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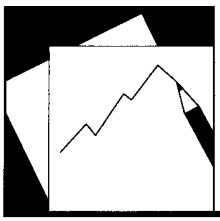

IMF Working Paper

Too Cold, Too Hot, Or Just Right? Assessing Financial Sector Development Across the Globe

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Too Cold, Too Hot, or Just Right? Assessing Financial Sector Development Across the Globe

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Abstract

This paper introduces the concept of the financial possibility frontier as a constrained optimum level of financial development to gauge the relative performance of financial systems across the globe. This frontier takes into account structural country characteristics, institutional, and macroeconomic factors that impact financial system deepening. We operationalize this framework using a benchmarking exercise, which relates the difference between the actual level of financial development and the level predicted by structural characteristics, to an array of policy variables. We also show that an overshooting of the financial system significantly beyond levels predicted by its structural fundamentals is associated with credit booms and busts.

JEL Classification Numbers: E44; E52; F6; G2; O16

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I. INTRODUCTION

Ample empirical evidence has shown a positive, albeit non-linear, relationship between financial system depth, economic growth, and macroeconomic volatility. At the same time, rapid expansion in credit has been associated with higher bank fragility and the likelihood of a systemic banking crisis.[1] This seemingly conflicting evidence is actually consistent with theory. The same mechanisms through which finance helps growth also makes it susceptible to shocks and, ultimately, fragility. Specifically, the maturity and liquidity transformation from short-term savings and deposit facilities into long-term investments is at the core of the positive impact finance on the real economy, but it can also render the system susceptible to shocks. The information asymmetries and ensuing agency problems between savers and entrepreneurs that banks help to alleviate can also turn into a source of fragility given agency conflicts between depositors/creditors and banks.

The importance of the financial sector for the overall economy raises the question of the "optimal" or "Goldilocks" level of financial depth and the requisite policies to reach this optimum. Given the dual-faced nature of financial deepening, contributing to growth while often resulting in boom-bust cycles, and the identification of non-linear relationships between growth, volatility, and financial depth, it is apparent that additional deepening is not always desirable. Further, there is increasing evidence for a critical role of the financial system in defining policy space and the transmission of fiscal, monetary and exchange rate policies (IMF, 2012). Both shallow as well as over-extended financial systems can severely reduce the available policy space and hamper transmission channels.

The conceptual and empirical frameworks offered in this paper are relevant for the academic and policy debate on financial sector deepening, particularly in developing countries. We introduce the concept of a financial possibility frontier as a constrained optimum level of financial development to gauge the relative performance of financial systems around the globe. Specifically, this concept allows us to assess the performance of countries' financial systems over time relative to structural country characteristics and other state variables (e.g., macroeconomic and institutional variables). Depending on the position of country's financial system relative to the frontier, policy options can be prioritized to address deficiencies.

Three different sets of policies can be delineated depending on a country's standing relative to the frontier. *Market-developing policies*, related to macroeconomic stability, long-term institution building, and other measures to overcome constraints imposed by a small size or volatile economic structure, can help push out the frontier. *Market-enabling policies*, which address deficiencies such as regulatory barriers and lack of competition, can help a financial system move toward the frontier. Finally, *market-harnessing policies* help prevent a financial system from moving beyond the frontier (the long-term sustainable equilibrium), and include regulatory oversight and short-term macroeconomic management.

[1] See Levine (2005) and Beck (2012) for an overview of the literature.

We also operationalize this conceptual framework by presenting a benchmark model that predicts countries' level of financial development based on structural characteristics (e.g., income, size, and demographic characteristics) and other fundamental factors. The most straightforward approach for assessing a country's progress in financial deepening is to benchmark its financial system against peers or regional averages. Such comparisons, while useful, do not allow for a systematic unbundling of structural and policy factors that have a bearing on financial deepening. Using regression analysis, we relate gaps between predicted and actual levels of financial development to an array of macroeconomic, regulatory, and institutional variables. We also provide preliminary evidence that overshooting the predicted level of financial development is associated with credit boom-bust episodes, underlining the importance of optimizing rather than maximizing financial development.

This paper is related to several literatures. First, it is directly related to an earlier exercise to derive an access possibilities frontier as a conceptual tool to assess the optimal level of sustainable outreach of the financial system (Beck, and de la Torre, 2007). While Beck, and de la Torre (2007) focus on the microeconomics of access to and use of financial services, this paper provides a macroeconomic perspective on financial sector development. Second, our paper is related to the empirical literature on benchmarking. Based on Beck et al. (2008) and Al Hussainy et al. (2011), we derive a benchmarking model that relates a country's level of financial development over time to a statistical benchmark, obtained from a large panel regression.

In a broader sense, the paper is also related to the literature on the finance-growth nexus, financial crises, and studies identifying policies needed for sound and effective financial systems. The finance and growth literature, as surveyed by Levine (2005), among others, has found a positive relationship between financial deepening and growth. More recent work, however, has uncovered non-linearities in this relationship. There is evidence that the effect of financial development is strongest among middle-income countries (Barajas et al., 2012), whereas other work finds a declining effect of finance on growth as countries grow richer.[2] More recently, Arcand et al. (2012) find that the finance-growth relationship becomes negative as private credit reaches 110 percent of GDP, while Dabla-Norris and Srivisal (2013) document a positive relationship between financial depth and macroeconomic volatility at very high levels.

Our paper is also related to a growing literature exploring the anatomy of financial crises.[3] This literature has pointed to the role of macroeconomic, bank-level and regulatory factors in driving and exacerbating financial fragility. Finally, our paper is related to a diverse literature

[2] Rioja and Valev (2004a, 2004b) and Aghion et al. (2005).

[3] See Detragiache and Demirguc-Kunt (2005) and Claessens et al. (2011)

exploring macroeconomic and institutional determinants of sound and efficient financial deepening.[4]

The remainder of this paper is structured as follows. The next section introduces the concept of the financial possibilities frontier, while section III discusses the taxonomy of financial sector policies based on this concept. Section IV introduces the benchmarking exercise and documents the relative performance of different country groups over time. Section V relates the gap between actual and benchmark levels of financial depth to different financial sector policies, and to the occurrence of credit booms. Section VI concludes.

II. THE FINANCIAL POSSIBILITY FRONTIER

The typical market frictions that interact to affect the process of financial deepening are associated either with information, enforcement, or transactions costs (Levine, 2005; Merton and Bodie, 2005; de la Torre et al., 2013).[5] As discussed in this section, financial intermediaries and markets arise exactly because these market frictions prevent direct intermediation between savers and borrowers. However, their efficient operation is limited by the same.

Fixed transaction costs in financial service provision result in decreasing unit costs as the number or size of transactions increases. These fixed costs exist at the level of the transaction, client, institution, and even the financial system as a whole. Processing an individual payment or savings transaction entails costs that, at least in part, are independent of the value of the transaction. Similarly, maintaining an account for an individual client also implies costs that are largely independent of the number and size of the transactions the client makes. At the level of a financial institution, fixed costs span a wide range—from the brick-and-mortar branch network to computer systems, legal and accounting services, and security arrangements—and are independent of the number of clients served. Fixed costs also arise at the level of the financial system (e.g., regulatory costs and the costs of payment, clearing, and settlement infrastructure) which are, up to a point, independent of the number of institutions regulated or participating in the payment system.

The resulting economies of scale at all levels explain why financial intermediation costs are typically higher in smaller financial systems and why smaller economies can typically only sustain small financial systems (even in relation to economic activity). They also explain the limited capacity of small financial systems to broaden their financial systems towards clients with need for smaller transactions.[6]

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[4] See, for example, Boyd et al. (2001), Djankov et al. (2007), and Demirguc-Kunt (2006) for a literature survey.

[5] For the following, see a similar discussion in Beck and de la Torre (2007).

[6] The effect of fixed costs on financial service provision can be reinforced by network externalities, where the marginal benefit to an additional customer is determined by the number of customers already using the service (Claessens et al., 2003). This is especially relevant for the case of payments systems and capital market development where benefits, and thus demand (or participation), increase as the pool of users expands.

