 30% in some cases (Basel Committee on Banking Supervision 2006). Although Basel II introduced standards on operational risk, these increases in capital requirements were more than offset by the reduction that resulted from allowing banks to use their own internal models for assessing risk.[7] Conversely, Basel III rules, which were designed in the wake of the global financial crisis, entail substantial (intended) adjustment costs for the largest banks as they required them to hold more and better quality capital (Elliott, Salloy et al. 2012).

Might a similar logic hold for countries outside of the Basel Committee? Is it plausible that the patterns of implementation reflect the interests of large banks? We consider two ways in which large banks are likely to be affected by the implementation of Basel II and III standards: through the direct adjustment costs the new capital and liquidity standards impose, and by facilitating the cross-border operations of internationally active banks.

Adjustment Costs

In contrast to impact studies for Basel member countries, the available evidence suggests that neither Basel II nor Basel III implementation is likely to systematically affect the level of capital held by the large banks in the majority of non-member countries. The FSI survey data presented above shows that non-member countries that are implementing Basel II capital adequacy requirements are typically doing so for both credit and operational risks, without authorising the use of internal model-based approaches. While we might expect this to result

[7] As Tarullo (2008) notes, under Basel II "banks were quite rationally prepared to accept regulatory features that they found arbitrary, costly, or even ill-conceived, so long as their capital requirements declined enough to make changes on net profitable" Tarullo, D. K. (2008). Banking on Basel: the future of international financial regulation, Peterson Institute. P113

in substantial adjustment costs for large banks, this does not appear to be systematic. For instance, in a 2011 World Bank survey of regulators in Basel non-member jurisdictions, only 15% of respondents stated that Basel II implementation had significantly impacted the level of bank capital and, where it did, it typically led to increases (World Bank 2012).

Analysis of Basel III suggests that large banks in non-member countries will meet Basel III capital standards relatively easily, although adjustment costs vary greatly depending on the business characteristics of banks and variations in national tax regulations (World Bank 2012). A study covering 127 banks in 42 emerging and developing countries suggests that on average, only 10% of core Tier 1 capital would need to be deducted in order to meet the most stringent Basel III standards. The main exception is for banks in Latin America and Caribbean region, which are expected to have to make deductions of up to 30% (World Bank 2013), which might help explain why Basel III implementation is lower than average in this region.[8] Another study of Basel III implementation 47 emerging economies shows that banks in more advanced emerging economies are more likely to face adjustment costs than banks in secondary and frontier markets (Abdel-Baki 2012).

These relatively low adjustment costs derive from the fact that banks in many developing countries typically hold capital well above the minimum international standards, as the result of national regulatory requirements and the nature of the financial sector in which they operate. In many developing countries national authorities impose higher capital standards than the Basel minima and impose a broad range of restrictions on the composition of banking assets and liabilities, including restrictions on large loan concentrations, foreign exchange exposures, and activities that fall outside traditional banking (Kasekende, Bagyenda et al. 2011). This does not mean that capital is necessarily of high quality as other factors, including accounting weaknesses, may put the quality of capital into question, but it does mean that nominal compliance with the Basel standards ought to be within reach. In Africa for instance, more than one third of national regulators impose higher capital standards than required under both Basel II and Basel III (Beck, Maimbo et al. 2011, Kasekende, Bagyenda et al. 2011).

Moreover, banks in many developing countries often hold more capital than the regulatory minima because of the volatility of their operating environment and/or the nature of their business environment. Banks in many developing countries are likely to be well positioned to meet the specific capital quality requirements of Basel III because their capital base is typically dominated by common shares and retained earnings (Frait and Vladimir 2014).

The adjustment costs associated with implementing liquidity standards are also expected to be relatively low in most non-member countries. However there is wide variation, with banks in Eastern Europe and Latin America and the Caribbean facing the greatest adjustment costs in meeting the NSFR (World Bank 2012, Gobat, Yanase et al. 2014). This is due to dependence on wholesale funding and high loan-to-deposit ratios, as well as low levels of government securities in asset portfolios. In some countries banks may find it difficult to meet the Liquidity Coverage Ratio (LCR) because they lack access to a sufficiently diversified portfolio of high quality liquid assets (Basel Committee on Banking Supervision 2014, Frait and Vladimir 2014). In South Africa for instance, the supply of government bonds domestically is expected to be insufficient to meet the expected demand from South African banks, while the ratings of most corporate bonds is below the minimum required for them to qualify as high-quality under Basel III (FSB 2012).

[8] However another study of Bolivia, Colombia, Ecuador and Peru suggests that major banks in these counties already meet the Basel III capital adequacy ratios. Galindo, A., Rojas-Suarez and M. del Valle (2011). Capital Requirements Under Basel III In Latin America: The Cases of Bolivia, Columbia, Ecuador and Peru. Policy Brief, Inter-American Development Bank. P15

In countries where large banks hold levels of capital close to the regulatory minimum, we expect large banks to lobby for the use of internal model-based approaches, as they did in Basel member countries, and there is evidence to this effect from Brazil, South Africa and India (Gottschalk 2010). A recent report on Basel implementation in non-member countries hints that large banks continue to pressure supervisors in this way (Basel Committee on Banking Supervision 2014).

Even where adjustment costs are relatively low, banks may be wary of specific aspects of Basel II and III, particularly requirements to increase public disclosure of financial information and those that impose additional capital requirements on systemically important domestic banks. In Malaysia and Thailand, for instance, powerful family-owned banks strongly resisted disclosure requirements which would have revealed high levels of related-party lending (Walter 2008). Of course small and weaker banks are likely to oppose Basel implementation. However, we expect that regulators are more likely to adapt the national implementation of Basel standards in the face of opposition from small domestic banks, rather than decide not to implement them at all. In the US and India for instance, regulators have adopted a tiered approach to Basel that exempts smaller banks from the more complex regulations.

The patterns of Basel II and III implementation revealed by the FSI survey data are largely consistent with the argument that adjustment costs are not a major impediment to Basel implementation, and do not provide a ready answer for shallow and selective adoption. Among all the key components, the microprudential capital requirements of Basel II and III are adopted most frequently, suggesting that capital-related adjustment costs are not deterring implementation. While relatively few non-member countries are implementing the countercyclical buffer, we attribute this to the technical challenges associated with implementation rather than the adjustment costs it will impose on banks, as we discuss below. The FSI data shows a relatively rapid take-up of the LCR, which is also congruent with the analysis suggesting that high adjustment costs are unlikely to be a major obstacle to implementation. Although data is not yet available on the NSFR, the evidence reviewed above suggests that banks are unlikely to face high adjustment costs, the complexity of the NSFR gives rise to specific challenges, as we discuss below.

Internationalisation of the Banking Sector

In addition to the magnitude of adjustment costs faced by large banks, it is important to consider other incentives that large banks have vis-à-vis the implementation of Basel II and III in non-member countries. Crucially, the more internationally active large banks are, the greater the likelihood that they will advocate Basel II and III implementation.

It is reasonable to expect foreign banks in non-member countries, particularly those operating as locally incorporated subsidiaries and subject to host-regulation, to advocate the implementation of Basel standards. Foreign banks that already comply with Basel standards at home can derive substantial competitive benefits from its adoption by host regulations in jurisdictions where competitor banks will struggle to meet the cost of compliance (Kern, Dhumale et al. 2006:148, Tarullo 2008:113, Gottschalk 2010).

