

Long-term Finance in Latin America

A Scoreboard Model

Thorsten Beck

**Institutions for
Development Sector**

**Capital Markets and
Financial Institutions
Division**

**DISCUSSION
PAPER N°
IDB-DP-476**

Long-term Finance in Latin America

A Scoreboard Model

Thorsten Beck

August 2016



<http://www.iadb.org>

Copyright © 2016 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



Contact: Maria Agustina Calatayud, mcalatayud@iadb.org.

Abstract*

Theory and empirical work have shown that long-term finance is critical for households, firms and government and for the overall development of the economy. The development of efficient and sustainable long-term financial markets, however, depends on macroeconomic stability and an effective institutional framework. Policy initiatives, including tax policy, regulation and competition policies can also improve the availability of long-term finance within these more fundamental constraints. However, country characteristics including size and demographic structure also play an important role. When comparing the provision of long-term finance across countries, it is important to take into account both structural characteristics and long-term policy constraints. A scoreboard for long-term finance in Latin America is suggested with indicators comparing different dimensions of long-term finance. Specifically, the paper suggests several indicators of the depth and inclusiveness of long-term financial markets, to be benchmarked according to country characteristics, and several policy variables, to be included in a scoreboard for long-term finance in Latin America.

JEL codes: G10, G18, G21, G22, G23, G28

Keywords: benchmarking, Latin America, long-term finance

* The author is affiliated with Cass Business School, City University London and CEPR. Comments by workshop participants at the IDB are gratefully acknowledged, as is the guidance by Agustina Calatayud, Financial Markets Specialist from IDB Capital Markets and Financial Institutions Division.

1. Introduction

Access to appropriate instruments of long-term financing has been identified as one of the critical financial sector policy challenges across the developed and developing world. While there has been recently a lot of academic and policy focus on financial inclusion and SME finance, the challenge of long-term finance constitutes as important an area for policy makers, with statements by the G20 speaking to this effect (G20, 2013). The lack of long-term financing has been linked to the enormous infrastructure needs across the developing and developed world as well as lack of innovation and investment in the private sector. At the same time, analyses of the recent Global Financial Crisis have pointed to high maturity mismatches as one of the causes or even triggers of the 2008 crisis, with financial intermediaries (both banks and shadow banks) relying too much on short-term funding for long-term assets. Both developmental and stability challenges thus are important in the policy debate on long-term finance. The policy challenge is thus *sustainable* long-term finance.

Long-term finance is typically defined according to a specific threshold maturity (at time of contracting), with some observers using the one-year threshold (e.g. World Bank, 2015) and others five years. It comprises an array of debt or debt-like instrument; in the following, I will also include equity claims (and therefore equity markets) among long-term finance, given the indefinite nature of these claims.

What constitutes an efficient and developed long-term finance market? According to Group of Thirty (2013), such a system would (i) channel savings from households and corporations into an adequate supply of financing with long maturities to meet the growing investment needs of the real economy, (ii) ensure that long-term finance is supplied by entities with long-term horizon, (iii) contain a broad spectrum of financial instruments to support long-term investment and (iv) promote economic growth through stable cross-border flows of long-term finance. This description thus points to the role of financial intermediation, the importance of appropriate asset-liability maturity matches and the increasing role of cross-border flows.

It is only recently that cross-country data on the development and efficiency of long-term finance has become available. These data show high cross-country variation, with most emerging and developing countries having significantly lower levels of long-term finance, including in Latin America and especially striking in the case of mortgage finance for households. Long-term finance is especially sensitive to macroeconomic stability and a sound and effective institutional framework, which explains why we can see a prevalence of short-term and foreign currency lending in many Latin American countries and limited capital market development. However, other policy areas, including regulation, taxation and competition, are important as well for explaining the effective provision of long-term finance

in an economy. Critically, socio-economic factors, including market size and demographic structure, are important in explaining the sustainability of long-term financial markets. It is thus important to take into account country characteristics and deep institutional factors, when comparing the provision of long-term finance across markets.

Building on the literature exploring explanatory factors and determinants for the efficiency and sustainability of long-term finance, this paper suggests a scoreboard to gauge the availability of long-term finance across Latin American countries. Specifically, the paper suggests several indicators of the depth and inclusiveness of long-term financial markets, to be benchmarked according to country characteristics, and several policy variables, to be included in this scoreboard. Most of these indicators are available with relative ease from cross-country databases, while other involve compilation from commercial databases or tapping country-specific sources.

The remainder of this paper is structured as follows. The next section presents some evidence on long-term finance in Latin America, comparing the region to other regions in the world and documenting differences within the region. Section 3 is a literature survey that discusses research on (i) the relationship between long-term finance and growth, (ii) factors explaining the high variation in long-term finance across the globe and (iii) policies and institutions that can support the sustainable supply and demand for long-term finance. Section 4 offers a conceptual framework – the long-term finance frontier - to determine the sustainable level of long-term finance in an economy and categorize different policies and institutions to support long-term finance. Based on this conceptual framework, section 5 will then present a scoreboard as performance management tool to rank countries according to the institutions and policies conducive for long-term finance. This will be linked to a benchmarking exercise that identifies the most important policies and institutions for a sustainable demand and supply of long-term finance. Section 6 concludes and discusses next steps to apply this scoreboard.

2. Long-term finance in Latin America

While the empirical financial development literature has relied on a number of indicators that are readily available for a large number of countries over longer periods, there are fewer indicators that capture specifically the long-term intermediation aspect of financial systems. The standard indicator of financial intermediary development – Private Credit to GDP – comprises both short- and long-term claims on the real economy, though evidence suggests that the share of long-term financing increases with higher levels of Private Credit to GDP (Tasic and Valev, 2008). On the other hand, indicators relating to the stock market capture the outstanding amount of publicly listed equity in the economy and the trading in these claims (Stock Market Capitalization to GDP and Turnover Ratio) as well as the share of

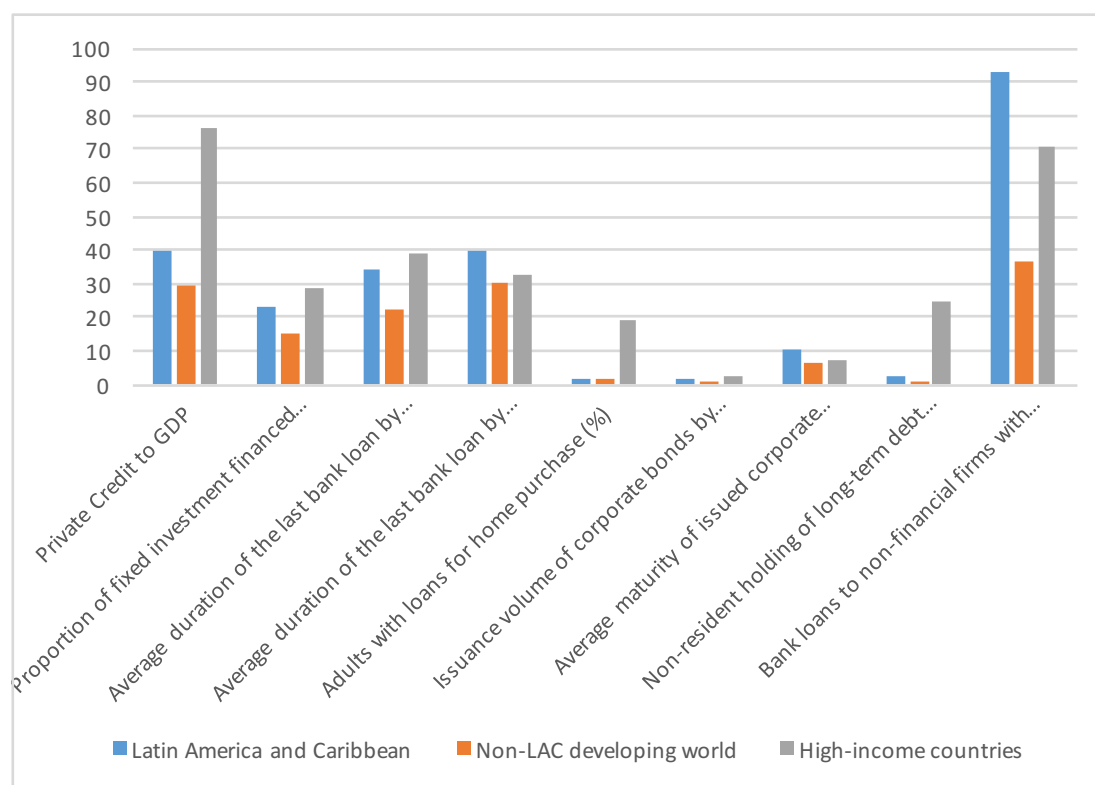
equity claims that are actively traded (float) and concentration of stocks. However, it provides only indirect evidence on the ease with which firms can access equity markets and actually do so. This would be captured in indicators of primary market activity, such as IPOs or SEOs, which are less readily available for a large cross-section of countries and over time. Indicators on the size and issuing activity of corporate bond markets are available for even fewer countries and often do not distinguish between long- and short-term bond issues.¹ In the area of contractual savings institutions, there are several data sources available, including the total assets of insurance companies, mutual funds and pensions funds, which indicate the importance of these institutions within the financial system. As claims of these institutions can be expected to be mainly long-term in nature (though mostly life rather than non-life insurance), it also gives a good indication of the importance of non-bank long-term finance providers in the economy. As alternative indicator of the importance of the insurance sector (both on demand and supply side) is life and non-life insurance penetration ratios, which indicate the total insurance premiums relative to GDP (with raw data from Swiss Re). There is less consistent cross-country information available on the depth of private debt and equity markets (equity funds, venture capital and angel financing) and alternative financing forms (crowd-funding and peer-to-peer financing).