In addition to costs, the depth and outreach of financial systems is constrained by risks, particularly default risk. These risks can be either contract specific/idiosyncratic (e.g., agency frictions arising from information asymmetries between debtors and creditors; costly contract enforcement; limits to the possibility of diversifying risks) or systemic (e.g., non-diversifiable within a given economy and, thus, affecting all financial contracts). Systemic risk also influences the ability of financial institutions to manage idiosyncratic risks. For instance, high macroeconomic uncertainty and deficient contract enforcement exacerbate agency problems.[7] This, in turn, enlarges the set of borrowers and projects that are effectively priced out of credit and capital markets, and make insurance policies unaffordable for broader segments of the population. At the same time, the easing of agency frictions in the absence of adequate oversight can create incentives for excessive risk-taking by market participants (by failing to internalize externalities), thus fueling financial instability.[8]

The efficiency with which financial institutions and markets can overcome market frictions is critically influenced by a number of state variables—factors that are invariant in the short-term, often lying outside the purview of policy makers—that affect provision of financial services on the supply-side and constrain participation on the demand-side. State variables, thus, impose an upper limit of financial deepening in an economy at a given point in time. These include a large array of factors identified in the literature as drivers of financial deepening across a range of institutions and markets[9]: (i) structural variables (income, savings, market size, population density, and age dependency ratios); (ii) macroeconomic management and credibility (degree of fiscal discipline); (iii) legal, contractual, and information frameworks (e.g., enforceability of contracts, credit registries, accounting and auditing standards, effective arrangements for debtor and collateral information sharing); (iv) prudential oversight; (v) available technology and infrastructure (e.g., quality of the transportation and communications infrastructure); and (vi) socio-economic factors (e.g., conflict, financial illiteracy, degree of informality). As such, financial deepening is a complex process characterized by feedback effects between the various state variables as well as lags.

Using the concept of state variables allows us to define the financial possibility frontier as a rationed equilibrium of realized supply and demand, variously affected by market frictions. In other words, it is the maximum sustainable depth (e.g., credit or deposit volumes), outreach (e.g., share of population reached) or breadth of a financial system (e.g., diversity of

[7] Specifically, the lack of diversification possibilities hinders the supply of financial services because it raises the default probability or the loss given default (LGD) for all contingent contracts written in a given jurisdiction. This leads to a higher cost for funds and, hence, a higher floor for lending interest rates, shorter maturities as risk increases with the loan horizon, or higher premiums to write insurance policies.

[8] See de la Torre et al. (2013) for a discussion of the "dark side" of finance.

[9] See Beck et al. (2008) for an analysis of relevant structural determinants of financial development across different institutions and markets; Garcia and Liu (1999) and Chami et al. (2009) for stock market development, Feyen et al. (2011), and Enz (2000) for insurance markets; Eichengreen, and Luengnaruemitchai (2004) for bond markets; Beck et al. (2007) and Claessens (2006) for access to financial services.

domestic sources of long-term finance) that can be realistically achieved at a given point in time. Conceptually, the frontier can vary for different types of financial services, depending on the sources of market frictions. For instance, the frontier for payment and savings services and equity markets, where transaction costs are the decisive constraint, can be different from that for credit and insurance services, where risk is an additional important component.[10]

Generalizing from the above discussion, we can identify three broad challenges that countries face with deepening financial systems. First, the financial possibility frontier may be low relative to countries at similar levels of economic development due to deficiencies in state variables. Here we can distinguish between the role played by structural and other state variables. Among structural variables, low population density, and small market size increase the costs and risks for financial institutions, excluding large segments of the population from formal financial services. In addition, economic informality of large parts of the population lowers demand for as well as supply of financial services. Second, absence of an adequate legal, contractual and institutional environment or persistent macroeconomic instability can explain a low frontier. For instance, limited capacity to enforce contracts and, more generally, poor protection of property rights can discourage long-term investments and arms-length financial contracting. Similarly, persistent macroeconomic instability can prevent deepening of markets for long-term financing.

Second, there is the possibility that a financial system lies below the frontier, i.e., below the constrained maximum defined by state variables, due to demand and/or supply-side constraints. Demand-side constraints can arise if, for instance, the number of loan applicants is low due to self-exclusion (e.g., due to lack of financial literacy) or on account of a lack of viable investment projects in the economy (e.g., as a result of short-term macroeconomic uncertainty). Supply-constraints influencing idiosyncratic risks or those artificially pushing up costs of financial service provision might also serve to hold the financial system below the frontier.[11] For instance, lack of competition or regulatory restrictions might prevent financial institutions and market players from reaching out to new clientele or introducing new products and services. Similarly, regulatory barriers could prevent deepening of certain market segments as can weak creditor information or opacity of financial information about firms.

Finally, the financial system can move beyond the frontier, indicating an unsustainable expansion of the financial system beyond its fundamentals. For instance, “boom-bust” cycles in economies can occur in the wake of excessive investment and risk taking (often facilitated

[10] Note that the financial possibility frontier can also move over time, as income levels change, the international environment adjusts, new technologies arise, and the overall socio-political environment in which financial institutions operate changes.

[11] It should be noted that lack of private sector participation could also result from other frictions in the economy. For instance, barriers to doing business, tax distortions that discourage firm growth, directed subsidies to industries and sectors, among others, are examples of distortions complementary to credit market frictions which serve to constrain participation.

by loose monetary policy) by market participants. Experience from past banking crises suggests that credit booms and subsequent busts typically occur in environments characterized by poorly defined regulatory and supervisory frameworks. As underscored by the global financial crisis, financial innovation combined with regulatory laxity can foster rapid deepening, but also pose challenges for financial stability.[12] Similarly, fragility in many developing countries is often linked to governance problems, so that an overshooting of the financial possibility frontier may also be related to limited supervisory and market discipline.

A stylized example can help unpack the role of structural and other state variables in determining the level of deepening that can be realistically and sustainably achieved (see Figure 1). The horizontal axis represents structural state variables, reduced to one dimension, while the vertical axis represents financial depth, again reduced to one dimension. We assume—for ease of illustration— that structural state variables are linearly related to sustainable financial depth. Consider country A, a low-income country (LIC) with a small and dispersed population ($STRUCT_A$). Financial depth, as proxied by the ratio of bank deposits to GDP, in this country will necessarily be low. In fact, historical analysis shows that, on average, countries matching A's structural characteristics tend to have a level of depth equal to SD_A. On the other hand, country B, richer and with a larger, more urban population ($STRUCT_B > STRUCT_A$) can be expected to have a higher level of depth, given by SD_B. The structural depth line therefore represents the expected level of depth given a country's structural characteristics.

By improving their macroeconomic and financial policies and, thus, providing an environment more conducive to financial deepening, countries can outperform their expected structural levels. For instance, country A, by enhancing competition in the banking sector, arrives at an actual financial depth DA (above its expected level SD_A). Similarly, although country B has a noticeably higher absolute level of depth (DB) than does country A, it is actually underperforming relative to its peers with similar structural characteristics ($DB < SD_B$), suggesting room for improvement on the policy front. If both countries continue to improve their policies, they will eventually reach the possibility frontier (represented by the higher line), with levels of depth of DA* and DB*, respectively. The possibility frontier for each country can thus be viewed as the level predicted by both structural and macroeconomic/institutional state variables.

For ease of illustration, we assume that the distance between the structural depth line and the financial possibility frontier is constant across a range of structural state variables, although it can be easily argued that the impact of policy variables on the sustainable level of financial depth might vary with structural factors. Compared to country B, country A faces a relatively low financial possibility frontier, pointing to the additional policy challenge of pushing out the frontier.

[12] See Beck et al. (2012) for evidence on the bright and dark sides of financial innovation.

Finally, some policy mixes may lead to levels of apparent depth that surpass the frontier (e.g., credit boom-bust cycles). For example, country C may temporarily outperform its possibility frontier, but this expansion will be unsustainable in the long-run. This stylized example suggests that assessing where countries stand relative to the structural depth frontier can provide information about the relative quality of their underlying policy and institutional environments.

III. TAXONOMY OF FINANCIAL SECTOR POLICIES

Identifying a country's position relative to the financial possibility frontier is a first step towards defining an adequate policy mix to achieve the optimum, or long-term sustainable level of financial sector development. In this section, we discuss three sets of policies that: (i) push the frontier outwards (market-developing policies); (ii) push the system towards the frontier (market-enabling policies); and (iii) prevent the financial system from moving beyond the frontier (market-harnessing policies). It is important to stress that all these policy areas focus on overcoming market frictions and market failures, and aim at better functioning markets. They stand in contrast to market-replacing policies that substitute market with government mechanisms which, in an overwhelming majority of cases, have not worked (Fry, 1988, La Porta et al., 2002).

Market-developing policies aim at pushing out the financial possibility frontier. They include, for instance, legal changes and substantial upgrading of macroeconomic (particularly fiscal) performance. Country experiences suggest that macroeconomic stability is often a necessary condition for unlocking the financial deepening process.[13] In small, relatively undiversified economies, international capital markets can confer access to vast risk-pooling and diversification opportunities, but such integration requires appropriate macro-prudential policies to dampen the impact of potentially disruptive capital flows. Constraints imposed by market size can also be partly overcome through regional integration and foreign bank entry, although risks here to be carefully managed as well. Policy interventions to strengthen informational and contractual frameworks and provide supporting market infrastructure can also help to push out the frontier. In general, it is important to note that benefits of market-developing policies materialize over the longer-term.