Regulators may also implement Basel standards in order to help domestic banks expand overseas. As (Simmons 2001) explains, large financial centres have sought to use threats of market exclusion to pressure other countries to adopt their regulations. The Basel framework explicitly requires host countries to review the supervisory and regulatory regimes of home countries with a view to determining whether the home country regime is “adequate”, where adequate is defined as compliance with the Basel Committee framework and other relevant international standards (Alexander, Dhumale et al. 2005). Thus, as a matter of practical regulatory policy Basel implementation is an important mechanism for helping domestic

banks gain access into the markets of Basel member countries.[9] This was a major driver of Basel I adoption in Taiwan and Korea in the 1990s (Chey 2014) and helps explain relatively high levels of Basel implementation among countries in the Gulf (Ercanbrack 2015).

Even where Basel implementation is not a formal requirement, national authorities may adopt the standard to boost the international reputation of their internationally active banks (Simmons 2001, Knaack 2014). As the Executive Director of the Reserve Bank of India recently noted "Any deviation [from global standards] will hurt us both by way of reputation and also in actual practice. The "perception" of a lower standard regulatory regime will put Indian banks at a disadvantage in global competition" (Vishwanathan 2015). In China, state owned banks have championed Basel II implementation, as it has allowed them to attract foreign investors and management techniques, improve their credit ratings, and expand their foreign activities (Walter 2010).

As cross-border banking activity increases, regulators also face strong incentives to adopt Basel standards in order to facilitate home-host supervisory coordination. Precisely because Basel standards are widely recognized, we expect them to act as a focal point and for cross-border collaboration to result in convergence on Basel. We expect this effect to be particularly powerful when host regulators engage in supervisory relationships with home regulators that are already implementing the latest Basel standards.

3.2 Alignment with Supervisory Capacity, Legal Powers and Regulatory Approach

The second major explanation we consider is the degree of alignment between Basel II and III standards and the existing capacity and legal powers of national supervisors as well as the government's broader approach to banking regulation.

The sheer complexity of Basel II and III standards and the extensive work involved in recalibrating them to reflect local conditions helps explain low adoption of the most complex components, particularly in developing countries. Even national authorities in long-standing Basel member countries have found implementation of Basel II and III challenging. As a senior official from the Bank of England notes in reflecting on the UK's experience, "to use models and stress tests effectively requires intensive development and maintenance by firms and a highly skilled body of supervisors and a regime where judgement can be used. It also requires the supervisor to have a credible capacity to withdraw the permission given to a firm to use a particular model if the model is considered to be inadequate or the firm has not demonstrated the capacity to use it safely" (Bailey 2014:9). Implementation may also require new legislation granting additional power to supervisors, particularly for the macroprudential elements of Basel III, though we expect this to slow down rather than wholly deter implementation.

Supervisory Capacity

Although supervisory capacity is a constraint in most non-member countries, it is a particularly acute constraint in the poorest developing countries and can be a major deterrent for moving from relatively simple compliance-based supervision under Basel I to risk-based supervision under Basel II and III (Fuchs, Losse-Mueller et al. 2013). Even the simplest approaches for risk assessment under Basel II substantially increase the complexities of banking supervision when compared with Basel I. To effectively supervise the standardized approach to credit risk for instance, supervisors have the extra responsibility of defining and

[9] If a bank is deemed to be inadequately regulated at home, host regulators require banks to incorporate locally as subsidiaries in order to bring these banks under their direct regulation. However, the costs of operating through a subsidiary are much higher than operating through branches. Crucially, a branch model permits a banking group to integrate operations, raising funds in the cheapest location and redeploying them in the location with the highest return. See Persaud, A. (2015). Reinventing Financial Regulation: A Blueprint for Overcoming Systemic Risk, Apress. P225

monitoring credit rating agencies, their credit ratings and the extra task of ensuring that banks use those ratings appropriately (Powell 2004).

Basel III adds a further layer of complexity, exacerbating implementation challenges (as an indication, Basel I was 30 pages long, Basel II was more than 300 pages, and Basel III more than 600 pages in length). In a survey conducted by the Financial Stability Board, national supervisors from emerging and developing countries cited a shortage of high-quality human resources as the most important constraint to the implementation of Basel II and III (FSB 2013). Human and financial constraints on the part of the Ethiopian authorities helps explain why they continue to implement Basel I (Zwedu 2014). Capacity constraints are not confined to low-income countries, middle-income counties including Mauritius, Botswana and Namibia also face substantial constraints (Gottschalk 2016).

These challenges are compounded by the fact that national supervisors need to tailor Basel banking standards to the specific contexts in which they operate. There is consensus in academic and policy circles that in financial regulation one size doesn't fit all (The Warwick Commission 2011, Barth 2013) and there is an inevitable divergence between the international standards and the *sui generis* regulations that would be most appropriate to each jurisdiction's industry structure, pre-existing financial regulation, and political preferences (Tarullo 2008, Brummer 2010).

The Basel Committee has recognized the need for differentiation and while they seek to provide a common set of minimum standards, they also allow national authorities a range of different options to consider when implementing the standards. However, as a World Bank report notes, in some small or lower-income countries, the full range of options proposed by the Basel Committee is not properly thought through, resulting in the adoption of overly complex regulations for the level of economic development and complexity of the financial system (World Bank 2012). Moreover, for many developing countries, Basel III is arguably over-reliant on capital adequacy ratios and overlooks more important sources of financial risk arising from weaknesses in areas such as loan provisioning and consolidated supervision (Financial Stability Board 2013).

Specific Capacity Challenges

Some elements of Basel II and III are particularly complex. Within Basel II, the internal-model based approaches are the most challenging components to implement. Implementing the foundation approach to credit risk is particularly demanding as supervisors rather than banks provide key inputs (loss given default and exposure at default) (Cornford 2008). Meanwhile, internal-model approaches to market risk require supervisors to maintain staff with a high degree of technical skill and experience in reviewing banks' trading operations. The internal-model approaches to operational risk are perhaps the most challenging to implement as they give a high level of flexibility to banks and require substantial efforts by national authorities to ensure consistency in application (Basel Committee on Banking Supervision 2011).

Large banks in some developing countries may find it hard to implement internal model based approaches as they are generally less advanced than their counterparts in more developed countries in terms of developing and using internal rating methodologies, mapping those ratings into default probabilities, and establishing portfolio models of credit risk. Indeed, in many emerging countries, the supervisory agency's main motivation for moving towards the Basel II internal model-based approaches may be to improve banks' own internal risk management (Powell 2004). However, supervisors run the risk that banks will use their comparative advantage over supervisors in resources, expertise and experience to calibrate the models to their advantage, as they have in more developed countries.

Given the challenges of implementing internal models, it is perhaps not surprising that these

are the components of Basel II implemented least frequently. Several experts argue that full implementation of Pillar 2 (which aims at strengthening supervision) is a prerequisite for the use of internal-model based approaches (Powell 2004, Frait and Vladimir 2014). Regulators appear to be following this advice. The FSI data shows that, as at 2015, among the 19 jurisdictions implementing a model-based approach, only Bahrain and Peru had done so without also implementing Pillar II.

As with Basel II, the components of Basel III vary in their complexity. Some elements are relatively straightforward for supervisors to implement, particularly the new definitions of capital, the capital conservation buffer, the simple leverage ratio, and the D-SIB standard. Other are more challenging. The additional resource demands of adopting a macro-prudential approach are considerable, particularly in skills, training, modelling, technology, and data. Moreover, macroprudential standards under Basel III need to be adapted to reflect the main sources of systemic risk in many low-income countries which often stem from external macroeconomic shocks rather than the use of complex financial instruments and a high level of interconnectedness among banks (Gottschalk 2016). Moreover, few national authorities have dedicated units for conducting macro-prudential surveillance.

The design of the countercyclical buffer has been criticised for its mechanistic reliance on the credit to GDP ratio. While it is possible to design more effective buffers, many supervisory authorities lack the macroeconomic tools and methodologies to do so. In particular, the effectiveness of the buffer depends heavily on the supervisor's ability to accurately anticipate credit bubbles, which is particularly challenging in developing countries where the economy is changing rapidly (Basel Committee on Banking Supervision 2014).