In the area of housing finance, recent data collection efforts have given some insights into the importance of mortgage finance (Badev et al., 2014) and have shown that the importance of mortgage finance increases in income levels of countries. However, data on the depth of housing finance have to be hand-collected and are not readily available on a consistent cross-country basis outside Europe.

More recent data efforts have considered the user perspective of financial services, including long-term finance. These indicators rely mostly on household and enterprise surveys and are thus subject to the usual concerns that come with surveys. While available across a large number of countries, they are not available on an annual basis. Critically, given the survey character of these indicators, variation across countries and over time within countries have to be treated with caution in their interpretation.

¹ BIS publishes data on government and private sector bonds, while data on corporate bond issues and their maturity is available from commercial sources (DCM Analytics, Dealogic). The World Federation of Exchanges has data on bond market liquidity, but not distinguishing between government and private bonds

Figure 2.1: Long-term finance across the globe



Source: World Bank (2015) and Global Financial Development Data. Median values are used.

Figure 2.1 presents several indicators of long-term, comparing the median value for Latin America, for non-Latin American developing countries and for high-income countries. Where available, we use data for 2013; most of the data are from the World Bank’s Global Financial Development Data or the Appendix to the recent Global Financial Development Report. While the median value for Private Credit to GDP – the standard indicator of financial sector development – is higher in Latin America than non-Latin American countries, it is significantly lower than the median value across high-income countries. It is noteworthy, however, that across many other indicators of long-term finance, the median values for Latin American and high income countries are not that different from each other. However, as we will note below, this might be partly driven by Latin American outliers that are offshore centers. We will discuss these different indicators in detail at a later stage, when we discuss within-region variation.

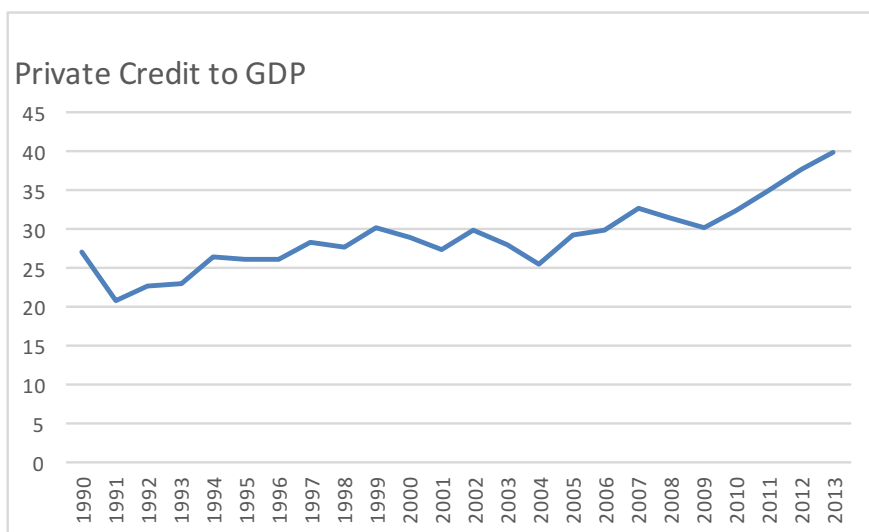
Figure 2.2: Long-term finance across regions



Source: World Bank (2015) and Global Financial Development Data. Median values are used.

Figure 2.2 shows variation in some of these indicators across six regions of the developing world. I use the median value for each region. We see that East Asia and Pacific has the highest ratio of Private Credit to GDP, the highest share of long-term loans and the highest issuance volume of corporate bonds. While Eastern Europe and Central Asia has the highest share of firms' fixed assets financed by external resources, while Latin America has the highest average maturity in corporate bonds. Latin America has the highest values of non-resident holdings of long-term debt securities, while the Middle East and North Africa region has the highest values of mortgage penetration. Overall, there is thus not one developing country region, which seems leading in terms of provision of long-term finance, though Sub-Saharan Africa is certainly behind other regions.

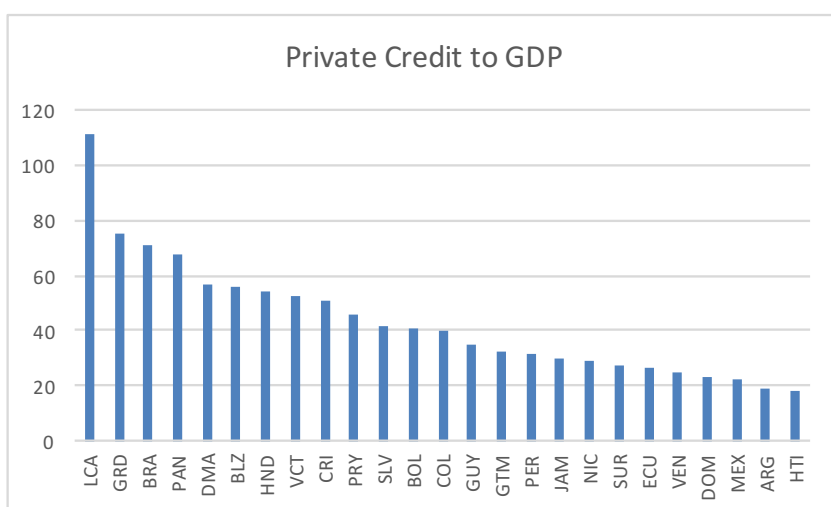
Figure 2.3: Private Credit to GDP over time in Latin America



Source: Global Financial Development Data; median value for Latin America region.

Figure 2.3 shows that the median value of Private Credit to GDP has increased over the past 20 years in Latin America, though not in a linear way, from the mid-20s in the early 1990s to around 40 percent in the early 2010s, illustrating the overall trend towards financial deepening, also document and discussed in World Bank (2012). Figure 2.4 shows a large cross-country variation within Latin America – from value above 100% in St. Kitts to values below 20% in Argentina and Haiti. The increase in Private Credit to GDP, however, has not benefitted all borrower groups to the same extent, with household credit in many countries increasing more than, for example, SME finance.²

Figure 2.4: Private Credit to GDP across countries in Latin America

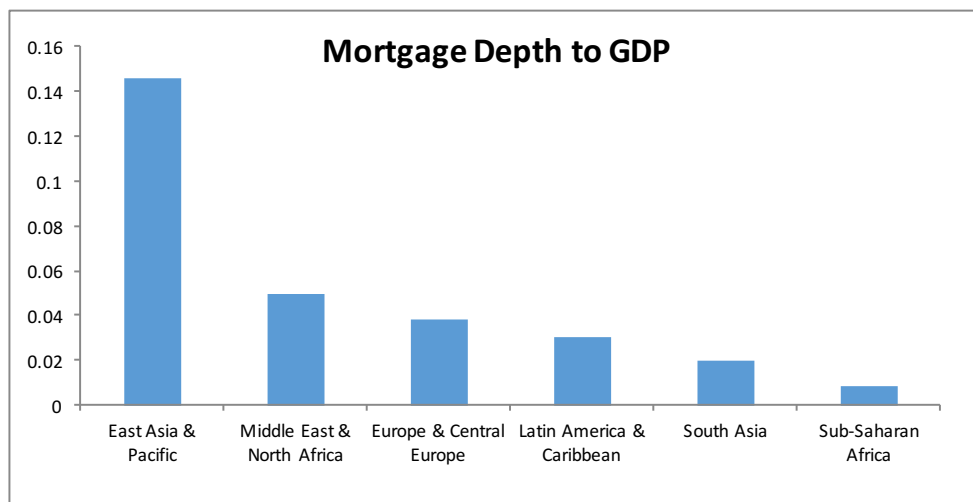


Source: Global Financial Development Data, data are for 2013.

² Beck et al. (2012) show an increase in the share of household credit in total credit as financial systems deepen.

Within the segment of household finance, Latin American countries still show very small mortgage markets, as illustrated in Figure 2.5, even in comparison with other regions with a large number of middle-income countries, such as East Asia. Overall, however, Badev et al. (2014) show that the largest gap in the development of mortgage finance system is between middle- and high-income countries. Within Latin America, the depth of mortgage finance system ranges from 23% in El Salvador and Panama to one percent or less in Argentina and Jamaica (data averaged over 2006 to 2010, where available).

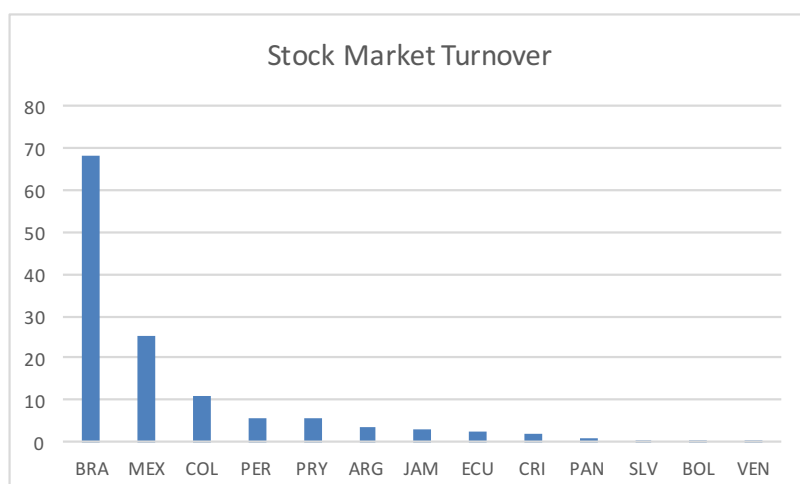
Figure 2.5: Housing finance depth across the globe



Source: Badev et al. (2014).