Market-enabling policies help push a financial system closer to the frontier, and include more short- to medium-term policy and regulatory reforms. For instance, policies aimed at fostering greater competition can result in efficiency gains, as illustrated by the recent vigorous expansion of profitable micro- and consumer lending across many developing countries. Such policies can also include removing regulatory impediments and reforming tax policies.[14] Enabling policies are not just limited to allowing new entry and facilitating greater

[13] For instance, deposit mobilization and credit expansion in transition economies only took off when disinflation became entrenched (IMF, 2012).

[14] Examples from country experiences abound (IMF, 2012). For instance, the development of the government bond market in Mexico was spurred by the elimination of compulsory lending to the government by banks.

(continued…)

contestability, but also include "activist" competition policies, such as opening up infrastructures (e.g., payment systems and credit registries) to a broader set of institutions, or forcing institutions to share platforms and infrastructure. Beyond targeting competition, market-enabling policies can address hindrances such as coordination failures, first mover disincentives, and obstacles to risk distribution and sharing in financial markets. While these government interventions can be diverse, they tend to share a common feature: they create incentives for private lenders and investors to step in, without unduly shifting risks and costs to the government (e.g., providing partial credit guarantee schemes and establishing joint platforms).

A final set of policies aim at preventing the financial system from moving beyond the frontier. This set of *market-harnessing or market-stabilizing* policies encompass risk oversight and management, and include the regulatory framework, macro-economic and macro-prudential management. These include upgrading regulatory frameworks to mitigate risks stemming from increased competition from new non-bank providers of financial services, carefully calibrating the pace of financial liberalization to the prudential oversight capacity, and establishing cross-border regulatory frameworks to mitigate risks stemming from increased international financial integration. Such policies are also important on the users side (e.g., minimizing the risk of household over-indebtedness through financial literacy programs and consumer protection frameworks).

While the concept of the financial possibility frontier and the associated taxonomy of financial sector policies can be an important guiding principle for financial sector policy reforms, two caveats should be borne in mind. First, given the uniqueness of macroeconomic, institutional, and structural conditions and the incidence of leapfrogging and financial crises, financial deepening paths may not necessarily be replicable across countries. The focus here is on identifying policies that have played a role in pushing financial systems towards the financial possibility frontier or shifting the frontier outwards. Second, the considerable heterogeneity within developing countries implies that while the reforms discussed are relevant across a broad range of countries, their relative importance and cost-benefit tradeoffs can differ widely across countries and even the same country over time, pointing to the need to account for country-specific circumstances and institutions.

IV. BENCHMARKING FINANCIAL SYSTEMS

This section uses a large cross-country panel dataset spanning over a 40 year period to estimate countries' position in relation to estimated time-varying benchmark levels of financial development. Because financial systems across the world fulfill similar functions

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Similarly, in Turkey, tax reform (e.g., the elimination of withholding tax on income from bonds with maturities of over five years and reducing the tax rate on those with maturities of less than five years) and greater transparency served to increase investor appetite for corporate bonds. Similarly, reducing restrictions on the asset composition of insurance companies in Barbados allowed the industry to fill an important role as a major supplier of mortgage finance until banks became more active in the market.

and face similar market frictions, the financial deepening process should be broadly comparable empirically across countries and stages of development once appropriate controls are introduced. If this is the case, using a broad statistical approach that controls for cross-country differences in economic development, as well as important country-specific structural (non-policy) differences that affect financial development, can enhance the statistical (hence discriminatory) power of the benchmarking exercise. This can help identify both the specific dimensions of financial development where gaps exist that require attention and the specific gaps in the enabling environment that may underlie the developmental gaps.

Building on the work by Beck et al. (2008) and Al Hussainy et al. (2011), we predict levels of financial depth based on structural characteristics and other fundamentals. We then document the difference between the actual and predicted levels of financial depth ("depth gaps"). This empirical exercise links directly to the discussion of the financial possibilities frontier above by providing a rough approximation to the structural depth line illustrated in Figure 1. In a second step, we relate the gaps to an array of institutional and policy variables.

As a first step, we follow Al Hussainy et al. (2011) and estimate the following regression

$$FD_{i,t} = \beta X_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where *FD* is the log of an indicator of financial development, *X* is an array of structural country-specific factors, and the subscripts *i* and *t* relate to countries and years, respectively. Among the structural factors, we include: (i) the log of GDP per capita and its square (to account for possible non-linearities), (ii) the log of population to proxy for market size, (iii) the log of population density to proxy for the ease of service provision, (iv) the log of the age dependency ratio to control for demographic trends and corresponding savings behavior, and (v) other fundamental factors (an off-shore center dummy, a transition country dummy and an oil-exporting country dummy) to control for specific country circumstances, and time dummies to control for global factors. The regression results are then used to predict the benchmark level of financial development $FD_{i,t}^{B}$ for each country in each year for which data are available.

As a second step, we define the *Gap* for each financial depth indicator in country *i* and year *t* as the difference between the benchmark FD^{B} and the actual level *FD*. A positive (negative) gap value thus indicates under (over) performance:

$$Gap_{it} = FD_{it}^{B} - FD_{it}$$

Figure 2 summarizes how the actual levels of three separate measures of financial depth have evolved over time and across broad income groups. For instance, from 1990 to 2009, banking

sector depth, as measured by *Private Credit to GDP* (extended by banks and other financial institutions), almost doubled in the median LIC, (increasing from 14 to 23 percent), while in high-income countries an even more dramatic deepening took place (from 41 to 98 percent of GDP). The process in middle-income countries was somewhat in between, with *Private Credit to GDP* increasing from 22 to 37 percent.

Stock markets, virtually non-existent in LICs in the early the 1990s, deepened noticeably, with market capitalization increasing from 5 percent of GDP in 1990 to 16 percent by 2009. For middle- and high-income countries as a whole, stock market capitalization doubled, increasing from 20 to 40 percent of GDP over the same period. In comparison to other countries, LICs, gained little ground in increasing market turnover ratios, which reflects more accurately the level of activity in domestic stock markets (turnover only increased from 2 to 4.5 percent of GDP over this period).

Examining these observed trends in relation to benchmarks allows us to gauge the extent to which cross-country differences in financial deepening reflect structural as opposed to policy-related factors. Figure 3 plots financial depth gaps for each measure of financial development by income group. It shows that LICs have deepened by more than would have been expected from their structural characteristics, although performance has varied widely across regions, countries, and financial indicators. The gap in *Private Credit to GDP* for the median LIC was very small in 1990 (just over 1 percent) and became negative over the subsequent three decades. Indeed, by 2009 the median LIC was outperforming its benchmark by about 2 percent. Increases in stock market capitalization appear even more impressive; from positive gaps of 4 percent in 1990, the median LIC reached a negative gap of 7 percent by 2009. Deepening with respect to stock market turnover, on the other hand, was more modest. By 2009, a positive gap of almost 3 percent persisted.[16]

The performance of other income groups was more mixed. Overall, high-income countries witnessed a rapid deepening, eliminating a 25 percent gap in *Private Credit to GDP* in the run up to the crisis. While they succeeded in eliminating gaps in stock market capitalization from 2000 onward, the gap in turnover was reduced more modestly (by 5 percent), and remained at a positive 6 percent in 2009. Middle-income countries, on the other hand, did not register significant gains, with gaps in *Private Credit to GDP* remaining virtually unchanged. As in the case of the other income groups, stock market capitalization outpaced the benchmark, with the gap turning negative in 2000 and dropping to -12 percent by 2009. Note that the global crisis had a more significant impact on non-LICs, particularly high-income countries, where actual *Private Credit to GDP* in the median country fell markedly below its benchmark level in 2008-09.

[16] The stock market indicators should be viewed with some caution, particularly as LICs are greatly underrepresented in both measures. Only five countries reported in 1990, with coverage increasing to 20 by 2006.

Looking beyond group medians, financial deepening over the 1990-2007 period was quite heterogeneous across countries, although somewhat less so among LICs than in other income groups. Changes in gaps in *Private Credit to GDP* ranged between -40 and +30 percent for LICs, with several countries lowering gaps by up to 20 percent (Figure 4).[17] This range is much larger for non-LICs, where some gaps were even closed or widened by over 100 percent. Overall, more LICs lowered than increased their gaps in *Private Credit to GDP*, while roughly the same number of non-LIC countries increased as lowered their gaps.[18]

By construction, the share of countries over-or under-performing their benchmarks should approach 50 percent for the sample period as a whole. However, these shares vary by income levels and over time. A visible downward trend can be seen in the share of underperforming countries when considering *Bank Deposits to GDP* and *Stock Market Capitalization to GDP* (see Figure 5), particularly in recent years and in the case of low- and middle-income countries. The opposite is true for *Private Credit to GDP* and for *Stock Market Turnover*, both of which reflect the impact of the global financial crisis on high-income countries.