The LCR and NSFR are relatively more sophisticated than most other Basel methodologies and need to be calibrated to suit the local contexts (Basel Committee on Banking Supervision 2014). Before implementing the LCR, national supervisors need to conduct granular quantitative impact studies to gauge whether there will be any challenges for banks in accessing the necessarily level and diversity of high-quality liquid assets. In developing and small economies where an LCR-like rule does not already exist and cross-border activities are minimal, the Basel Consultative Group proposes that the LCR should be introduced gradually (Basel Committee on Banking Supervision 2014).

A specific critique of the NSFR is that it may deter banks from engaging in long-term lending, especially in developing countries with shallower capital markets and heavy reliance on banks for long-term financing. National authorities need to conduct impact assessments to assess whether the factors used to calculate the 'available stable funding' in the Basel NSFR framework are justified in their jurisdictions. For instance, in smaller jurisdictions where non-resident deposits play a big role or where large cross-border mobility of deposits is observed, these deposits might be less reliable than assumed in the Basel framework, and a lower available stable funding factor might be warranted (Gobat, Yanase et al. 2014). Given these constraints, basic approaches such as the simple customer loans-to-deposit ratio seen in some developing countries may be more appropriate and easier to implement than the liquidity standards specified under Basel III (Fuchs, Losse-Mueller et al. 2013).

Legal Powers

Aside from the technical challenges of implementing complex standards, specific components of Basel II and III require substantial legal powers on the part of national supervisors. In countries where they have limited operational autonomy vis-à-vis local political authorities, supervisory authorities are likely to support implementation as a means of increasing their autonomy, as has been the case in China (Walter 2010). Where governments are willing to grant these powers, new parliamentary legislation may be required, and this can slow down implementation.

Under Basel II, the implementation of Pillar 2 requires that national supervisors have the powers to ensure prompt corrective action, the legal mandate to impose higher capital requirements, and ability to conduct supervision at a consolidated level, while Pillar 3 requires the oversight of confidentiality rules (Stephanou and Mendoza 2005). Full compliance with the internal model-based approaches relies on highly skilled regulators using judgement and discretion, thereby placing even more onus on regulators being independent, immune from lawsuits, and willing to challenge the well-connected (Calice 2010, Murinde and Mlambo 2010).

The macroprudential rules under Basel may require changes to the legal framework, as regulators may lack the legal authority for intervening on the basis of macroprudential factors as opposed to institution-specific factors. The implementation of some components may require quite specialised powers. Implementation of the new 'definitions of capital' requires all regulatory capital instruments to be able to absorb losses in the event that the issuing bank reaches the point of non-viability. This in turn requires that supervisors have sufficient powers to make judgment calls about the point at which a bank is deemed to be unable to continue on its own. Similarly, for the capital conservation buffer to be effective, restrictions on the distribution of profits in cases of non-compliance should be automatic and imposed on banks through requirements set forth by national legislation. Where foreign banks have a systemically important local presence, supervisors may require increased supervisory powers over branches and the ability to require conversion of branches into subsidiaries in order to implement the requirements on D-SIBs, and prevent banks in host jurisdictions from circumventing the higher loss absorbency requirements (Basel Committee on Banking Supervision 2014).

In many non-member countries national authorities lack the political and operational independence as well as the required enforcement powers to fully implement Basel II and III (Beck, Fuchs et al. 2009, FSB, IMF et al. 2011). In francophone West Africa for instance, the Banking Commission lacks sufficient power to enforce corrective measures in the case of non-compliance with regulations (Beck, Fuchs et al. 2009).

Alignment with Prevailing Regulatory Approach

Basel II and III standards are part of a wider set of international financial standards that assume an arms-length relationship between the regulator and the regulated and, given the right information in a timely fashion, that private capital markets will operate efficiently (Mosley 2010). This policy orientation is deeply embedded across the Basel framework. The Basel Core Principles emphasize the need for supervisors to have operational independence, free from political interference, and the relevant legal powers to ensure compliance. They allocate a central role to 'robust market discipline' for ensuring that the banking sector is 'safe and sound' and accordingly emphasize the need for public disclosure and transparency. Policy-directed lending and the general use of financial intermediaries as instruments of government policy are identified as distorting market signals and impeding effective supervision (Basel Committee on Banking Supervision 2012).

Basel II standards place greater emphasis on market actors and price signals than Basel I, with credit ratings agencies and banks accorded central roles in evaluating risks and the third pillar of Basel II dedicated to improving market discipline including through new public disclosure requirements. Compared with Basel I, Basel II and III also require governments to confer additional legal powers on supervisors.

In non-member countries where the government's approach to the financial sector is very different from that promoted by the Basel framework, we expect lower levels of Basel II and III implementation. This is particularly likely in countries where the government directly allocates credit through policy-directed lending. This regulatory strategy tends to empower local banks and firms at the expense of foreign banks and firms, and any move away from the

developmental state model is likely to provoke opposition from local elites who have been privileged (Mosley 2010). Analysis from Basel I implementation in Korea shows how a low level of regulatory alignment generated substantial resistance to implementation (Walter 2008, Chey 2014, Thurbon 2016). In China the introduction of Basel I was opposed by powerful factional elements within the party-state apparatus that benefited from the politically-directed credit allocation, and implementation only began in earnest after the Asian financial crisis alerted the leadership to the risks associated with an unreformed financial sector (Walter 2010).

At the other end of the spectrum, some governments may go out of their way to implement Basel II and III as part of a wider regulatory strategy of signalling to attract international investors into the financial services sector. When a country's commitment to transparency is low and its reputation for enforcement of national regulations is poor, then investors have less, and less trustworthy, information on which to base their decisions (Brummer 2010). Implementing Basel and other international standards is a mechanism for signalling commitment to transparency and more generally upholding international best practice. Financial centres that are trying to gain size and market share may find that the reputational payoffs for compliance with international standards are comparatively high, particularly when they are trying to convince investors of the sophistication of their financial centres (Brummer 2012). Conversely regulators may deliberately opt *against* the adoption of Basel and other international standards if they thrive on secrecy and regulatory forbearance, in order to signal commitment to continuing this approach (Goodhart 2011).

3.3 Financial Infrastructure & Financial Market Gaps

The third and final explanation we consider is that the shallow and selective implementation of Basel II and III is due to weaknesses in the wider financial infrastructure, particularly gaps in the availability of credit ratings and credit information, and the fact that some elements of Basel II and III have little relevance in countries where capital markets are in their infancy.

Credit rating agencies play a central role in the Basel II framework, a role that has been widely criticised since the financial crisis, but persists nonetheless. However many countries outside the Basel Committee do not have national ratings agencies and the penetration of global ratings agencies is limited to the largest corporations. The development of a local credit ratings industry is not straightforward – it requires, inter alia, a reporting and corporate governance framework for companies, strong accounting and external auditing rules, the existence of credit bureaus, as well as the collection and sharing of borrowers' data (Stephanou and Mendoza 2005). Where credit ratings are not available the standardized approach can still be used for assessing credit risk but the risk-weights applied to bank assets are very similar to Basel I, undermining the incentive for national supervisors to move from Basel I to Basel II.

The absence of external credit ratings may also impede implementation of the internal model based approaches to assessing credit risk under Basel II. Although banks use their own internal models to generate credit ratings under these approaches, supervisors need to validate these models and they commonly benchmark the ratings generated by banks against those generated by external ratings agencies in order to do so. Where the market or external ratings is shallow, validation becomes harder.