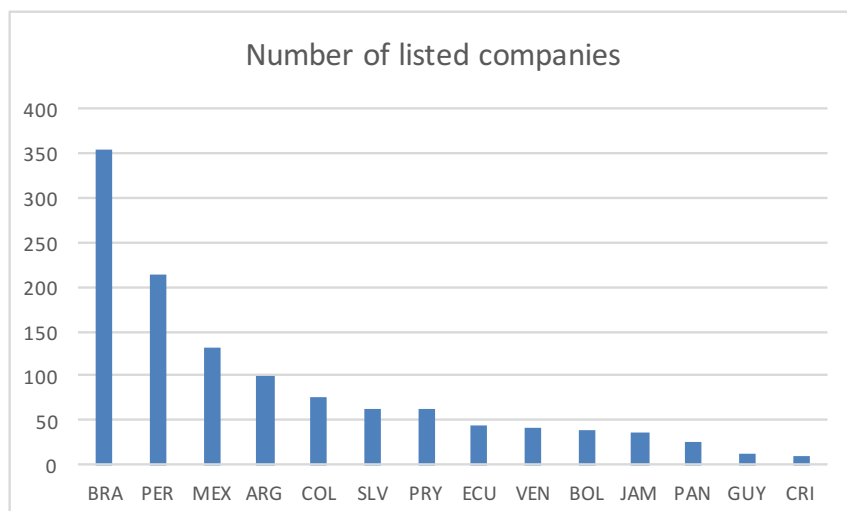
Similarly, data for stock market development (turnover ratio in Figure 2.6 and number of listed companies in Figure 2.7) show a large variation within the region. Turnover (how many times per year does the average share change hands) ranges from 68% in Brazil to less than one percent in Panama, El Salvador, Bolivia and Venezuela. Similarly, the number of listed firms ranges from over 350 in Brazil and over 200 in Peru to 12 in Guyana and 9 in Costa Rica.

Figure 2.6: Stock market turnover across countries in Latin America



Source: Global Financial Development Data, data are for 2012.

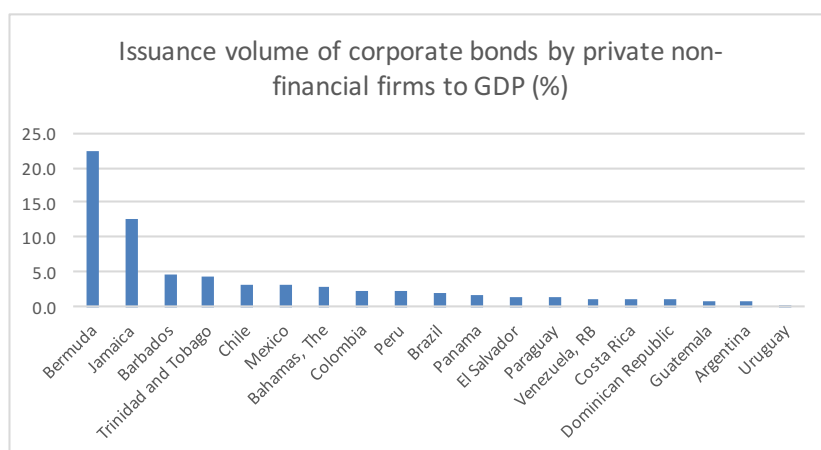
Figure 2.7: Number of listed shares across countries in Latin America



Source: Global Financial Development Data, data are for 2012.

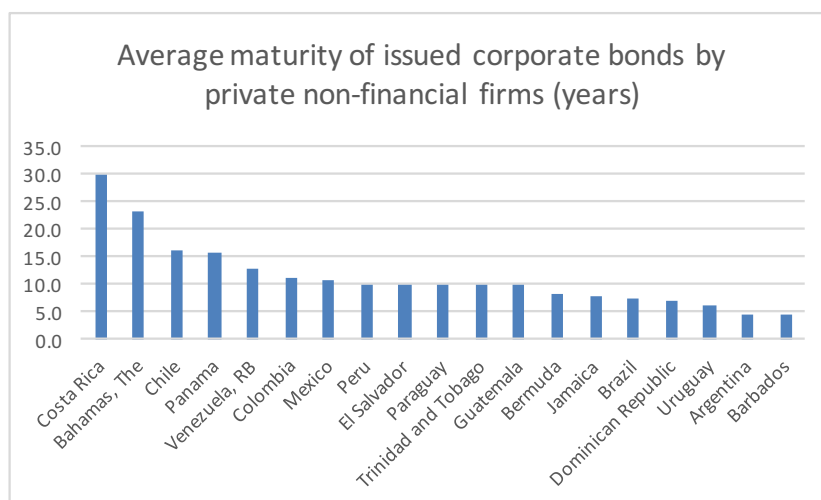
The following figures show variation in several indicators of long-term finance across Latin American countries, for which data are available. The primary market for corporate non-financial bonds shows a large variation across Latin America, ranging from 22% in Bermuda (an off-shore center) and 13% in Jamaica to less than one percent in the Dominican Republic, Guatemala, Argentina and Uruguay (Figure 2.8). As noted by World Bank (2012), the development of some of these markets has been quite notable, including in Chile, Colombia and Mexico. The average maturity of these bonds ranges from 30 years in Costa Rica (explained by the dominance of the state-owned energy company) to less than five years in Argentina and Barbados. Concerning some other markets, we find that the average maturity of corporate bonds is 16 years in Chile, 11 years in Colombia and Mexico and 7.5 years in Brazil (Figure 2.9).

Figure 2.8: Primary corporate bond markets across countries in Latin America



Source: World Bank (2015).

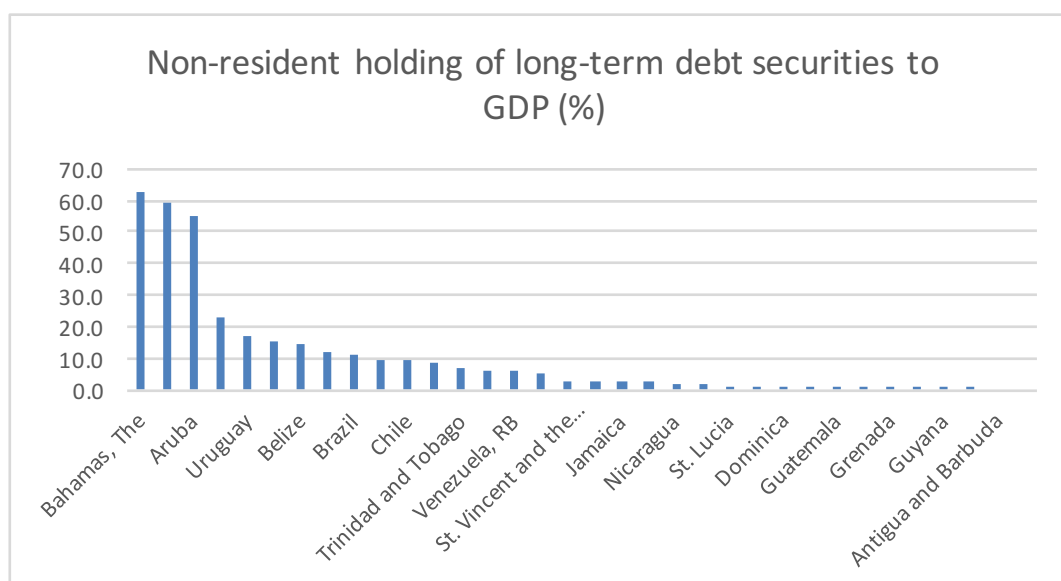
Figure 2.9: Corporate bond maturity across countries in Latin America



Source: World Bank (2015).

Another important dimensions are cross-border funding for long-term finance. We consider the non-resident holding of long-term debt securities relative to GDP, which ranges from 62% in the Bahamas and 59% in Bermuda (indicating their status of an off-shore centres) to less than two percent in Nicaragua, Honduras and St Kitts (Figure 2.10). Mexico shows a value of 12%, Brazil of 11%, Chile 9% and Colombia 6%.