In sum, the benchmarking model can also be used to track progress of a financial system over time in relation to its structural characteristics and relative to comparator countries. It is important to note, however, that this a relative exercise which excludes a vast array of other relevant state variables.[19] Specifically, the benchmark is a relative, not absolute measure, i.e., it depends on the distribution within the sample used for benchmarking. Further, model specification can be critical for the findings, especially in terms of the explanatory variables included. Future work could possibly extend the benchmarking exercise outlined above to take into account the longer-term institutional and macroeconomic variables that impact financial system performance.

V. EXPLAINING GAPS

In this section, we relate the gap between predicted and actual levels of financial development to an array of institutional and policy factors. In particular, we use indicators covering several different policy areas. Our focus is on the determinants of *Private Credit to GDP*, an indicator for which there is broad coverage across countries and time, and which has shown to be robustly related to economic growth.[20]

[17] For this analysis we have chosen the period up to 2007 in order to exclude the global crisis, and thus focus our attention on the longer-term deepening process.

[18] Some over-performance is also evident in the case of stock markets (not shown here), but the relatively small number of LICs with this type of data limits direct comparisons to non-LICs.

[19] If all countries in the sample increase financial development indicators in a given year, this will also increase the benchmark for the country in question.

[20] See, among others, Beck et al. (2000).

Our set of explanatory variables includes a large number of variables capturing the macroeconomic, regulatory and institutional environment, and the market structure within which banks operate.

- **Macroeconomic variables.** These include a numerical variable indicating the flexibility of the exchange rate regime—ranging from zero (hard peg) to 8 (freely floating); the inverse of inflation as a proxy for macroeconomic stability; lagged growth, and a dummy for banking crises. In addition, we include two globalization measures: remittance flows as a share of to GDP and gross capital inflows relative to GDP.

- **Market structure.** We examine several indicators of market structure and competition, including an indicator of foreign bank entry restrictions; the five-bank concentration ratio; the share of government ownership; the share of foreign-owned banks; and the Lerner index of market power, averaged across banks within a country.

- **Regulatory policy variables.** These include requirements to geographically diversify lending; as well as a set of indicators of the state of financial reform from Abiad, et al (2008), including on credit controls, privatization, the quality of bank supervision, as well as an overall financial reform index.

- **Institutional variables.** These comprise the ICRG indicators of financial, economic and political risk, along with the World Bank's creditor rights index.

We ran cross-country regressions, on both the levels of the gap averaged over 2000 to 2007, and the change in the *Private Credit Gap* between 1995 and 2007. We intentionally exclude the recent crisis from the sample period in order to draw more general conclusions.

As a first step, we identify simple correlations by using univariate regressions on the full array of macroeconomic, market structure, regulatory and institutional variables (reported in Table 1). We find that the relationships between gaps and the explanatory variables are largely as expected. On the macroeconomic side, countries with lower inflation rates, higher remittance inflows, and more rapid previous growth tend to over-perform, achieving lower gaps relative to the structural benchmarks. The same is true for countries with a lower share of government-owned banks, while those maintaining fewer restrictions on foreign bank entry tend to lower their gaps more rapidly over time. Among regulatory or financial reform variables, the quality and strength of banking supervision is associated with better performance, while the existence of geographical diversity restrictions on bank lending tend to delay closing of gaps over time. Finally, all institutional variables are significantly associated with either the level or changes in gaps over time. Countries with lower overall risk have lower levels of gaps and succeed in closing existing gaps more rapidly, with political and economic risk indices being particularly significant, while those with stronger creditors' rights tend to have lower gaps.

A number of variables were, however, found to be insignificant determinants of gaps. Whether a country has a fixed or floating regime does not appear to be significantly associated with gaps, nor does the size of capital inflows or occurrence of a financial crisis in the preceding decade. While the regressions show a negative relationship between competition and gaps, this result is not statistically significant, and there is some evidence that more *concentrated* banking systems narrowed their gaps more rapidly between 1995 and 2007. Other measures of financial reform, including the composite index, are also associated with lower gaps, but not significantly.

Table 2 provides multivariate evidence on the role of country-specific policy variables in explaining the gap between predicted and actual levels of *Private Credit to GDP*. Due to differences in data availability, the country sample shrinks noticeably when a large number of explanatory variables are included simultaneously. Therefore, we present eight different specifications using different sub-groups of the regressors, the results of which by and large confirm the univariate findings.

Lower inflation, larger remittance share, and higher past growth all are associated with lower *Private Credit Gaps*. Similarly, a lower share of government ownership[21], better quality of banking supervision, and stronger creditor rights are associated with lower gaps. In contrast to the univariate regressions, restrictions on foreign bank entry, greater exchange rate flexibility, and gross capital inflows are now associated with higher gaps, while greater competition and overall financial reforms are related to lower gaps. Note that the latter variable ceases to be a significant predictor of gaps when either the degree of privatization or bank supervision are included, indicating that these dimensions of financial reforms matter most for enhancing depth. Finally, all ICRG risk variables lose significance once macroeconomic, structural, and regulatory factors are controlled for.

We also ran multivariate regressions for changes in the *Private Credit Gaps* between 1995 and 2007 (reported in Table 3). Again, the bulk of our results are confirmed. Restrictions on geographic diversity discourage lowering of the *Private Credit Gap*, while concentration in the banking system tends to go hand in hand with narrowing gaps over time. It must be noted, however, that greater banking sector competition has a similar effect. Thus, a process of pure consolidation in the banking industry which results in lower competition is not likely to generate substantial financial depth. Also of note, stronger creditors' rights, robustly associated with a lower level of gaps, do not seem to influence the change in these levels over time. Finally, there is evidence that countries with lower economic risk tended to lower their gaps more rapidly over time.

As robustness tests (available on request) we re-ran the regressions reported in Tables 2, and Table 3 using other financial sector indicators, including stock market capitalization to GDP,

[21] This is also captured by the coefficient on the privatization component of financial reform.

stock market turnover, and the interest rate margin. While the size and the significance of the coefficient estimates vary, our broad findings are confirmed.

The previous results provide some indication of the policies that can help countries approach or even surpass their structural benchmarks. However, the financial possibilities frontier concept also implies a sustainable upper limit to financial deepening. To get a handle on where this upper limit might lie, we relate the credit gap to the likelihood that a country undergoes a credit boom period and/or suffers a banking crisis, based on data from Dell'Ariccia et al. (2012).

Dell'Ariccia et al. (2012) compare private credit to GDP in each year *t* and country *i* to a backward-looking, rolling, country-specific, cubic trend estimated over the period between years *t-10* and *t.* They define an episode as a boom if either of the following two conditions is satisfied: (i) the deviation from trend is greater than 1.5 times its standard deviation and the annual growth rate of private credit to GDP exceeds 10 percent; or (ii) the annual growth rate of private credit to GDP exceeds 20 percent. Limiting our sample to 1980 – 2008, we identify 139 boom periods.[22] In addition, we follow Dell'Ariccia et al. (2012) and define a boom as "bad" if it is followed by a banking crisis within three years of its end date, and as "sub-par" if it is associated with a recession or below-trend medium-term growth. In our sample, 34 percent of booms are classified as bad and 59 percent as sub-par.

Figure 6 plots the frequency of booms against the *Private Credit Gap*, showing that periods with a negative gap (i.e., levels of *Private Credit to GDP* above the benchmark) are more likely to experience a boom episode as defined above. At the extreme, having a level of private credit to GDP of 90-100 percent above the benchmark is 50 percent more likely to be associated with a credit boom. In addition, these are almost always bad or sub-par booms, i.e., they end in low-growth episodes or even banking crises. While positive gaps (i.e., periods where the actual level underperforms the benchmark) are less likely to be associated with boom periods, the booms that do occur are associated with adverse outcomes. Note that zero gaps (when a country's private credit to GDP is close to its structural benchmark) have the lowest incidence of booms, both good and bad/subpar.

Figure 7 plots the frequency of booms against changes in the *Private Credit Gap*. We find that large changes in the gap, especially negative changes (i.e., rapid growth relative to the benchmark) are associated with a higher likelihood of boom episodes. As above, we find that if rapid changes are associated with boom periods, the higher the change in the gap, the higher is the likelihood that the boom will be sub-par or end in a crisis. On the other hand, underperformance (i.e., an increase in gaps over time) is very rarely associated with either booms or bad outcomes.

[22] There are very few observations with data on booms but no data for benchmarks or gaps and we therefore excluded them. There are three observations for countries that had booms with a starting date prior to 1980 but with boom-periods extended until after 1980, which we included.