High quality data from credit reporting institutions, particularly credit registries, is particularly useful for implementing the macroprudential components of Basel III. Although regulators can obtain information from individual financial institutions, credit registries enable regulators to obtain a more comprehensive picture of interconnected risks in the financial sector because they typically contain information on all loans above a particular threshold made by regulated institutions. Credit registry data can provide the basis for

evaluating the systemic importance of financial institutions, thereby informing D-SIB calculations, and assist supervisors to make decisions on the countercyclical buffer decisions, by increasing the accuracy of risk-weighting in banks' loan portfolios (World Bank 2012). A paucity of credit information may thus impede the implementation of macroprudential standards.

Supervisors in countries with nascent capital markets may decide that specific components of Basel II and III are less relevant for their jurisdictions. Pillar 3 of Basel II aims to complement the other two Pillars by encouraging market discipline as a 'counterweight' to the increased discretion accorded to banks in the estimation of their own capital requirements. However it is only likely to be useful in countries where banks are publicly listed and capital markets are sufficiently deep and liquid for the market to act as a source of discipline (Powell 2004). Similarly, standards for counterparty credit risk will have little immediate impact where capital markets are thin, because bank activity in derivatives, repurchase agreements, and securities financing will be limited.

4. Insights from Regression Analysis

We estimate a number of OLS and probit models to probe the plausibility of our explanations. Given the small sample size and the high correlation between the covariates of interest, we choose to estimate simple regressions that nonetheless offer proofs of concept for our explanation of the variation in Basel adoption.

Data description:

Our data on the adoption of the Basel standards has largely been coded from surveys published by the Financial Stability Institute, which has surveyed the extent and date of Basel adoption in jurisdictions outside of the Basel committee every year since 2012. To augment this, we gathered additional data on the level of Basel II adoption in jurisdictions that joined the Basel Committee in 2009. We code a country's adoption of each component of Basel II and III and then combine this into a single index for each Basel II and III, encompassing the ten components of Basel II and eight components of Basel III.[10]

For our analysis of Basel II, we use a cross-section of data on the extent of Basel II adoption in 2008, the year when the universe of standard-takers was the largest, prior to the expansion of the Basel Committee in 2009. In 2008, the mean level of Basel II adoption among the 115 standard-takers for which we have data was 2.11. In our regressions investigating the adoption of Basel III we use data from the most recent available year, 2015. In that year, the mean level of adoption among the 100 standard-takers in the dataset was 1.34 components. To probe specific explanations for particular components of the Basel standards we also include a few regressions with a binary dependent variable of the adoption of individual elements of the standard.

Explanatory variables:

We model the variation in Basel II and III adoption in line with the three explanations outlined above: banking sector politics; alignment with supervisory capacity, legal power and regulatory approaches; and financial infrastructure and financial market gaps. We use the following measures to capture variation in standard-taking countries across these three explanations.

Banking sector politics

To explore the expectation that Basel II and III adoption is determined by the adjustment costs faced by banks, we use data on the actual *risk-adjusted* and *non-risk-adjusted capital ratio* in the banking sector taken from Barth et al's Bank Regulation and Supervision Dataset

[10] A jurisdiction is coded as adopting a component if there is a "final rule published" or a "final rule in force".

(Barth, Caprio et al. 2013). If adoption is in fact shaped by adjustment costs, then we ought to see a positive relationship between the actual capital ratio and the extent of Basel II and III adoption. However, as we explain above, we do not expect the level of capitalization to be the main impediment to Basel adoption, and thus predict a null finding.

To get at the distributive politics of banking regulation, we include four covariates. First, we test for the effect of *banking sector concentration*, measured as the assets held by the three largest commercial banks as a share of all banking assets and taken from the Global Financial Development Database. Second, we include an indicator of *foreign bank presence,* which is measured in terms of the percentage of a jurisdiction's banking assets that are held by foreign banks and taken from Claessens and van Horen's dataset on crossborder banking (Claessens and van Horen 2014). Third, we control for whether there are banks headquartered domestically that operate abroad, *banks abroad,* an indicator we recode from Claessens and van Horen's dataset. We expect both indicators of banking sector internationalization to be positively correlated with the extent of Basel adoption. Fourth, we include a measure of the *number of government owned banks*, taken from Barth et al's Bank Regulation and Supervision survey. As a robustness check, we control for whether a jurisdiction has experienced a recent systemic banking crisis, using the data from Laeven and Valencia (2012).[11]

Alignment with supervisory capacity, legal powers and regulatory approach

As we outline above, implementation of Basel II and III requires significant institutional capacity. To test for this, we first use the *regulatory quality index* taken from the World Bank's World Governance Indicators as a measure of the government's overall regulatory capacity. This index amalgamates perceptions of regulatory quality from different sources, including firm surveys and NGO assessments, and ranges from -2.5 to 2.5. We expect that jurisdictions evaluated as having better overall regulatory quality will adopt more of Basel II and III. For a more specific evaluation of the effect of the resources available to banking supervisors, we use data from Barth et al's Bank Regulation and Supervision Dataset to calculate the *number of supervisors per bank*, expecting that jurisdictions with more human resources will be better able to implement the complex elements of Basel II and III. We also draw from Barth et al's dataset for the *supervisory power index*, which amalgamates responses to numerous survey questions about the tools available to banking supervisors to prevent and correct problems, and ranges from 0 to 16.5. As a robustness check, we test for the effect of corruption, using Transparency International's corruption perception index.

The Basel standards also reflect a particular policy orientation. We therefore expect that adoption of the standards depends on their alignment with prevailing regulatory practices. We use several proxies to capture a jurisdiction's regulatory approach, all from Barth et al's Bank Regulation and Supervision dataset. First, the *capital stringency index* measures the responsiveness of capital requirements to credit risk, and ranges from 0 to 7. It includes whether jurisdictions use risk-weighting in line with the Basel I guidelines.[12] We expect jurisdictions with higher pre-existing capital stringency will be more aligned with the Basel standards and therefore will implement them to a greater extent. Second, we include a binary indicator of *accounting practices*, which is equal to 1 if a jurisdiction uses either the International Financial Reporting Standards (IFRS) or the US Generally Accepted Accounting Principles (GAAP). The use of international accounting practices not only eases the introduction of the Basel capital requirements, but also reflects the convergence of a

[11] For the analysis of Basel II adoption in 2008 we measure whether a jurisdiction has experienced a crisis in the preceding five years. In the regressions of Basel III adoption in 2015 the indicator captures any systemic banking crisis 2007-2012.

[12] For our regressions of 2008 adoption of Basel II we use data from the 2000 and 2003 surveys, i.e. prior to the agreement of Basel II, so as to avoid possible reverse causality, in which greater capital stringency is a consequence of the adoption of Basel II.

jurisdiction's regulatory practices with international expectations. We expect jurisdictions that have adopted the accounting standards to adopt more of Basel II and III.

The Basel standards reflect an expectation that market actors will monitor banks' behaviour. We use the measure *private monitoring index* to capture whether this aligns with a jurisdiction's approach to regulation. This indicator ranges from 0 to 12, with higher values reflecting more private oversight. Finally, as a robustness check, we control for the *external governance index*, which is an overall indicator of the use of external standards and private bodies in the monitoring and oversight of the financial sector in a jurisdiction. It ranges from 0 to 19.

Financial infrastructure and financial market gaps

We expect the extent of Basel II and III adoption to vary with the appropriateness of the standard for the jurisdiction in question. We therefore include a number of measures intended to capture the development of domestic financial infrastructure and financial markets. We include *financial sector depth*, measured as the amount of credit provided to the private sector as a percentage of GDP, the commonly used indicator of the size of a financial sector (see for example Beck, Demirgüç-Kunt et al. (2009)). We expect that economies with deeper financial sectors will be more likely to adopt more of Basel II and III. We also control for *market capitalization*, which measures the capitalization of publicly listed companies as a percentage of GDP and is taken from the World Bank.