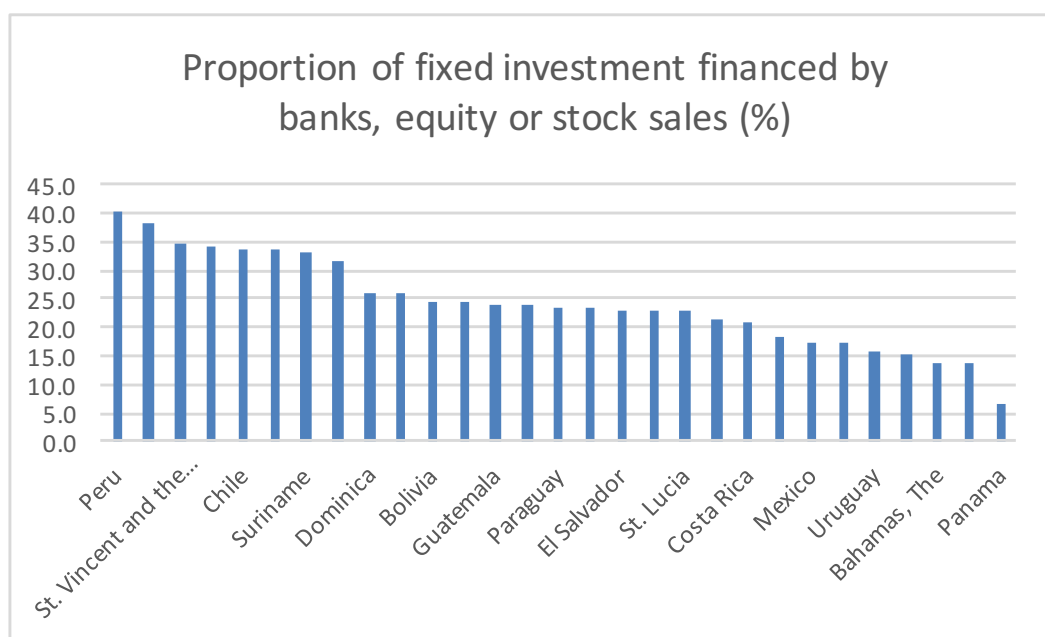
Figure 2.10: Cross-border debt holding across countries in Latin America



Source: World Bank (2015).

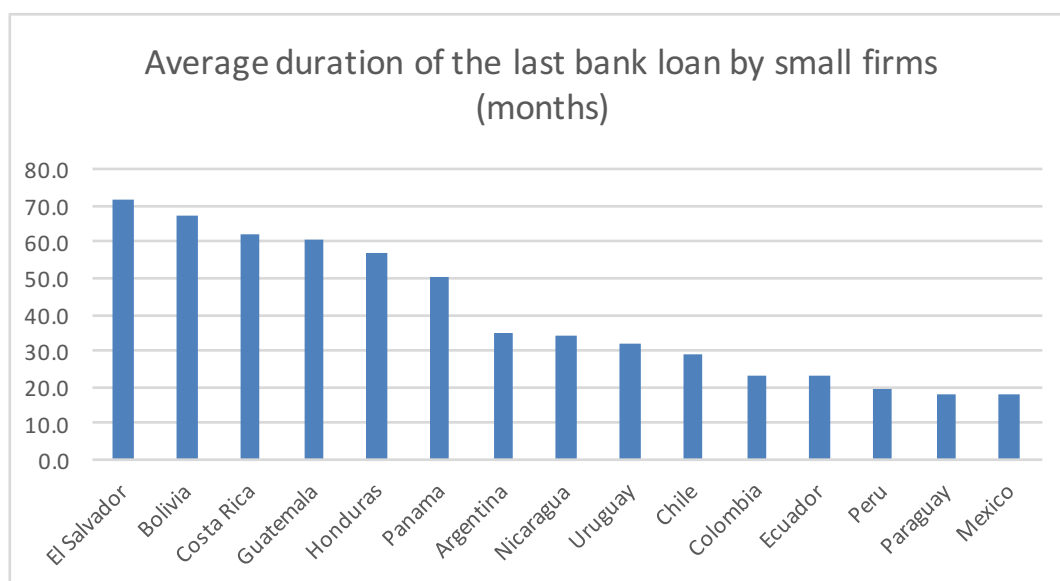
Turning to access to long-term finance, Figure 2.11 shows a large intra-region variation in the share of fixed asset investment financed by external finance sources. While specific information on the share of long- vs. short-term finance is not available on the firm level, it is more likely that long-term finance would be used for fixed asset investment, based on the earlier argument on firms matching maturities of assets and liabilities. This indicator is based on Enterprise Surveys and thus therefore does not necessarily refer to the same year; data for the most recent survey for each country have been taken. We find that this financing ratio ranges from 40% in Peru to less than 20% in Argentina and Mexico. Brazil and Chile both range in the upper part of the distribution, with 34%, while Colombia in the lower part, with 24% (Figure 2.11). In terms of average duration of the latest loan by small firms, we observe a similar large variation (over substantially fewer countries for which data are available) ranging from almost six years in El Salvador to 1.5 years in Mexico (Figure 2.12).

Figure 2.11: Firm investment financed by external source across Latin America



Source: World Bank (2015), based on Enterprise Surveys.

Figure 2.12: Loan maturity across countries in Latin America

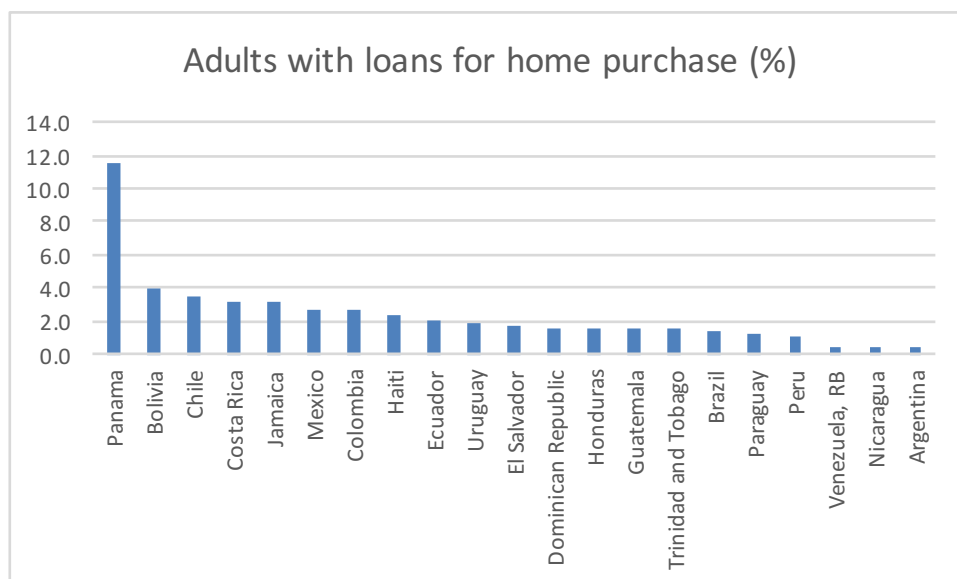


Source: World Bank (2015), based on Enterprise Surveys.

Turning to household finance, we see that the share of households with housing loans (the main long-term credit product for households across the globe) is very low in general, ranging from 11.5% in Panama to less than one percent in Venezuela, Argentina and Nicaragua (Figure 2.13). This is in line with the discussion earlier on the relatively shallow mortgage finance systems in the region. It is important to note that the depth and

access indicators for housing finance are not completely compatible, as the latter refer not only to formal housing finance.

Figure 2.13: Housing finance penetration across countries in Latin America



Source: World Bank (2015), based on Global Findex data.

In summary, while Latin America does not stand out too much from other developing and emerging markets, there is a high cross-country variation within the region. While there seems to have been some deepening over the past years, including successes in long-term finance, there are still challenges to be overcome.

3. Literature survey

This section discusses the academic evidence on (i) the relationship between long-term finance and growth, (ii) factors explaining the supply of long-term finance and (iii) policies to close the long-term finance gap. While relying on global evidence (i.e. cross-country or country-studies), references to Latin America are made wherever possible. It is important to note that this survey relies on previous work by the author on Africa (Beck et al., 2011), more general literature surveys on the relationship between economic and financial development (e.g. Beck, 2012, 2013) as well as the recent Global Financial Development Report (World Bank, 2015), for which the author served as advisor and reviewer.

3.1. Long-term finance and growth

One of the critical functions of the financial system is maturity transformation. Banks transform at-sight liabilities into longer-term assets and thus support economic growth; this critical function, however, is also at the core of their fragility (Diamond and Dybvig, 1983).

Similarly, well-functioning and highly liquid capital markets allow investors access to savings on demand (though unlike banks not at face value), while at the same supporting long-term investment through corporate bonds and equity (Levine, 1991). The role of financial intermediaries and markets in screening and monitoring entrepreneurs is often modeled as resulting in higher innovation, which is a long-horizon process (e.g. King and Levine, 1993). It is important to stress that the maturity transformation function of financial intermediaries carries with it fragility risk. The Diamond-Dybvig model shows that financial intermediation is a fragile equilibrium; bank runs can bring it down. Similarly, while financial intermediaries help overcome agency conflicts between savers and investors, they create new agency problems between depositors/creditors and intermediaries.

There are also more specific theoretical arguments of how the availability of long-term finance can foster economic development. These arguments can be made for the different users of financial services – firms, households and governments. They are based on the underlying assumption that user of finance would like to match maturities on the liability and asset sides of their balance sheets.

First, there is a need for long-term finance for funding of infrastructure projects. Given high resource needs and long-time horizons between start of construction, its completion and revenue phase, appropriate funding structures are needed. As private-public partnerships in infrastructure gain in importance, corresponding financing structures are needed that match maturity and risk structures of assets with funding. Historic evidence supports the role of financial intermediation for the financing of infrastructure, as in the case of the Industrial Revolution in Great Britain, although not necessarily by banks but coalitions of local investors (Hicks, 1969, Trew, 2010). Infrastructure needs are high in both developed and developing countries; while difficult to put an exact number on these needs, Group of Thirty (2013) estimates infrastructure needs of USD 7 trillion for nine major economies, accounting for 60 percent of global GDP, until 2020. There is ample evidence that infrastructure investment increases not only economic growth, but also contributes to lower income inequality by broadening access to markets and thus opportunities (Calderon and Servén, 2014; World Bank, 2015).