Although not a monotonic relationship, these stylized facts suggest that banking system instability is much more likely to occur when gaps are highly negative—that is, when the country lies significantly above the structural depth line. At negative gaps of over 50 percent, the probability of a crisis surpasses 10 percent. As gaps approach 90 percent, the likelihood of a crisis or subpar macroeconomic performance becomes very high. In addition, when these large negative levels are the result of very rapid deepening above and beyond the changes in structural characteristics—say, by 30 percent or more over a ten year period— the likelihood of instability increases even further. Thus, our preliminary analysis points to an upper limit to the financial possibilities frontier of at least 50 percent above a country's structural depth line, which is related to the speed of deepening.

VI. CONCLUSIONS

This paper introduced the concept of the financial possibility frontier and provided an empirical application in the form of a benchmarking exercise. A country's standing relative to its structural depth frontier on a particular financial indicator, and in relation to other countries with similar structural characteristics, can point to different policy and institutional gaps. Our empirical analysis points to a range of policies that help reduce financial system gaps, thus, pulling countries out of their "too cold" status. For instance, *market-enabling* and *market-developing* policies, such as lower restrictions on lending, limited government ownership of banks, and strong creditors' rights, can spur development of financial systems. Similarly, promoting greater competition in banking can enhance financial deepening, even if the system becomes more concentrated. In addition, stronger supervisory and regulatory frameworks can actually facilitate financial deepening.

We also presented evidence consistent with the existence of an upper threshold to financial deepening, beyond which it becomes "too hot", as the risk of excessive financial instability outweighs the benefits. While our analysis does not pin down the exact location of the frontier[23]—the Goldilocks level—it suggests that sufficient warning bells should sound when the gap in private credit relative to the benchmark is around 50 percent. Furthermore, it illustrates a constant policy tradeoff between promoting greater intermediation and incurring greater risk. The lowest probability of a bad outcome is achieved when actual depth is approximately at its structural benchmark. Thus, policymakers need to implement appropriate *market-harnessing* policies to monitor the existence of potential and emerging stability threats.

While the concept of a financial possibility frontier provides a useful heuristic for assessing the potential scope for deepening, several caveats are in order. First, the concept is not based on a utility-maximizing theoretical framework. To this end, developing general equilibrium models with financial intermediaries would be important for quantifying the impact of

[23] Identifying the position of the financial possibility frontier is empirically difficult as it requires taking a stance on which institutional factors and policies can be considered long-term (state variables), and which policies can be considered to operate over a short- to medium-term horizon.

policies and evaluating the underlying trade-offs. Second, this paper treated policies as exogenous tools and instruments to be applied by governments interested in effective and sound financial systems. This view is in line with the public-interest view of government and not always borne out in reality. An extensive literature has pointed to the political economy of financial sector policies and reforms.[24] For instance, recent work by Quintyn and Verdier (2011) has shown the importance of political checks and balances for deep and sustainable financial deepening. While discussing the politics of financial sector reform is beyond the scope of this paper, it is important to keep in mind that all financial sector policy is local!

[24] For a recent more complete survey, see Haber and Perotti (2008).

Figure 1. The Financial Possibility Frontier

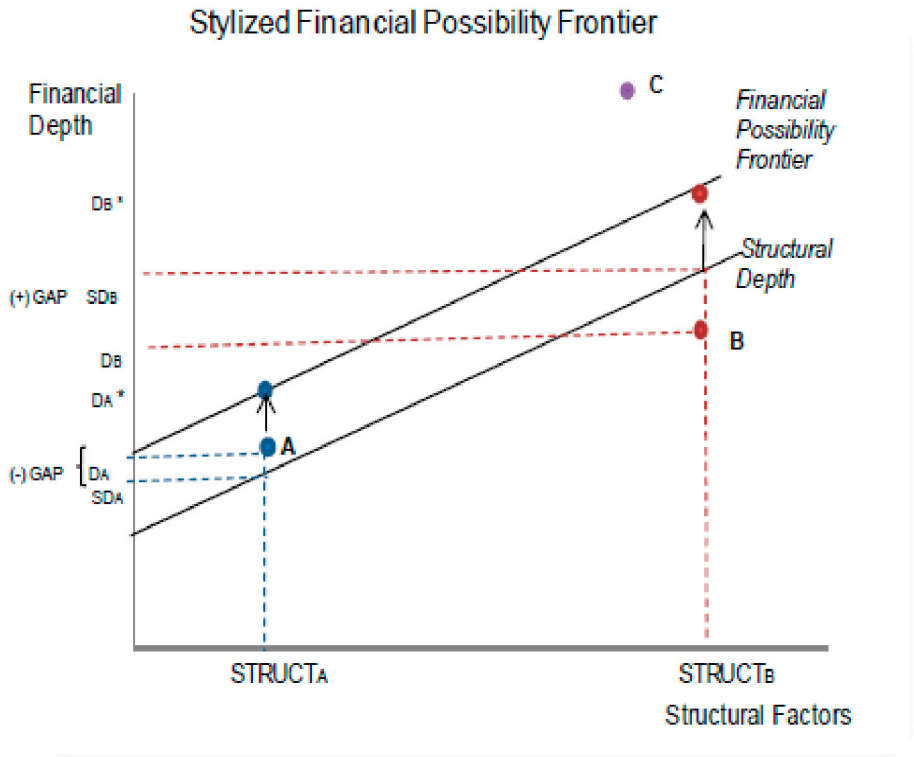


Figure 2. Observed Financial Depth Over Time and Across Income Groups
(Percentages, income group medians)

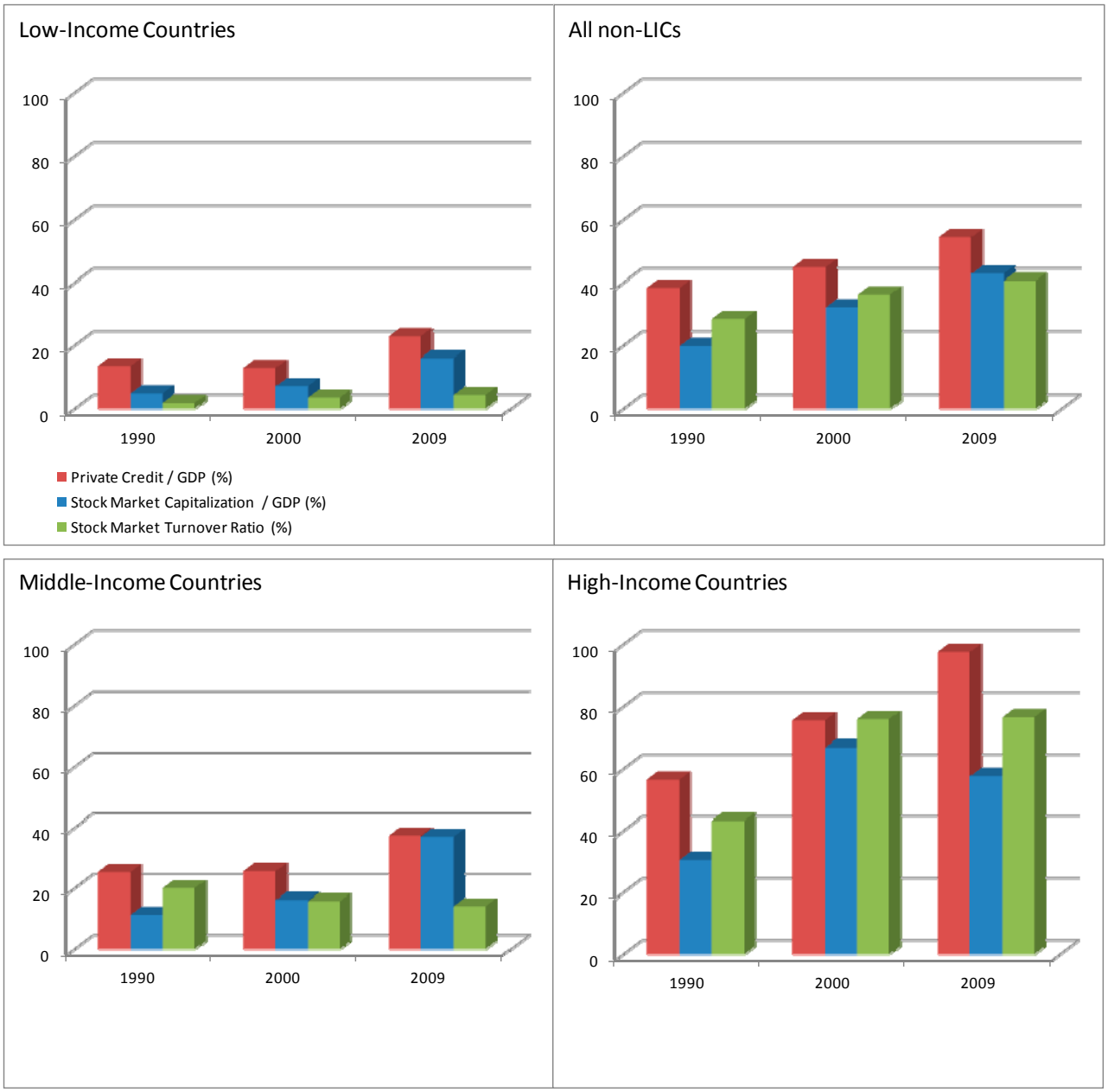


Figure 3. Gaps in Financial Depth Relative to Benchmarks
(In percentage points; difference between the benchmark and the observed level of depth, medians by income group)