To account for the fact that both Basel II and III rely on data availability for risk calculations, particularly of credit risk, we include two proxies of the extent and quality of credit information available within a jurisdiction: the *depth of information index* and *private credit bureau coverage*. The first is a World Bank index of the depth of credit information, ranging from 0 to 8.[13] However, there is risk of reverse causality in using this measure, since it is possible that a deepening of available credit information is a consequence of adoption of the Basel standards, rather than a pre-existing feature of the economy. Therefore, we also use a second indicator, *private credit bureau coverage*, which is taken from the World Bank and measures the percent of the adult population whose credit information is documented by a private credit bureau. For both of these, we expect that jurisdictions with more credit information available will adopt more of Basel II and III

Methodology:

For our cross-sectional analysis of the extent of Basel II adoption in 2008 and the extent of Basel III adoption in 2015, we use OLS regressions with robust standard errors. To model the adoption of specific components of the Basel standards we use probit regressions with robust standard errors. Covariates are lagged to avoid simultaneity bias, with most covariates averaged over the preceding three or five years.[14] In models of Basel III adoption, we control for the level of Basel II adoption in order to account for path dependence. Among our sample of non-members of the Basel Committee, approximately 70% are upper middle-income, lower middle-income, or low-income for which the data coverage on key covariates is often very limited.[15] To maintain sample sizes and statistical power, we therefore choose to include each of the key covariates in turn, rather than in a large multivariate regression.[16] We control

[13] This data is only available for 2013-2016, but since is fairly time invariant, we use the 2013 reported score for the 2008 regressions.

[14] For covariates taken from the Barth et al. Bank Regulation and Supervision Dataset, we use responses from the most recent available survey prior to the introduction of the standard (i.e. the 2003 survey for Basel II and the 2012 survey for Basel III).

[15] For instance, in 2008, there is market capitalization data for only 51 out of the 115 countries in our sample (44%).

[16] Given that many of the covariates are also very highly correlated, we are also precluded from combining them in a single multivariate regression for reasons of multicollinearity.

for financial sector depth in all of our models, since this is the most reliable predictor of adoption.

Results:

Tables 1 and 2 below show the results of our models of Basel II and III adoption. To summarize, we consistently find that *financial sector depth* and other measures of financial infrastructure and financial market development predict the extent of Basel II and III adoption. We also find evidence that the internationalisation of the banking sector and alignment with regulatory quality and approach matter for the extent of Basel II and III adoption. As expected, we find no relationship between the extent of adoption and the level of capitalisation in the banking sector.

[Insert Tables 1 and 2 about here]

Beginning with adjustment costs, column 1 of Tables 1 and 2 shows that actual *capital ratios* are not significantly associated with the extent of Basel II or III adoption, even when controlling for *financial sector depth*.[17] This suggests that, as we expected, high adjustment costs are unlikely to be a plausible explanation for relatively low levels of Basel II and III adoption in most cases. With respect to distributive politics in the banking sectors, however, there is some evidence of banking sector internationalisation affecting the extent of Basel II and III implementation. While *foreign bank presence* is not significantly associated with Basel II or Basel III (column 2), there is a significant positive effect of both *banking sector concentration* and *banks abroad*. In column 3 of Tables 1 and 2, *banking sector concentration* is positively associated with the extent of Basel II and II implementation, suggesting that large banks may be contributing to the uptake of Basel standards. Further, jurisdictions that have at least one *bank abroad* are predicted to adopt 1.15 additional components of Basel II by 2008 and 0.76 additional components of Basel III by 2015, all else constant. This lends support to the explanation that cross-border operations by domestic banks can incentivize convergence on the Basel standards. The *number of government banks* is not significantly associated with the extent of Basel II or III adoption (column 4), nor is the experience of a systemic banking crisis.

Turning to alignment with supervisory capacity, legal powers and regulatory approach, we find some evidence that this matters for Basel II and III adoption. *Regulatory quality index* is positively and significantly associated with the adoption of Basel II (column 5, Table 1). A difference of one standard deviation in the *regulatory quality index* (0.70) is associated with the adoption of one additional component of Basel II. We find no similar effect for Basel III. We also surprisingly do not find an effect of *number of supervisors per bank* or *supervisory power* on either Basel II or III adoption. However, this may be in part due to the quality of the data on the number of supervisors, which appears to have been reported very differently by different respondents to the Bank Regulation and Supervision survey.[18] There is no effect of corruption on implementation of the Basel standards.

We do find evidence that the prevailing regulatory approach shapes the adoption of both Basel II and III. Unsurprisingly, there is a robust positive relationship between Basel II adoption and subsequent implementation of Basel III (see Table 2), which suggests there is a high level of path dependence. Holding all else constant, those jurisdictions that had adopted at least one component of Basel II by 2015 took up around 0.30 more components of Basel III than those that had implemented none of Basel II. Further, there is a positive and statistically

[17] This is also the case when risk-adjusted and non-risk-adjusted capital ratios are included in the model individually or when we control for *log GDP per capita* instead of *financial sector depth*.

[18] For instance, China reports having 16,546 banking supervisor employees, while New Zealand reports having only 7. We drop China from our analysis because it is such an outlier in its response, and still do not find an effect *number of supervisors per bank* and adoption of the Basel standards.

significant effect of the *capital stringency index* on the adoption of Basel III (column 8, Table 2). Those jurisdictions that had tighter capital requirements prior the introduction of Basel III in 2011 adopted more of Basel III by 2015. We find no such effect for Basel II. For both Basel II and III there is a positive and significant effect of the *private monitoring index*. Jurisdictions with greater market infrastructure and incentives for private monitoring of firms adopt more of both Basel II and III, indicating the importance of alignment between existing regulatory approaches and the Basel standards.

There is considerable evidence that adoption of the Basel standards varies with the appropriateness of the standard for the jurisdiction in question. We find a robust positive and significant association between *financial sector depth* and the extent of Basel II and III adoption. Across the models in Table 1 a difference of one standard deviation in *financial sector depth* (38.73% of GDP) is associated with a difference of approximately two additional components of Basel II. This effect is less pronounced for Basel III, where a similar difference in financial sector depth is associated with the adoption of 0.31 additional components of Basel III. As explained above, the suitability of many elements of Basel II and III has been challenged for countries with low levels of financial sector depth. Where the standards are implemented they need to be carefully tailored to reflect the local context, a task that is particularly onerous for supervisors that are acutely resource constrained. The results suggest that this is a particularly powerful reason for selective implementation.

For Basel II, we also find a positive and statistically significant effect for *market capitalization* (column 12, Table 1). Holding constant *financial sector depth*, jurisdictions with more developed capital markets will adopt more of Basel II; a difference of one standard deviation in market capitalization (130.89% of GDP) is associated with the adoption of 1.31 additional components of Basel II. There is also a positive and statistically significant relationship between the *depth of information index* and the extent of Basel II adoption (column 13, Table 1), pointing to the importance of market infrastructure for credit information. Substantively, jurisdictions that score one standard deviation higher on the index (2.98 points) are predicted to adopt 0.42 additional components of Basel II. We do not find similar effects for Basel III. However, there is no effect of *private credit bureau coverage* on the extent of implementation of either Basel II or III.