On a broader level, access to long-term finance, especially local currency bond markets, allows governments to finance fiscal deficits without having to resort to financial repression (ultimately undermining the overall efficiency of the financial system) or foreign currency borrowing on international markets (ultimately exposing government and the economy to additional macro-risks). Liquid and efficient markets also allow for more effective monetary policy transmission. The absence of deep long-term financial markets forces government authorities to use the short-end of the yield curve to intervene in markets (e.g. to stabilize the exchange rate), which can unnecessarily drive up short-term rates, as

happened for example in the Colombian mortgage crisis of the late 1990s. Finally, a long-term yield curve can reflect expectations about macroeconomic development and future monetary policy, ultimately helping monetary policy authorities (Laeven, 2014)

For households, the positive effects of long-term finance arise both on the savings and funding side. On the savings side, it allows consumption smoothing over the life cycle, including access to necessary credit products for the “sandwiched generation” (i.e. the generation with children in education and parents with need for care) and savings and insurance products for retirement. On the funding side it allows large investment, prominently into housing, but also into human capital, independent of current income but as a function of future expected income streams (e.g., Flug, Spilimbergo, and Wachtenheim, 1998). Home ownership, funded through access to long-term finance, also provides households with the necessary collateral to borrow in case of unexpected income shocks (Lustig and Van Nieuwerburgh, 2004) and might even boost entrepreneurship if personal collateral can be used for entrepreneurial borrowing (Adelino, Schoar and Severino, 2013)

The availability of long-term finance allows firms to invest in R&D activities, as shown by Aghion et al (2010). Specifically, the lack of access to long-term finance results in a procyclical behaviour of the share of long-term in total firm finance given liquidity risk that varies with the business cycle, ultimately resulting in higher aggregate volatility and lower growth. More generally, better access to long-term finance allows a better maturity matching of assets and liabilities and reduces the dependence of investment decisions from cash flow availability (Love, 2003).

In summary, a better provision of long-term finance allows for more stable investment and consumption across all sectors of the economy (households, firms, governments). As I will discuss further below, however, it also requires stability as pre-condition for long-term finance provision in the first place. Ultimately, there is a feedback loop between stable macroeconomic and effective institutional frameworks and the provision of long-term finance, often driven by underlying fundamentals, such as political conditions.

The empirical finance and growth literature has focused on aggregate financial sector indicators, rather than on specific indicators of long-term finance, to gauge the relationship between financial and economic development. However, one can use the results of this literature, which shows a positive and significant relationship between financial sector development and growth across developing and emerging markets to make statements about the relationship between long-term finance and growth. First, more developed banking systems have a higher share of long-term loans in their loan books (Tasic and Valev, 2008) and there is strong evidence for a positive impact of banking sector development on economic growth in emerging and developing economies (e.g., Beck, Levine and Loayza, 2000). Second, cross-country comparisons have shown a positive relationship between

stock market liquidity (though not necessarily size) and economic growth (Levine and Zervos, 1998; Beck and Levine, 2004), suggesting that capital markets' maturity transformation is a critical dimension of the positive effect of financial development for economic growth.

There is evidence on the firm-level for the positive effect of long-term finance. Using the Global Financial Crisis as exogenous shock – from viewpoint of individual firm – and thus identification strategy, Almeida et al. (2011) find that firms whose long-term debt matured during the crisis – and who thus faced problems in rolling over – cut investment much more than firms whose long-term debt matured before the crisis. Vermoesen, Deloof and Laveren (2013) find similar results comparing firms with different maturity dates of their long-term debt during the crisis.

The focus on the importance of long-term finance for economic growth is somewhat related to the financial structure debate, i.e. whether bank- or market-based financial systems are better in fostering economic growth. While initial empirical analyses have shown the irrelevance of the financial structure and the importance of overall financial development, more recent evidence has shown that a stronger focus on capital markets might be especially helpful for innovation and growth in more developed economies.³ In addition, Demirguc-Kunt and Maksimovic (1998, 2002) show that while both banking and equity market development are critical for firm-growth, the latter is more important for long-term funding. This debate has taken on increasing importance in the current debate on the capital market union in the European Union, targeted at strengthening non-bank components of the financial system, including capital markets.

The contrast between markets and banks, however, might be a wrong one. Most of finance today is intermediated, even if it goes through public markets, such as public debt and equity markets, as I will discuss below. Institutional investors, including insurance companies, pension and mutual funds have become increasingly important, which is also reflected, e.g., in the prominent role of institutional investors in the ownership structure of publicly listed firms. On the other hand, there are indications that there might be insufficient sources of equity finance in the economy. Ultimately, the challenge might be more one of debt vs. equity than of the prominence of specific players in the financial system.

Financial intermediaries and markets also have other complementarities. Securitization is an important connection between intermediaries and markets in the cross-section. IPOs of companies financed by venture capitalists are an important connection across time, between financial intermediaries and public markets. There is evidence that

³ For initial wave of cross-country explorations of financial structure, see Beck and Levine (2002); Demirguc-Kunt and Maksimovic (2002) and Levine (2002). For more recent evidence, see Demirguc-Kunt, Feyen and Levine (2013) and Hsu, Tian and Xu (2014).

different segments of the financial system develop together, such as bond markets and banks (Burger and Warnock, 2006).⁴ Local currency government bond markets are an important basis for corporate bond market, as they provide a yield curve. Another dimension of complementarity is that between capital markets and institutional investors, such as pension funds. Giannetti and Laeven (2009) show such a complementarity in the case of Sweden. Cifuentes, Desormeaux and Gonzalez (2002) relate the development of the Chilean bond market to the introduction of a fully-funded pension system in 1981; this can have significant macroeconomic repercussions, as shown by Corbo and Schmidt-Hebbel (2003) who attribute 0.5 percentage points of annual growth to the pension reform.

On the other hand, there is the risk that a bank-dominated if not bank-biased financial system might undermine the development of other segments, as banks, for example, fear for the erosion of rents if they face competition from other financial service providers. There is also the issue of cross-ownership links between different segments of the financial system, a topic I will return to below. Overall, the question, therefore, seems not necessarily in the contrast of two specific segments, but rather in having a diversified if not complete financial system.

Long-term funding in most developing/emerging markets goes mainly through banking systems. Consistent with theory, the empirical financial structure literature has shown that different segments of the financial system emerge at different points of economic and financial development. While banks dominate low-income countries' financial systems, capital markets arise at a later stage. Similarly, contractual savings institutions arise at a later stage. In addition, and as I will discuss in more depth further below, collective frictions related to network externalities might prevent the emergence of liquid capital markets. On the one hand, the size and enterprise structure of a country might not "provide" a sufficient number of firms ready to go public and thus provide the basis for a liquid market. On the other hand, there might not be sufficient long-term investors to provide the necessary liquidity for such markets. The establishment and growth of non-bank contractual savings institutions can thus be critical for the development of liquid capital markets, but depend in turn on the existence of liquid capital markets, a classical chicken-hen problem (Impavido, Musalem and Tressel, 2003).

However, different firms might also finance themselves in different markets, which points to repercussions from enterprise structure to financial structure. SMEs are more likely to finance themselves with bank finance, while it is predominantly larger corporates that have access to public markets. Mid-size enterprises, especially growth-oriented firms, are

⁴ Similarly, Claessens, Klingebiel and Schmukler (2007) find that countries with deeper banking systems and equity markets have larger domestic currency bond markets and issue less foreign currency debt.

best positioned to gain access to private equity sources.⁵ More specifically, Altunbas, Kara and Marques (2010) find for a sample of European firms that large firms, with greater financial leverage, more (verifiable) profits and higher liquidation values tend to prefer syndicated loans. In contrast, firms with larger levels of short-term debt and those perceived by markets as having more growth opportunities favor financing through corporate bonds. As important as the development impact of long-term finance is, it is important to note that maturity mismatches have often been at the core of financial crises. Especially, housing finance has been at the center of multiple banking crises, most recently in the U.S., Ireland and Spain and recent research has shown that banking crises linked to housing boom and bust cycles are typically deeper than other crises (Claessens, Kose and Terrones, 2012). There is also evidence that credit booms in mortgage credit result in higher economic damage – in form of below-par economic growth after the bust – than firm credit booms (Büyükkarabacak and Valev, 2012, Jorda, Schularick and Taylor, 2016).

There is also the risk of competition leading to a “maturity rat race”, where borrowers have incentives to dilute the claims of incumbent creditors by offering a lower maturity claim to a new creditor; ultimately, all creditors will reduce their maturity (Brunnermeier and Oehmke, 2013). Such a maturity rat race can create additional sources of fragility.

The recent crisis experience across the developed world has led to a substantial shift in the regulatory approach to financial intermediation, part of regulatory super-cycles. While the trade-off between growth/efficiency and stability has been mostly responded to in favor of growth/efficiency before the crisis, stability concerns have become much more prominent in recent years, ultimately resulting in the Basel III and Solvency II regulatory framework for banking and insurance sectors, respectively. This stronger focus on stability concerns affects the provision of long-term finance more strongly than other financial services, given the higher risk. I will return to this topic below.