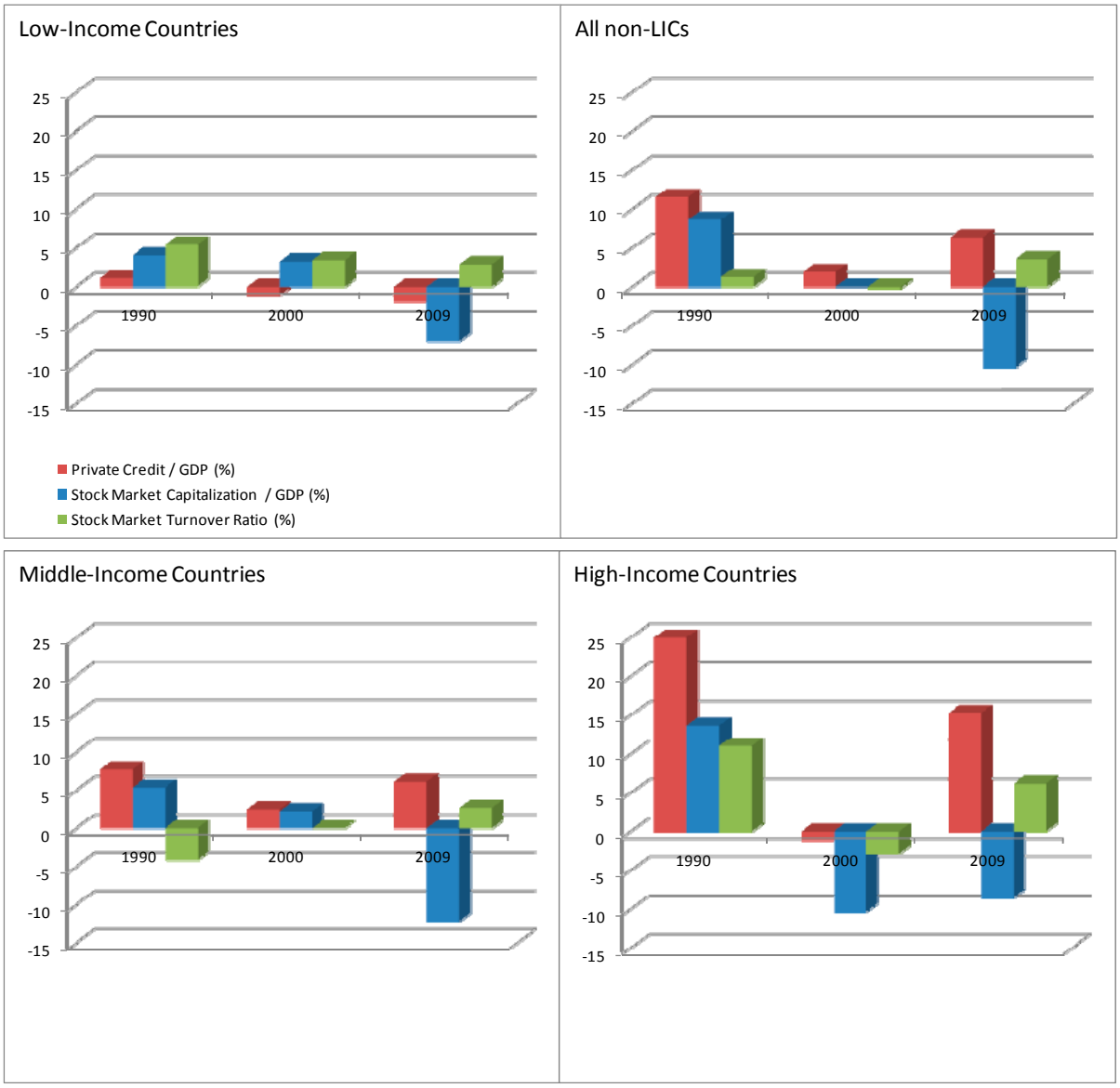


Figure 4. Change in Gaps in Private Credit, 1990 to 2007
(Percentage points)

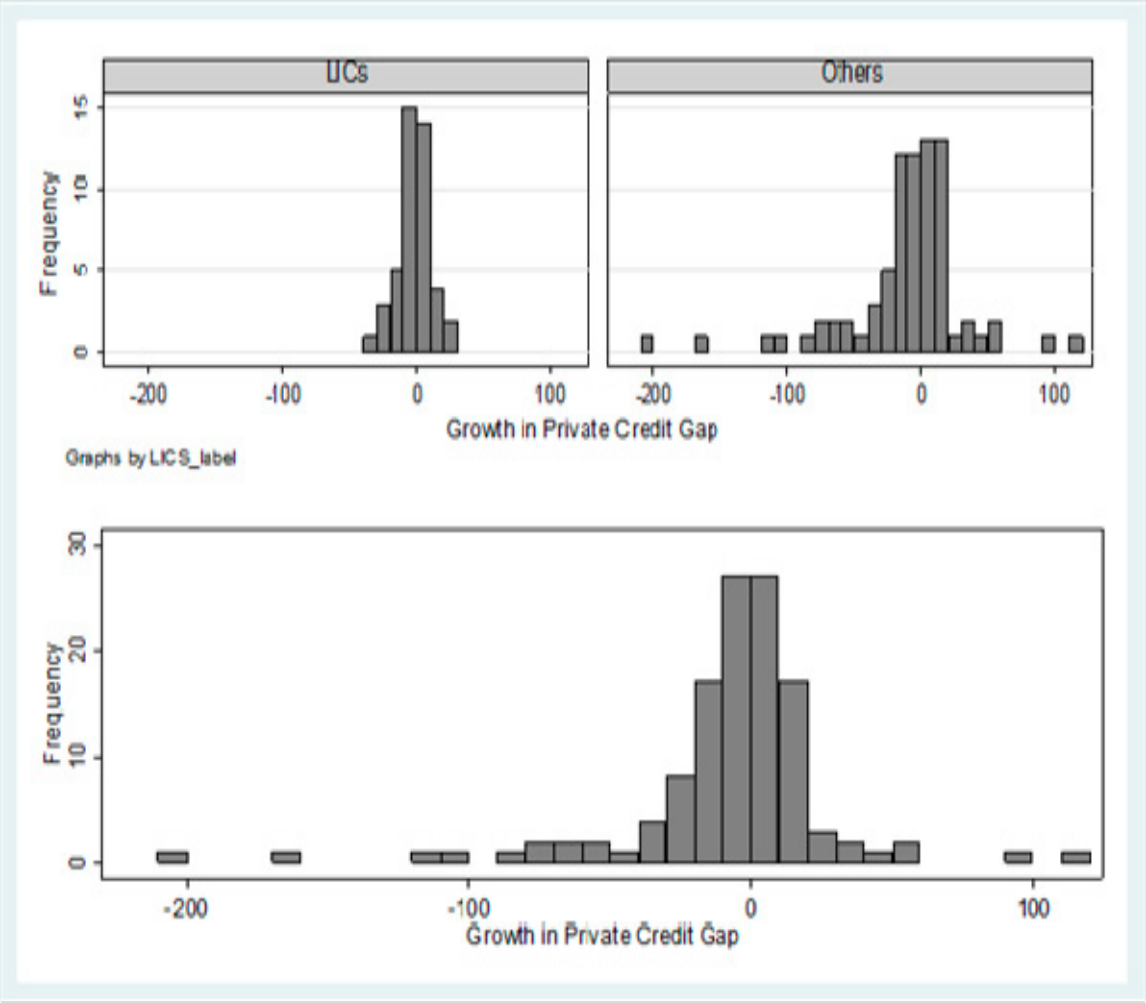
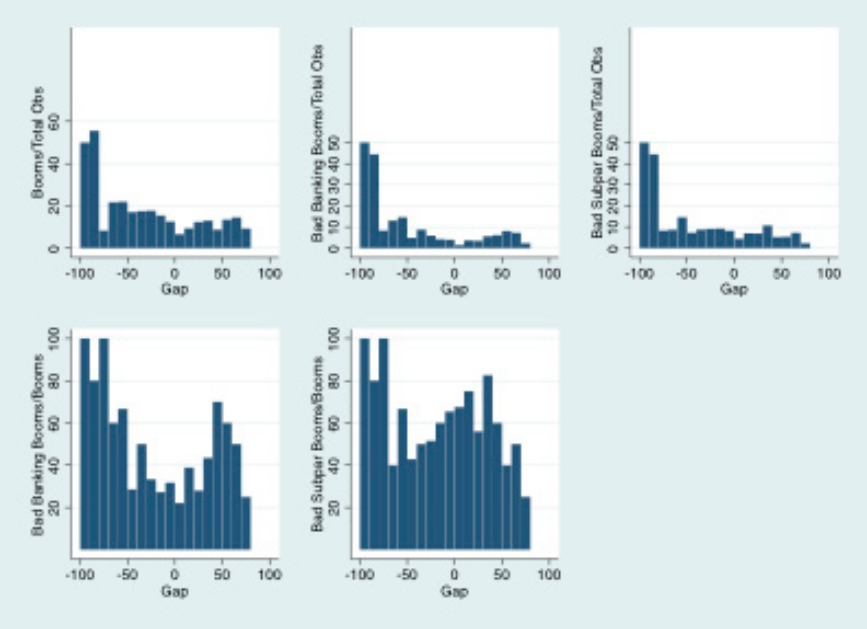