In Table 3, we probe the drivers of adoption for some specific subcomponents of the Basel standards. Results are reported as odds ratios. First, in columns 1-3, we look at the internal model-based components of Basel II.[19] We find a significant positive association with *banking sector concentration.* Surprisingly, we find no effect of banking sector internationalization on these model-based components in particular, though there was an effect of *banks abroad* on Basel II adoption overall. We also find that jurisdictions are more likely to adopt these model-based approaches to risk if they score higher on the *regulatory quality index*, reflecting how demanding these components are to implement. We tested the effect of supervisory capacity on Pillar II of Basel II, which focuses on strengthening supervision, but found no effect. When investigating Pillar III (column 4), we find a positive significant relationship between *market capitalization* and implementation of this subcomponent, which is intended to strengthen market discipline. We tested the relationship between supervisory capacity and the uptake of the macroprudential components of Basel III, but found no evidence of an effect.

[Insert Table 3 about here]

[19] There are four such elements of Basel II: the foundation and advanced internal ratings-based approaches to credit risk, the advanced measurement approach to operational risk, and the internal models approach to market risk. Countries are coded as one if they have adopted one or more of these internal model-based components and zero otherwise.

5. Conclusion

Basel II and III were designed by regulators from a select group of countries at the core of the international financial system. They are intended to regulate large, complex and internationally active 'super-banks' in the EU and US and they are arguably ill-suited for the regulation of most banks in other parts of the world (Buckley 2015). Yet they have been implemented over the last decade by regulatory authorities across the world that had no part in setting the standard. Some of these adopters hail from low-income countries at periphery of the international financial system and thus oversee banking systems that differ greatly from those of the standard-setters.

Previous scholars have examined the drivers behind the adoption of Basel and other international financial standards by 'standard-taking' regulators, and have explored in detail the domestic political economy dynamics associated with their implementation in individual countries. In this paper be have built from this literature to scrutinise global Basel II and III adoption across 'standard-takers' and we have shown that while many countries are indeed taking steps to implement Basel II and III, implementation is, on the whole, shallow and highly selective.

Drawing on the available evidence and a series of simple regressions, we have argued that the sheer complexity of Basel standards and the fact that they need substantial modification before they can be implemented is a particularly powerful explanation for shallow and selective implementation among non-members, the majority of which are developing countries. These implementation challenges are compounded by gaps in the financial market infrastructure, notably credit rating agencies, as well as shallow capital markets.

Beyond this, we have suggested that more political factors shape implementation decisions. It is plausible that non-member countries are likely to pursue relatively high levels of Basel II and III implementation when powerful foreign and internationally active domestic banks operate in their jurisdiction, and when they have relatively liberalized banking sectors and a history of a market-oriented approach to financial sector regulation. Conversely non-member countries are likely to pursue relatively low levels of Basel II and III implementation when they have few internationally active domestic banks and a more interventionist approach to the financial sector.

Our findings have substantial policy implications. While other scholars have pointed out the flaws inherent in pursuing a 'one-size-fits-all' global standard for banking supervision, our analysis has highlighted the practical and political impediments to such an approach. These results highlight the fundamental challenges of global regulatory harmonization in a world of heterogeneous financial sectors.

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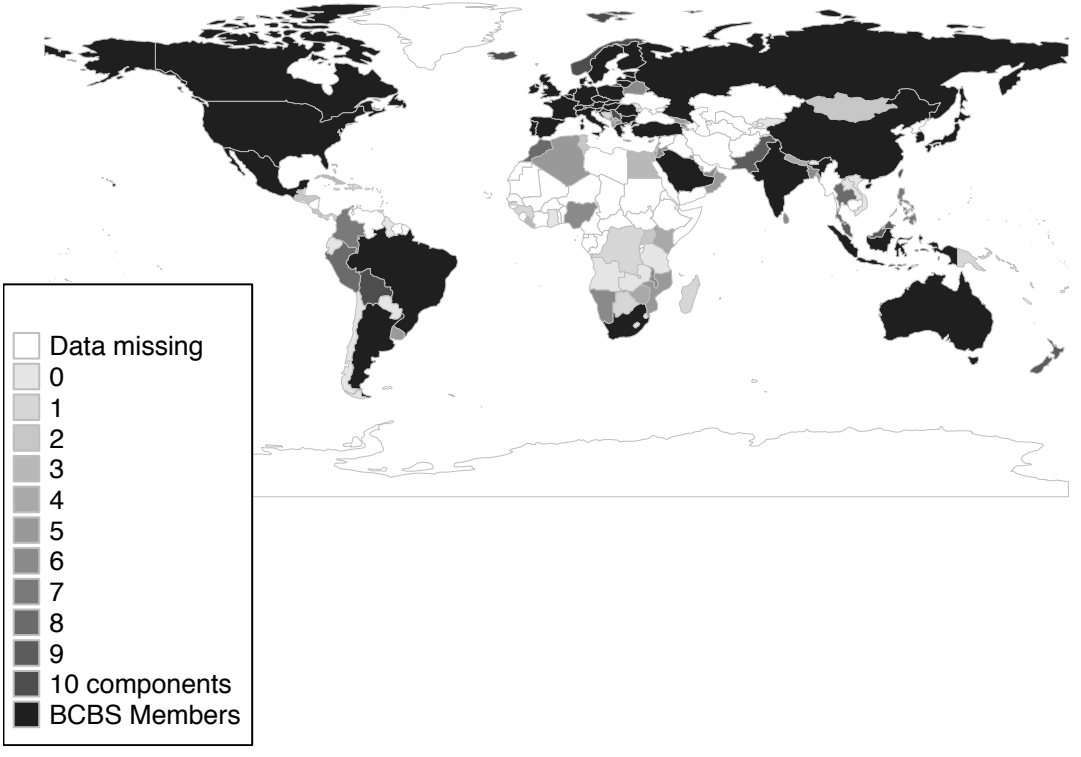
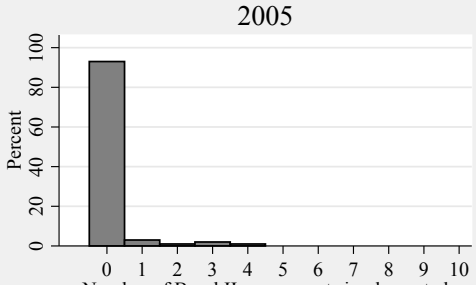
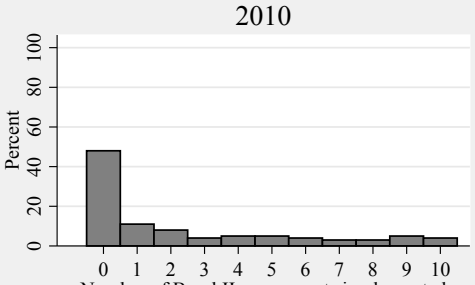
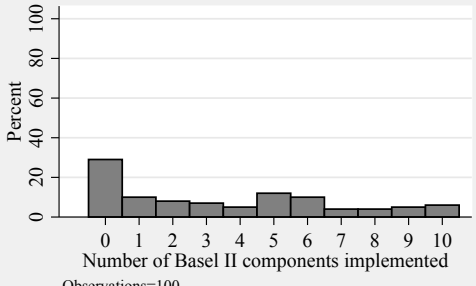
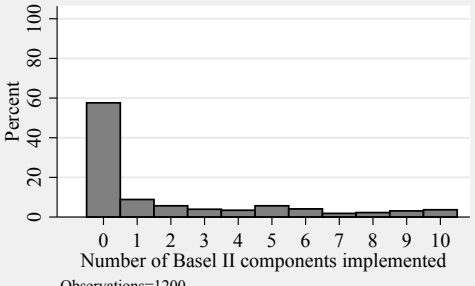
Figure 1: Level of Global Basel II Adoption




2005
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8 9 10
Number of Basel II components implemented
Observations=100


2010
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8 9 10
Number of Basel II components implemented
Observations=100


2015
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8 9 10
Number of Basel II components implemented
Observations=100


2004-2015
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8 9 10
Number of Basel II components implemented
Observations=1200