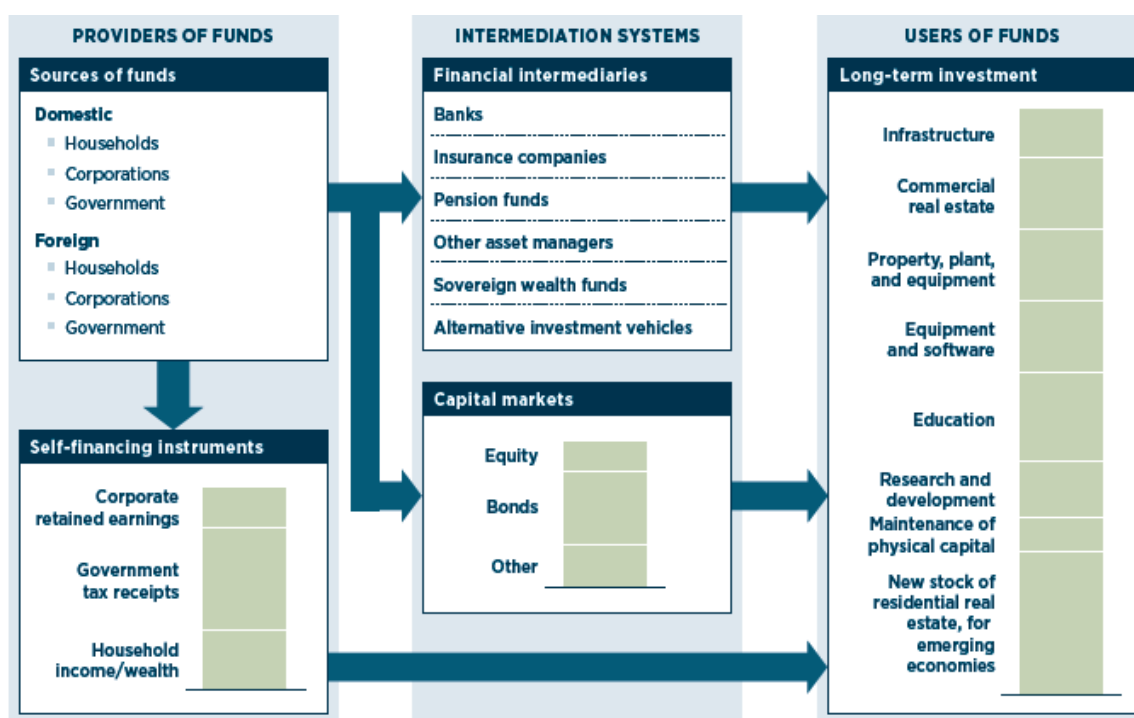
3.2. Factors explaining long-term finance

In order to understand better the factors explaining the existence and efficiency of sustainable long-term finance in an economy, it is important to first consider the different stakeholders and processes, as illustrated in Figure 3.1. On the two sides of the intermediation process are the providers of funds – both domestic and foreign – and use(r)s of funds, as already discussed in the previous section. The intermediation process goes partly directly through capital markets (both public and private) and intermediaries (who in turn partly use capital markets in the intermediation process, as for example mutual funds or insurance companies). The different intermediaries offer different types of products, ranging

⁵ It is important to stress, however, that the argument of firm size distribution implying the optimality of a certain financial structure is a treacherous one as it only argues on the basis of existing firms.

from deposit contracts in the case of banks over contingent contracts in the case of insurance companies to equity shares in the case of mutual funds. Some of the intermediaries are open to the public (most prominently banks) while other serve as intermediation provider for specific funding providers (e.g. sovereign wealth funds). Similarly, capital markets are organized according to different claims – equity, bond, derivatives etc.

Figure 3.1: Actors in long-term finance system



SOURCE: McKinsey Global Institute.

Source: Group of Thirty (2013).

Factors explaining the efficiency of long-term finance in a country can thus be differentiated according to (i) supply (i.e. providers), (ii) demand (i.e. use(r)s) and (iii) intermediation and market challenges. While in the following I will focus mostly on the latter, supply and demand-side constraints can also reduce the efficiency of long-term finance in an economy. Specifically, the demographic structure of a country can be critical for the supply of long-term savings (see, e.g. Beck and Webb, 2003, in the case of life insurance penetration). As societies age, there is a tendency towards lower-risk investment strategies by households, with consequences for the relative cost of equity and debt, but also capital market and bank financing. However, there might also be behavioral constraints to savings, as documented by a recent extensive empirical literature, as well as the absence of a risk/equity culture among investors, which reduces the total available domestic funding for long-term risk financing. The extent to which corporations are net borrowers or net lenders in an economy varies substantially across countries, with a large share of savings in China, for

example, supposedly being held by firms. This might also vary with the business cycle. The degree to which foreign funders provide long-term resources to an economy is in the first instance a policy decision, related to capital account liberalization. However in case of open capital accounts, the level and volatility of capital flows depends on similar factors as we will discuss in the following plus to a large extent on global factors often outside the realm of domestic policymakers and regulators.

On the demand side, in terms of different uses for long-term financial resources, there might be non-financial constraints that impede demand for long-term financing. To give just a few examples: lack of regulatory certainty and project management skills can undermine infrastructure investment⁶; socio-political unrest can undermine demand for fixed-asset investment goods.

Most of the theoretical and empirical literature as well as policy debate, however, has focused on the intermediation process and market frictions related to specific intermediaries and missing market segments. This discussion is related to an extensive and still growing literature that has explored the factors that can explain the large cross-country variation in financial sector development. These factors include country characteristics such as size and income level, but also policy areas, such as macroeconomic stability and institutional development. Before discussing further details, it is important to stress that many of these factors are even more critical for the emergence of an appropriate supply of long-term financing than for financial sector development in general. Most if not all financial sector transactions are intertemporal in nature and are thus sensitive to the degree of uncertainty, both related to macroeconomic stability and to agency problems between lender and borrower, with this sensitivity increasing in maturity.

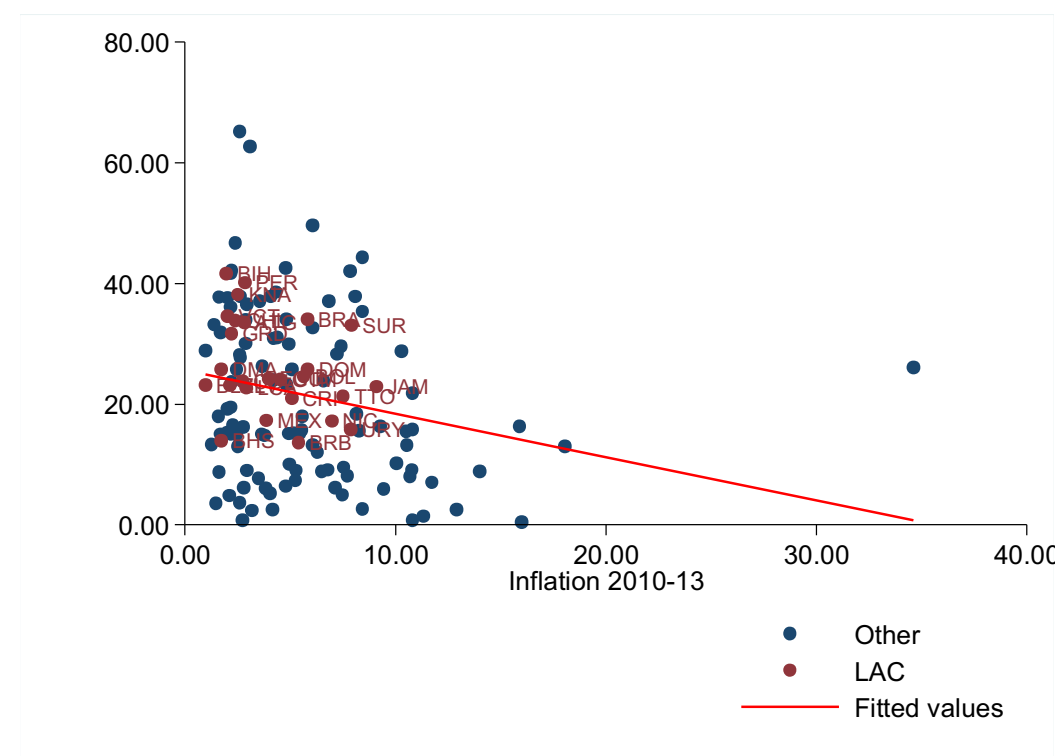
Different intermediaries have different strengths and shortcomings. Banks typically can rely on large resources from the general public thus being able to reach out to a large share of the population and specialize in creating private information about the users of these funds; on the downside, they face maturity mismatches. Life insurance companies and pension funds have a more balanced asset-liability maturity structure; as I will discuss below, however, incentive structures might bias against considering long-run investment horizons. Similarly, mutual funds allow direct investment into long-term assets by investors, without the risk of maturity mismatch. These contractual savings institutions, however, depend on liquid public equity and debt markets. Private equity funds specialize on specific firm segments, such as young and growth firms; on the other hand, they often face scale problems, limited diversification possibilities and similar agency problems vis-à-vis their investors as banks vis-à-vis depositors.

⁶ See Ehlers (2014) for a discussion on financial and non-financial barriers to more infrastructure financing.

Long-term financial contracts can be seen as a risk-sharing arrangements between the two parties – for the funder there is default risk increasing in maturity as well as loss of real value of repayment streams and for borrowers is the roll-over and interest rate risks, which in the worst case scenario might force premature liquidation. Different country- and intermediary level constraints determine the outcome of this arrangement. In the following, I will discuss both aggregate market frictions as well as incentive problems within intermediaries and market failures that bias this arrangement towards the short end of maturities.