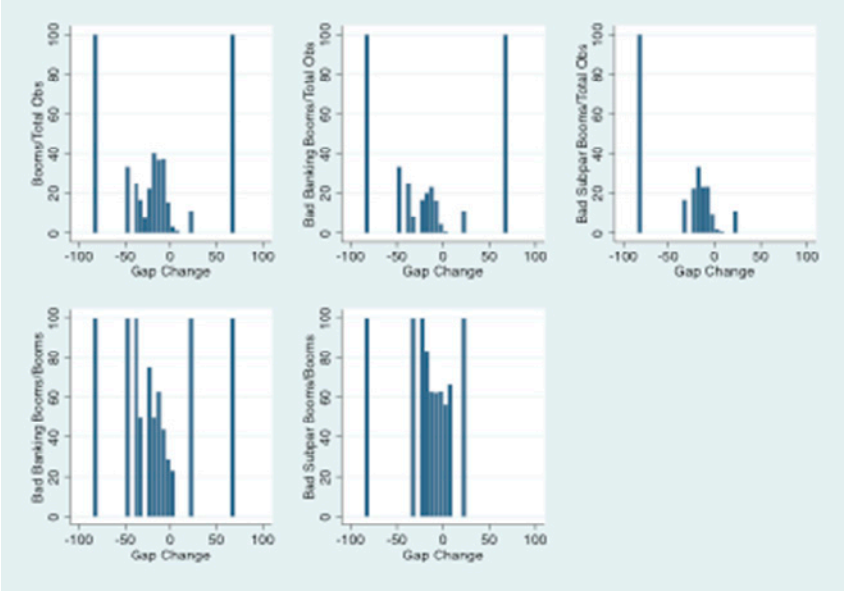
Figure 5. Share of Underperforming Countries, by Income Level
(Percentage of countries with positive financial depth gaps in each year)

Figure 6. Frequency of Credit Booms Related to the Level of the Private Credit Gap



Source: Finstat database, Dell'Ariccia et al. (2012), and authors' calculations.

Figure 7. Frequency of Credit Booms Related to the 1995-2005 Change in the Private Credit Gap



Source: Finstat database, Dell'Ariccia et al. (2012), and authors' calculations.

Table 1. Univariate Regressions Explaining Levels and Changes in the Private Credit-GDP Gap Relative to the Benchmark

	Dependent variable:								
	Private credit gap in 2005			Average private credit gap over 2003-07			Change in the private credit gap 1995-2005		
	Coefficient	Countries	R-Squared	Coefficient	Countries	R-Squared	Coefficient	Countries	R-Squared
Macroeconomic variables									
Exchange rate regime	1.266	160	0.016	1.699	161	0.000	-0.653	151	0.005
	(1.606)			(0.133)			(-0.812)		
Inverse of inflation	-20.150*	141	0.028	-13.559	145	0.013	-16.899*	132	0.031
	(-1.957)			(-1.332)			(-1.723)		
Remittances	-0.670**	124	0.019	-0.623*	128	0.019	-0.139	127	0.001
	(-2.601)			(-1.951)			(-0.532)		
Gross inflows	0.003	149	0.001	0.004	149	0.002	-0.011	140	0.004
	(0.151)			(0.252)			(-0.652)		
Lagged growth				-1.701***	159	0.045			
				(-2.875)					
Banking crisis	-9.958	161	0.014	0.814	160	0.006	6.169	151	0.014
	(-1.078)			(0.954)			-1.267		
Market structure and competition									
Foreign entry restrictions	-1.098	115	0.001	-0.432	115	0.000	6.158*	110	0.053
	(-0.362)			(-0.145)			(-1.831)		
Asset concentration	-14.016	98	0.010	-12.729	98	0.008	-20.738*	93	0.040
	(-1.074)			(-0.986)			(-1.968)		
Government ownership share	24.606**	86	0.054	26.177**	86	0.062	11.674**	83	0.020
	(2.116)			(2.159)			(-2.465)		
Foreign bank share	0.083	130	0.008	0.088	130	0.009	0.053	122	0.004
	(1.109)			(1.176)			(-0.688)		
Lerner	-41.923	73	0.031	-39.286	73	0.028	-22.673	69	0.016
	(-1.176)			(-1.138)			(-1.487)		
Regulatory variables									
Geographic diversity	16.718	115	0.023	16.322	115	0.022	11.700*	111	0.017
	(1.238)			(1.298)			(-1.732)		
Credit controls	-2.215	87	0.003	-2.581	87	0.004	-3.243	84	0.010
	(-0.545)			(-0.621)			(-0.908)		
Privatization	-4.175	87	0.026	-4.443	87	0.030	-2.061	84	0.009
	(-1.297)			(-1.423)			(-0.864)		
Banking supervision	-6.165*	87	0.027	-7.668**	87	0.041	-9.915***	84	0.105
	(-1.706)			(-2.033)			(-2.923)		
Overall financial reform	-12.407	87	0.005	-13.899	87	0.006	-18.789	84	0.021
	(-0.597)			(-0.664)			(-1.162)		
Institutional variables									
Risk	-0.280	129	0.013	-0.387*	130	0.024	-0.394**	123	0.050
	(-1.476)			(-1.901)			(-2.212)		
Financial risk	-0.481	129	0.013	-0.565	130	0.017	-0.345	123	0.012
	(-1.424)			(-1.552)			(-1.221)		
Political risk	-0.209	129	0.012	-0.307*	130	0.024	-0.410**	123	0.072
	(-1.298)			(-1.815)			(-2.607)		
Economic risk	-0.253	129	0.003	-0.410	130	0.007	-0.638*	123	0.028
	(-0.698)			(-1.079)			(-1.777)		
Creditors' rights	-4.056**	126	0.038	-4.364**	126	0.045	-0.903	121	0.003
	(-2.373)			(-2.584)			(-0.748)		

This table shows the results of OLS regressions explaining the level or change in the private credit-GDP gap between the benchmark median and its observed level. The regressors are classified into several groups, the first of which is *Macroeconomic variables,* including: *Exchange rate regime*, measured as a number between 0 (hard peg) and 8 (completely floating); *Inverse of inflation*; *Remittances*, the ratio of remittance inflows to GDP; *Gross inflows*, gross capital inflows in relation to GDP; *Lagged growth*, GDP growth in the previous five years; *Banking crisis*, a dummy variable expressing whether the country experienced at least one financial crisis (as defined in Laeven and Valencia, 2008) in the previous decade. The second group of variables encompasses market structure and competition: An index of restrictions on foreign bank entry; *Asset concentration*, the share in total assets of the five largest banks; *Government ownership share*, the percentage of banks that are government-owned; *Foreign bank share*, the number share of foreign-owned banks; and *Lerner*, a measure of banking competition as estimated by Anzoategui, et al (2011). The third group includes regulatory variables, including four from from the Abiad, et al (2008) database of financial reform: *Banking supervision*, *Privatization*, *Credit controls*, and a summary variable, *Overall financial reform*, which is normalized to be between 0 (low liberalization) and 1 (highly liberalized); and *Geographic diversity*, a dummy variable showing whether there are geographical diversity requirements in lending. The final group includes institutional variables: *Risk*, a composite risk indicator from ICRG, summarizing the financial, political, and economic risk measures; and *Creditors' rights*, from La Porta et al (1998).