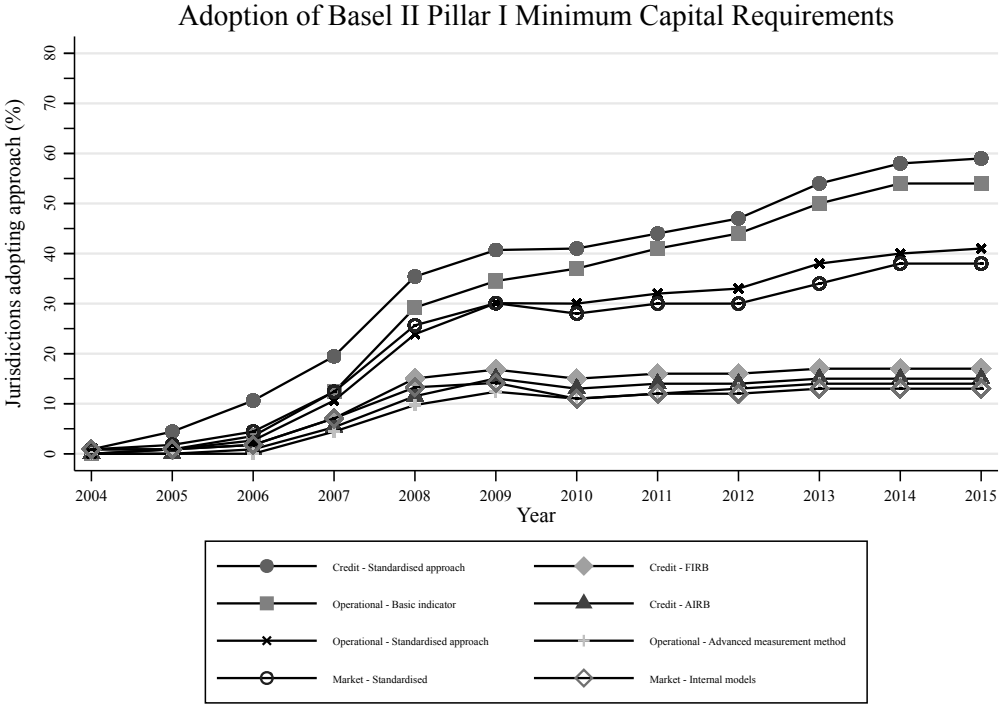
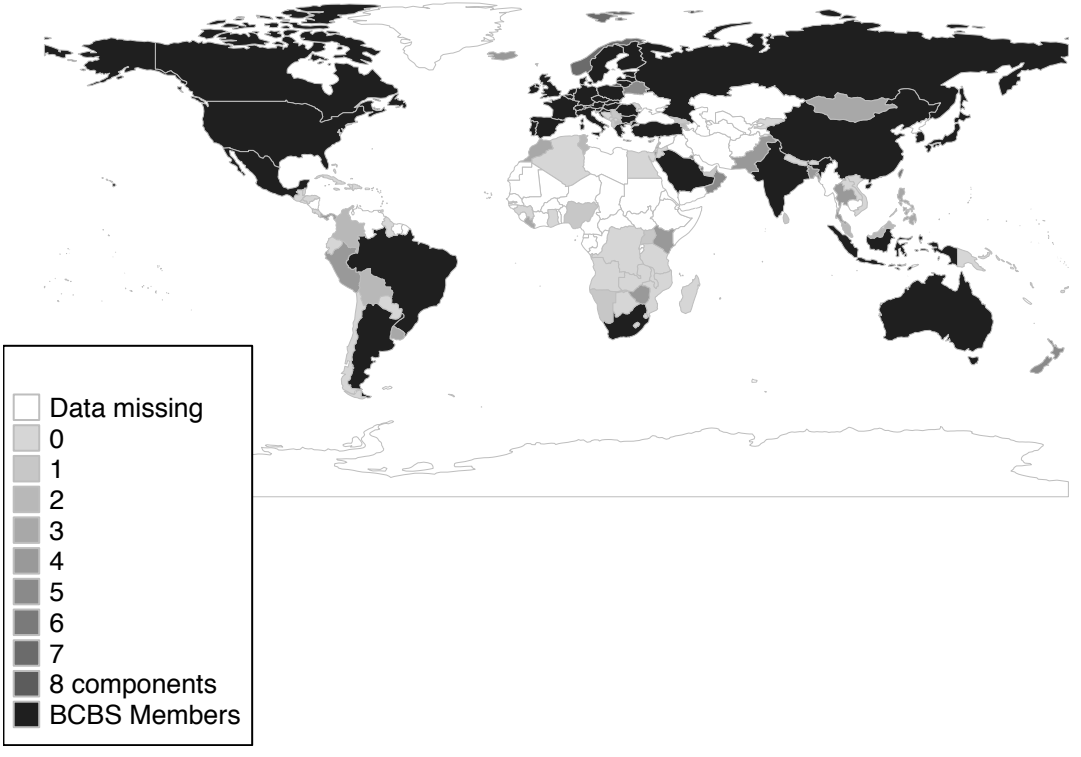
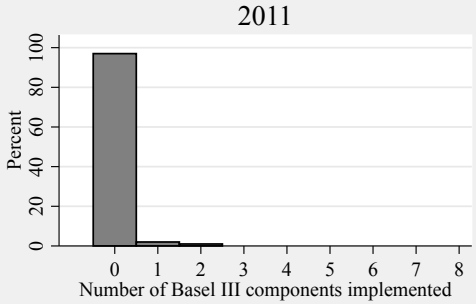
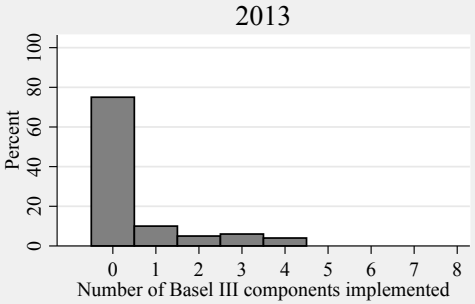
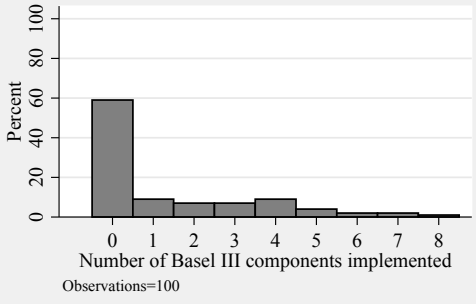

Adoption of Basel II Pillar I Minimum Capital Requirements
Jurisdictions adopting approach (%)
0
10
20
30
40
50
60
70
80
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year
Credit - Standardised approach
Credit - FIRB
Operational - Basic indicator
Credit - AIRB
Operational - Standardised approach
Operational - Advanced measurement method
Market - Standardised
Market - Internal models

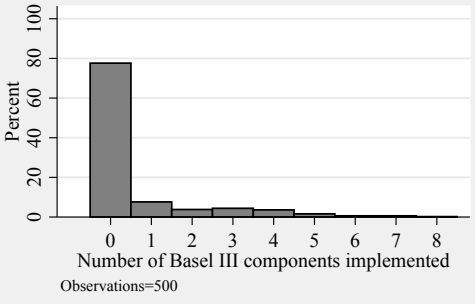
Figure 4: Level of Global Basel III Adoption




2011
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8
Number of Basel III components implemented
Observations=100


2013
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8
Number of Basel III components implemented
Observations=100


2015
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8
Number of Basel III components implemented
Observations=100


2011-2015
Percent
0
20
40
60
80
100
0 1 2 3 4 5 6 7 8
Number of Basel III components implemented
Observations=500