One important policy constraint is the lack of macroeconomic stability. Given that in most instances nominal repayment amounts are contracted rather than repayment in real consumption, macroeconomic volatility (mostly in form of high and volatile inflation, two factors that go mostly hand-in-hand) undermines the willingness on both sides of the intermediation chain to commit to long-term financing contracts. Looking at it from a different angle, the risk premium required to compensate funders for the repayment uncertainty in real terms would be too high for (i) users of such funds to accept and/or (ii) would undermine their repayment capacity. The importance of macroeconomic stability for financial development, in general, and long-term, more specifically, can be shown empirically by relating aggregate indicators of financial development or more specific indicators of long-term finance to inflation rates, as illustrated in Figure 3.2, where we plot inflation averaged over 2010 to 2013 against the proportion of firms' fixed investment financed with external finance. Burger and Warnock (2006) show with data across 49 countries, that lower inflation is associated with larger bond and local currency bond markets, a result that holds both across the government and private bond market segments. It is important to understand that it is not only current levels of inflation, but it can also be the long-term legacy of high and volatile inflation that can undermine the development of local capital markets, as the example of Brazil shows (Park, 2012).

Figure 3.2: Long-term finance and inflation



Sources: World Development Indicators and World Bank (2015). Vertical axis is the proportion of fixed investment financed by banks, equity or stock sales.

Several shortcuts have been “designed” to overcome the lack of local currency denominated long-term finance. On the one hand, index-based financial contracts can get around macroeconomic volatility; however, this requires trust in the index being used and the use of such instruments might simply turn maturity risk into default risk if not carefully constructed (e.g. Colombian mortgage crisis in 1990s discussed above). Nevertheless, indexed local currency bonds can be an important instrument to create long-term yield benchmarks. On the other hand, foreign currency deposits and loans might seem an easy way around the lack of domestic macroeconomic stability, as to be observed in many developing and emerging markets; however, the use of foreign currency loans in the case of borrowers without foreign currency revenues can again turn currency into credit risk.⁷

A second important impediment to long-term finance is the contractual framework. While contract enforcement, creditor rights and the efficiency of the judicial system in general are important for financial contracts, long-term contracts are even more sensitive to deficiencies in this area. The lack of enforceability of claims increases the uncertainty from the supplier and intermediary viewpoint. The use of short-term rather than long-term finance

⁷ As discussed by de la Torre and Schmukler (2004) based on observations across Latin America, there has been a tendency to overcome different systemic risk components within a country by concentrating on short-term loans, foreign currency loans and foreign jurisdiction contracts. It is important to understand that these are shortcuts that result in risk reallocation rather than risk reduction, most notably from price risk (against volatile real interest and real exchange rate changes) to price-induced default risk.

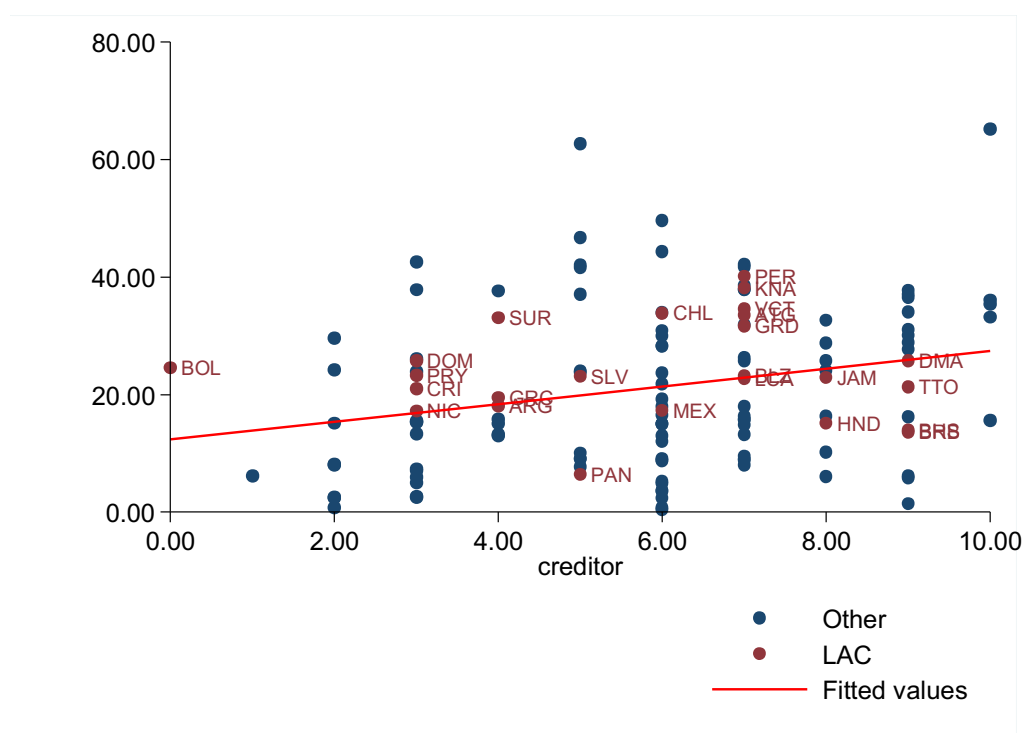
can be optimal from the lender's/funder's viewpoint in volatile and/or institutionally weak environment. There is ample evidence that more effective contractual institutions are associated with larger and more liquid stock markets and local bond markets (Djankov, McLiesh and Shleifer, 2007; Burger and Warnock, 2006). Eichengreen and Luengnaruemitchai (2006) argue that stronger investor protection in Latin America can explain why their capital markets are more developed than those in East Asia.

The importance of contract enforcement has been confirmed by recent firm-level evidence that relates country-level efficiency of contract enforcement with firms' use of long-term finance (World Bank, 2015) as well as a positive association of institutional development and the use of long-term debt (Gianetti, 2003). Similarly, Fan, Titman and Twite (2015) find that firms in countries that are viewed as more corrupt tend to use less equity and more debt, especially short-term debt, while firms operating within legal systems that provide better protection for financial claimants tend to have capital structures with more equity and relatively more long-term debt. Bae and Goyal (2009) show banks reduce loan maturities in countries with less efficient contract enforcement. Focusing on firm-level data from five Latin American countries Kirch and Soares Terra (2012) find that the institutional quality of a country has a significant positive effect on the level of long-term debt in a firm's financial structure.

On a country-level and thus being able to use the staggered introduction of a new judicial procedure in India as identification strategy, Gopalan, Mukherjee and Singh (2014) show that this improvement in judicial efficiency resulted in a significant increase in the ratio of long-term debt to assets. Musacchio (2008) studies the case of Brazil and shows that the weakening of creditor rights after 1945 contributed to a decline in bond market development. Figure 3.3 illustrates these findings and shows a positive correlation between creditor rights and the share of fixed assets financed with external finance.⁸

⁸ One can also argue that there is an important variation in the sensitivity of different market segments to investor right protection, with bond markets being more sensitive than equity markets, as in the latter investors can be compensated for higher agency conflicts and thus higher perceived risks with higher upside potential. This can explain that even in countries with more than nascent equity markets, bond markets are often underdeveloped.

Figure 3.3: Long-term finance and creditor rights



Sources: World Development Indicators and World Bank (2015). Vertical axis is the proportion of fixed investment financed by banks, equity or stock sales.

A third and related challenge is a deficient informational framework. In the absence of high-quality financial statements, loan covenants are difficult to formulate and enforce. On a more basic level, assessing the financial situation of an entrepreneur and the business perspectives are much more difficult. The absence of credit and corporate registries reduces the efficiency of both screening and monitoring process. Martinez Peria and Singh (2014) show that introducing private credit bureaus increases the use of long-term debt among firms; providing more information reduces risks for lenders and thus allows them to extend loans for longer maturities.

Related to macroeconomic instability and contractual deficiencies is government-induced risk, most notably dilution and expropriation risk. Dilution risk is mostly related to macroeconomic policies diluting the real value of claims, while expropriation risk refers to political interference into the contract process. It is important to note that the shortcuts mentioned so far (indexed claims or foreign exchange denominated claims) offer only limited help, in this case, as the recent example of Argentina shows, where the authorities have manipulated inflation numbers.

Related to both contractual and informational frameworks is the governance structure of corporations, which determines the premium that investors will ask for holding minority shares in listed companies (e.g., Nenova, 2003). Anginer et al. (2015) show that firms with

stronger governance structure (especially independent boards, are more likely to use long-term sources of funding, even controlling for country differences in the institutional framework. Better governance structures on the firm-level can thus reduce the need, as perceived by investors, for short-term funding structures as disciplining tool. Again, there might be an important feedback loop as documented by Aggarwal et al. (2011) who find that institutional investors play an important role in improving firm-level governance over time, especially foreign institutional investors, and here especially investors from Common Law countries.

The willingness to provide long-term finance can also vary across financial institutions, with their capacity to screen and monitor borrowers accordingly. To give just one example, Beck, Ioannidou and Schäfer (2012) show for Bolivia, that foreign bank loans are of shorter maturity than domestic bank loans (to the same group of firms) while relying more on collateral. In the absence of reliable and audited financial statements where lenders cannot rely on debt covenants to ensure entrepreneurial commitment, shorter loan maturities can also serve as an alternative disciplining tool. As highlighted in the theoretical literature, lending at shorter maturities can help banks to better screen and monitor their clients by forcing more frequent information disclosure and renegotiation of contract terms (e.g., Diamond, 1993, 2004).