Robust t-statistics are shown in parentheses, with significance levels at the 10 percent (*), 5 percent (**), and 1 percent (***) levels indicated.

Table 2. Multivariate Regressions Explaining Levels of the Private Credit-GDP Gap Relative to the Benchmark

	Dependent variable: Average private credit-GDP gap over 2003-07.							
Macroeconomic variables								
Exchange rate regime	2.437**				2.528*			
	(2.529)				(1.816)			
Inverse of inflation	-35.095*			-22.323		-37.336		-18.256
	(-1.682)			(-1.103)		(-1.569)		(-0.900)
Remittances	-1.411***						-1.490	
	(-2.949)						(-1.239)	
Gross inflows				0.013	0.010	0.028***		0.027**
				(0.993)	(0.640)	(2.706)		(2.051)
Lagged growth	-2.232*	-3.259**	-3.091**	-3.783***	-3.263***	-4.659***	-2.346	-4.751***
	(-1.965)	(-2.427)	(-2.637)	(-3.100)	(-3.088)	(-3.298)	(-1.257)	(-3.299)
Banking crisis	0.964				1.481	-23.338**		-20.515
	(0.083)				(0.141)	(-2.048)		(-1.302)
Market structure and competition								
Foreign entry restrictions		-8.924**	-9.941***			-9.404***		-8.040**
		(-2.608)	(-3.363)			(-2.931)		(-2.535)
Asset concentration		-11.172	-5.070					
		(-0.543)	(-0.252)					
Government ownership share		7.088	16.804***					
		(0.994)	(3.150)					
Foreign bank share					0.150			0.099
					(1.162)			(0.717)
Lerner	-59.488*						-115.811**	
	(-1.715)						(-2.081)	
Regulatory variables								
Geographic diversity		17.293	25.025	6.588				
		(1.024)	(1.212)	(0.476)				
Credit controls		2.542						
		(0.461)						
Privatization		-10.239**		-8.300**	-8.017***			
		(-2.679)		(-2.050)	(-2.779)			
Banking supervision		-2.400				-11.003*	-3.769	
		(-0.414)				(-1.775)	(-0.730)	
Overall financial reform			-54.371**	26.289		-39.827		-42.273*
			(-2.076)	(0.854)		(-1.345)		(-1.844)
Institutional variables								
Risk	0.326						-0.194	
	(0.638)						(-0.255)	
Financial risk					-1.199	-1.547		
					(-1.284)	(-1.481)		
Political risk						0.655		
						(1.282)		
Economic risk						0.925		
						(0.664)		
Creditors' rights				-8.064**		-6.872**		-6.938**
				(-2.614)		(-2.016)		(-2.168)
Constant	-7.321	31.154*	49.916**	18.216	41.143	61.818	51.601	53.763***
	(-0.228)	(1.737)	(2.390)	(1.188)	(1.034)	(1.473)	(0.884)	(3.143)
Observations	57	55	55	67	78	65	44	66
R-squared	0.343	0.328	0.268	0.299	0.271	0.383	0.368	0.301

This table shows the results of OLS regressions explaining the average private credit-GDP gap during 2003-07. The regressors are classified into several groups, the first of which is *Macroeconomic variables,* including: *Exchange rate regime*, measured as a number between 0 (hard peg) and 8 (completely floating); *Inverse of inflation*; *Remittances*, the ratio of remittance inflows to GDP; *Gross inflows*, gross capital inflows in relation to GDP; *Lagged growth*, GDP growth in the previous five years; *Banking crisis*, a dummy variable expressing whether the country experienced at least one financial crisis (as defined in Laeven and Valencia, 2008) in the previous decade. The second group of variables encompasses market structure and competition: An index of restrictions on foreign bank entry; *Asset concentration*, the share in total assets of the five largest banks; *Government ownership share*, the percentage of banks that are government-owned; *Foreign bank share*, the number share of foreign-owned banks; and *Lerner*, a measure of banking competition as estimated by Anzoategui, et al (2011). The third group includes regulatory variables, including four from from the Abiad, et al (2008) database of financial reform: *Banking supervision*, *Privatization*, *Credit controls*, and a summary variable, *Overall financial reform*, which is normalized to be between 0 (low liberalization) and 1 (highly liberalized); and *Geographic diversity*, a dummy variable showing whether there are geographical diversity requirements in lending. The final group includes institutional variables: *Risk*, a composite risk indicator from ICRG, summarizing the financial, political, and economic risk measures; and *Creditors' rights*, from La Porta et al (1998).

Robust t-statistics are shown in parentheses, with significance levels at the 10 percent (*), 5 percent (**), and 1 percent (***) levels indicated.

Table 3. Multivariate Regressions Explaining the 1995-2005 Change in the Private Credit-GDP Gap Relative to the Benchmark

	Dependent variable: Change in the private credit-GDP gap between 1995 and 2005							
Macroeconomic variables								
Exchange rate regime	3.805**				3.025**			
	(2.028)				(2.356)			
Inverse of inflation	36.048**			0.868		20.401		-10.831
	(2.080)			(0.055)		(0.825)		(-0.627)
Remittances	-0.660						-0.962*	
	(-1.237)						(-1.700)	
Gross inflows				0.012	-0.002	0.027***		0.011
				(1.106)	(-0.120)	(3.035)		(1.097)
Banking crisis	12.029				17.147**	20.893**		19.302**
	(1.673)				(2.251)	(2.503)		(2.322)
Market structure and competition								
Foreign entry restrictions		4.844	5.401			4.939		4.457
		(0.961)	(1.010)			(1.604)		(1.079)
Asset concentration		-32.470**	-36.255**					
		(-2.287)	(-2.538)					
Government ownership share		14.048***	10.607***					
		(3.158)	(3.076)					
Foreign bank share					0.035			-0.039
					(0.278)			(-0.345)
Lerner	-50.595**						-47.413**	
	(-2.616)						(-2.072)	
Regulatory variables								
Geographic diversity		16.385**	19.508***	18.654**				
		(2.253)	(3.605)	(2.091)				
Credit controls		-4.835						
		(-1.454)						
Privatization		0.568		2.107	-1.015			
		(0.255)		(0.748)	(-0.473)			
Banking supervision		-7.172*				-17.338***	-10.450**	
		(-1.962)				(-3.936)	(-2.396)	
Overall financial reform			-18.012	-49.247**		35.599*		-17.821
			(-0.923)	(-2.268)		(1.782)		(-0.867)
Institutional variables								
Risk	-0.178						0.204	
	(-0.554)						(0.431)	
Financial risk					-0.449	1.547*		
					(-0.695)	(1.860)		
Political risk						-0.142		
						(-0.446)		
Economic risk						-2.268*		
						(-1.717)		
Creditors' rights				-0.647		-1.195		-1.536
				(-0.312)		(-0.594)		(-0.691)
Constant	-1.741	41.733***	35.506**	30.630**	-5.920	27.177	15.985	13.698
	(-0.072)	(3.660)	(2.311)	(2.504)	(-0.204)	(0.886)	(0.519)	(0.948)
Observations	51	54	54	63	75	61	44	62
R-squared	0.26	0.301	0.229	0.137	0.124	0.429	0.191	0.225

This table shows the results of OLS regressions explaining the the change in the private credit-GDP gap from 1995 to 2005. The regressors are classified into several groups, the first of which is *Macroeconomic variables,* including: *Exchange rate regime*, measured as a number between 0 (hard peg) and 8 (completely floating); *Inverse of inflation*; *Remittances*, the ratio of remittance inflows to GDP; *Gross inflows*, gross capital inflows in relation to GDP; *Lagged growth*, GDP growth in the previous five years; *Banking crisis*, a dummy variable expressing whether the country experienced at least one financial crisis (as defined in Laeven and Valencia, 2008) in the previous decade. The second group of variables encompasses market structure and competition: An index of restrictions on foreign bank entry; *Asset concentration*, the share in total assets of the five largest banks; *Government ownership share*, the percentage of banks that are government-owned; *Foreign bank share*, the number share of foreign-owned banks; and *Lerner*, a measure of banking competition as estimated by Anzoategui, et al (2011). The third group includes regulatory variables, including four from from the Abiad, et al (2008) database of financial reform: *Banking supervision*, *Privatization*, *Credit controls*, and a summary variable, *Overall financial reform*, which is normalized to be between 0 (low liberalization) and 1 (highly liberalized); and *Geographic diversity*, a dummy variable showing whether there are geographical diversity requirements in lending. The final group includes institutional variables: *Risk*, a composite risk indicator from ICRG, summarizing the financial, political, economic risk measures; and *Creditors' rights*, from La Porta et al (1998).

Robust t-statistics are shown in parentheses, with significance levels at the 10 percent (*), 5 percent (**), and 1 percent (***) levels indicated.

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