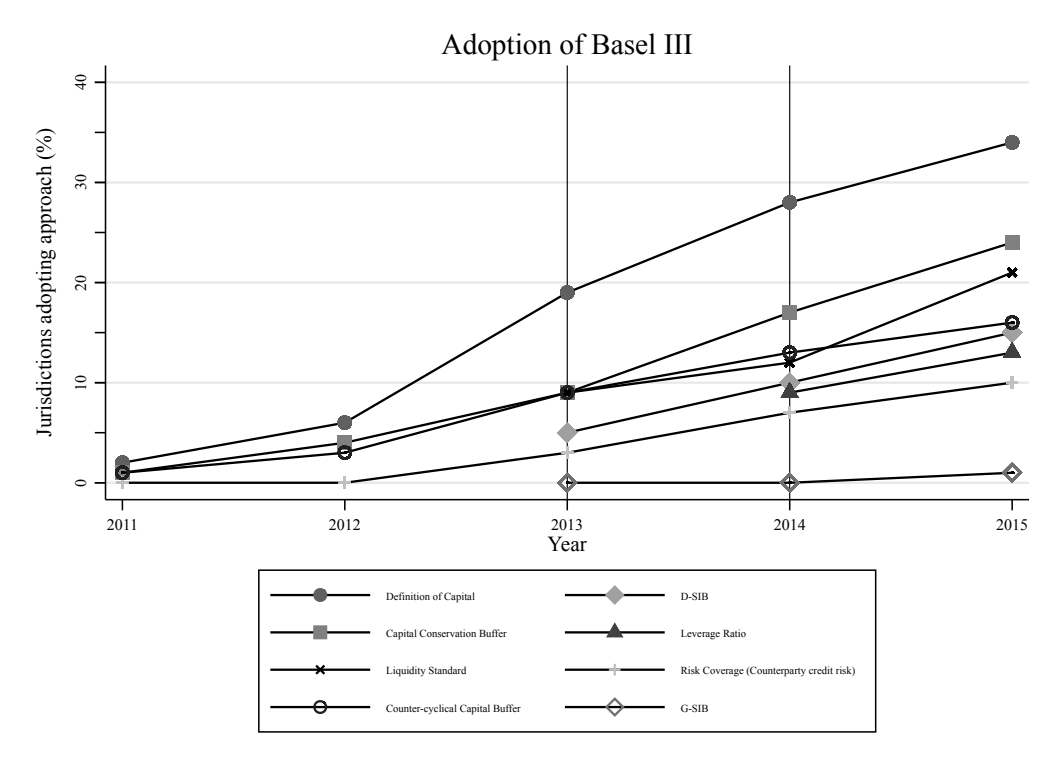

Adoption of Basel III
Jurisdictions adopting approach (%)
0
10
20
30
40
2011
2012
2013
2014
2015
Year
Definition of Capital
Capital Conservation Buffer
Liquidity Standard
Counter-cyclical Capital Buffer
D-SIB
Leverage Ratio
Risk Coverage (Counterparty credit risk)
G-SIB

Table 1: OLS models of extent of Basel II Adoption by non-members of the Basel Committee, 2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Financial Sector Depth	0.05***	0.06***	0.04***	0.05***	0.03***	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***	0.04***	0.04***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Risk-adjusted capital ratio	-2.91													
	(5.98)													
Non risk-adjusted capital ratio	2.25													
	(3.93)													
Banking sector concentration		0.02	0.03**											
		(0.02)	(0.02)											
Foreign bank presence		0.00												
		(0.01)												
Banks abroad			1.15*											
			(0.63)											
Number of government owned banks				-0.01										
				(0.01)										
Regulatory quality index					1.42**									
					(0.58)									
Number of supervisors per bank						0.03								
						(0.06)								
Supervisory power index							0.07							
							(0.09)							
Capital stringency index								0.24						
								(0.19)						
Accounting practices								-0.02						
								(0.95)						
Private monitoring index									0.46***					
									(0.17)					
External governance index										0.10				
										(0.11)				
Market capitalisation												0.01**		
												(0.00)		
Depth of information index													0.14**	
													(0.07)	
Private credit bureau coverage														0.00
														(0.01)
Constant	0.24	-2.04*	-2.87**	0.01	0.60	-0.50	-1.14	-1.02	-3.74**	-1.91	-0.28	0.26	-0.75**	-0.54*
	(1.65)	(1.02)	(1.31)	(0.42)	(0.48)	(0.39)	(1.11)	(1.15)	(1.42)	(1.29)	(0.30)	(0.71)	(0.33)	(0.29)
Observations	66	59	80	86	87	82	88	77	80	36	98	49	88	79
R-squared	0.36	0.36	0.31	0.38	0.43	0.43	0.37	0.40	0.40	0.35	0.36	0.31	0.39	0.50

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: OLS models of extent of Basel III Adoption by non-members of the Basel Committee, 2015

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Basel II adoption	0.38***	0.30***	0.31***	0.33***	0.32***	0.31***	0.32***	0.34***	0.29***	0.32***	0.33***	0.33***	0.31***	0.30***
	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.08)	(0.05)	(0.06)
Financial sector depth	0.01	0.01*	0.01*	0.01**	0.01	0.01**	0.01**	0.01***	0.01**	0.01**	0.01**	0.02**	0.01**	0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
Risk-adjusted capital ratio	-1.25													
	(2.10)													
Non risk-adjusted capital ratio	0.91													
	(1.62)													
Banking sector concentration		0.01	0.02*											
		(0.01)	(0.01)											
Foreign bank presence		-0.00												
		(0.01)												
Banks abroad			0.76**											
			(0.36)											
Number of government owned banks				0.00										
				(0.01)										
Regulatory quality index					0.37									
					(0.29)									
Number of supervisors per bank						0.03								
						(0.04)								
Supervisory power index							-0.05							
							(0.06)							
Capital stringency index								0.26***						
								(0.09)						
Accounting practices								0.09						
								(0.31)						
Private monitoring index									0.16*					
									(0.10)					
External governance index										0.05				
										(0.08)				
Market capitalisation												-0.01		
												(0.01)		
Depth of information index													0.04	
													(0.05)	
Private credit bureau coverage														0.00
														(0.01)
Constant	-0.14	-1.08	-1.60**	-0.43*	-0.14	-0.53*	0.15	-1.86***	-1.59**	-1.20	-0.30	-0.55	-0.48*	-0.32
	(0.58)	(0.73)	(0.70)	(0.23)	(0.29)	(0.30)	(0.74)	(0.54)	(0.74)	(1.14)	(0.22)	(0.51)	(0.26)	(0.24)
Observations	55	52	65	74	76	74	76	71	75	53	86	28	74	79
R-squared	0.54	0.50	0.52	0.46	0.46	0.46	0.45	0.49	0.46	0.51	0.45	0.47	0.45	0.44

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Probit models of adoption of Basel II subcomponents by non-members of the Basel Committee, 2008

	(1) Basel II Internal models	(2) Basel II Internal models	(3) Basel II Internal models	(4) Basel II Pillar III
Financial Sector Depth	1.02***	1.02***	1.02***	1.01*
	(0.01)	(0.01)	(0.01)	(0.01)
Banking sector concentration	1.02*	1.02**		
	(0.01)	(0.01)		
Foreign bank presence	1.00			
	(0.01)			
Banks Abroad		2.59		
		(1.53)		
Regulatory quality index			2.03**	
			(0.70)	
Private monitoring index				0.72
				(0.15)
Market capitalisation				1.01**
				(0.00)
Constant	0.03***	0.01***	0.15***	2.18
	(0.02)	(0.02)	(0.06)	(3.39)
Observations	59	80	87	47
Pseudo R2	0.31	0.33	0.37	0.26

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1