There might also be incentive problems as documented by World Bank (2015) for the Chilean pension industry. If benchmarks for private pension funds are based on annual rather than longer-term targets, then this can bias investment targets towards less risky investment that ensure a more stable short-term return rather than more volatile but also higher return longer-term investments. Similarly, the prevalence of an “interest guarantee” in German private pension funds provides perverse incentives for long-term investment strategies by these firms (Beck, Kaserer, and Rapp, 2015).

3.3. Policies to foster long-term finance

In addition to the general policy areas mentioned above (macroeconomic stability and institutional framework) a more recent literature has evaluated several policy interventions and initiatives to expand the supply of long-term finance in an economy. Policies targeting macroeconomic stability have to go beyond low inflation. Establishing a long-term yield curve implies effective management of government debt. Another important aspect of the management of macrostability is the challenge of properly managing the Dutch Disease risk that arises from large inflows of capital revenues related to commodity exports or portfolio inflows related to monetary policy in advanced countries. If such inflows are mostly spent on import goods, a more relaxed approach can be considered, while an increase in the demand for domestic goods and services can easily result in inflationary pressures.

Another area concerns regulation, both for banks and for capital markets. As already discussed above, banks have a critical function in maturity transformation, while at the same being subject to fragility risks stemming from the same maturity transformation. As shown by Diamond and Rajan (2001), the reliance on short-term funding for long-term loans reinforces market discipline and thus reduces agency problems between the banks and its funders, including depositors. The financial safety net might actually have a negative effect on this discipline by offering deposit insurance. Going beyond idiosyncratic towards systemic risk, however, might change this view, with macro-prudential regulation having an increasingly important role in both reducing the negative impact that systemic risk can have on banks' solvency and stability and dampening credit cycles. Risk weights that are (indirectly) a function of maturity and illiquidity of claims (as these might reflect higher risks) and liquidity requirements that balance short-term liabilities with (access to) liquid assets might negatively impact the ability of banks to provide long-term funding, while at the same time make them more stable, thus ensuring provision of long-term funding.

Similarly, capital market regulation is critical for their development and creating trust by investors. As shown by La Porta et al. (2006), securities law that focus on public disclosure and facilitate private enforcement through liability standards are more conducive to the development of liquid markets than public enforcement of regulation.

Transparency is important also in other area, including in accounting and auditing standards for corporates, which reduce information asymmetries and thus agency costs between them and investors/lenders. There is evidence that increased information disclosure results in easier access to funding. Using information over 32 years for over 10,000 firms, Jiraporn and Tong (2010) find that the beneficial effect of short-term maturity debt on firm value is less pronounced for firms in industries with lower agency conflicts (such as regulated utilities), again indicating the lower reliance on short-term debt as disciplining tool in the presence of lower information asymmetries.

There are also more technical (plumbing) issues to point out, in the area of capital market development, including trading infrastructure, clearance and payment systems (Zervos, 2004). Standardization of bond issues for midsized companies might also help expand the universe of public enterprises, as does standardization of the securitization process. Very high transaction costs, both on the issuer and on the trading side can undermine liquidity of public capital markets

Another important policy lever might be taxation. For example, Park (2012) points to tax incentive schemes for equity and long-term corporate bond issues to help stabilize investor sentiment during the recent crisis in Korea, while also mentioning income tax exemptions for foreign investors in Brazil for long-term corporate and infrastructure bonds. It is important, however, not to use tax incentives as tool to jumpstart a capital market as the

negative example of Egypt shows, where tax exemptions on capital gains and dividends for retail and institutional investors were aimed at enticing investors to use their savings in listed equity rather than bank deposits, while exemptions on corporate tax payments were offered for listing firms. While these incentives led to a rather large boom in listings (Egypt's stock market capitalization reached a staggering 107 percent of GDP in 2007). Feyen (2010) reports that more than 50 percent of firms have free floats of less than 15 percent, and only 5 percent have free floats exceeding 70 percent. This also explains why the boom in listings and market capitalization was not accompanied by a similar increase in liquidity; the turnover ratio, reaching 47 percent in 2007, is similar to the ratios in other middle-income countries.

Another important policy area is that of competition and contestability. Across several Latin American countries, the non-bank segments of the financial sector are often closely connected to the banking sector through joint ownership, which might undermine the competition between the different segments of the financial systems and might create additional sources of contagion and thus fragility. And as discussed above, an oligopolistic banking structure might undermine the emergence and efficiency of non-bank financial system segments.

Finally, there is the issue of private pension reform to stimulate capital market development with the ultimate objective of more long-term finance in the economy. As discussed above, Chile has been seen both as a success story in this context, but caveats have also been stated, related to the incentive structure of fund managers. There is the risk of reverse maturity transformation, where long-term liabilities are invested into short-term relatively liquid and safe but also low-return assets. In addition, higher operational and marketing costs might make this route to capital market development an expensive one.

Latin America also offers an interesting example on the limitations of fostering the establishment and deepening of local capital markets. As discussed by De la Torre, Gozzi and Schmukler (2007), the associated expectations of policy reforms in this area were not completely met: Latin American countries, despite their reform efforts, greatly underperformed relative to East Asia and the G7 countries, though not necessarily when benchmarked to country characteristics, an exercise described further below. In addition, large firms are more likely to move abroad, with negative externalities for the remaining mid-sized companies that cannot afford the fixed costs of raising equity in international markets (Levine and Schmukler, 2007). A couple of explanations can help shed light on what went wrong in the Latin American experience. One explanation ascribes the failure to a combination of impatience and the insufficient implementation of reform. Alternatively, the claim has been put forth that some key reforms were not initiated, while other reforms were often implemented in an incomplete or inconsistent fashion. Appropriate laws and regulations were approved, but not duly implemented or adequately enforced. Another

explanation ascribes the underperformance to mistakes in sequencing the reform. This view contends that, before the application of capital market reforms, other reforms are necessary, such as the achievement of a minimum threshold of institutional strength in the legal and regulatory framework, supervisory capacity, accounting and disclosure standards, and so forth.

Beyond policies and institutions market size can be a constraining factor: Borensztein, Eichengreen, and Panizza (2006) show that the lack of capital market development in many developing and emerging markets can be explained with the lack of critical mass. Related to this is the structure of the firm population: are there sufficient large and transparent firms that can afford to go public? Is the ownership not too concentrated so that dispersed minority shareholders are not easily outvoted?

One way to overcome the market size constraint is international financial integration. While controversial among academics and policy makers alike, recent evidence has shown that foreign investors are more likely to hold long-term domestic debt than domestic debt holders, most likely because of the better diversification possibilities (World Bank, 2015). These findings, however, come on the background of an extensive literature gauging the effect of capital account liberalization and stock market liberalization more specifically on growth and volatility of developing countries. While the average effect has been shown to be positive, there seem to be threshold effects and the composition of funds in terms of equity vs. debt and maturity structure is important, which in turn has implications for regulatory restrictions and macroprudential regulation, including possibly capital controls (Kose et al., 2009). The finding, however, that international investors have longer-term horizons and are less likely to run, has important repercussions for the debate on integration into international financial markets.

Beyond aggregate effects, however, there are also distributional effects. Not all firms go global by opening themselves up to international owners or issuing debt on international markets. Claessens and Schmukler (2007), for example, document that only relatively few countries and firms actively participate in international markets. Firms more likely to internationalize are from larger and more open economies, with higher income, better macroeconomic policies, and worse institutional environments. These firms tend to be larger, grow faster, and have higher returns and more foreign sales. Didier, Levine and Schmukler (2014) show that the bias towards larger firms is even bigger among bond issuers than equity issuers. Furthermore, the firm size distribution of issuers develops differently from that of nonissuers. Among issuers, smaller firms grow faster than larger ones, thus tightening size distribution; but among non-issuers, larger firms grow faster than smaller ones, widening the size distribution.

Over the years, some specialized instruments have been developed to mitigate the effects of specific risks in long-term finance. Mortgage liquidity facilities can help for refinancing long-term mortgages. One way to foster long-term financing is credit-enhancement through guarantees, such as an infrastructure guarantee facility. Similar tools exist on the firm- and household level in the form of partial credit guarantee schemes.

In the presence of strong market frictions, related to transaction, agency and collective frictions, governments across the developed and developing world have focused on government-owned banks – be they commercial or development banks – to provide the necessary long-term funding.

4. The long-term finance frontier

Building on the discussion in the previous section and as basis for the following benchmarking exercise, this section introduces the concept of the long-term finance frontier. It is related to similar work by the author on the access possibilities frontier (Beck and de la Torre, 2007) and the financial depth frontier (Barajas et al., 2013). This frontier concept allows us to summarize many of the arguments made so far into one framework.

The idea of the frontier is that of a constrained maximum – what is the maximum feasible and sustainable amount of long-term finance in an economy, given the structure of the economy and the macroeconomic and institutional environment. This concept is based on the observation that uncertainty and market frictions create the need for financial intermediaries and markets. While financial institutions and markets help overcome these market frictions, these same market frictions restrict their efficient operation. 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, Feyen and Ize, 2013).⁹ Fixed transaction costs in financial service provision result in decreasing unit costs as the number or size of transactions increases. 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. 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, which in the context of our discussion is especially relevant for capital market development. In summary, fixed transaction costs can explain the high level of formal financial exclusion in many developing

⁹ For the following, see a similar discussion in Beck and de la Torre (2007).

countries. Fixed costs can also explain the lack of capital markets in many small developing economies.

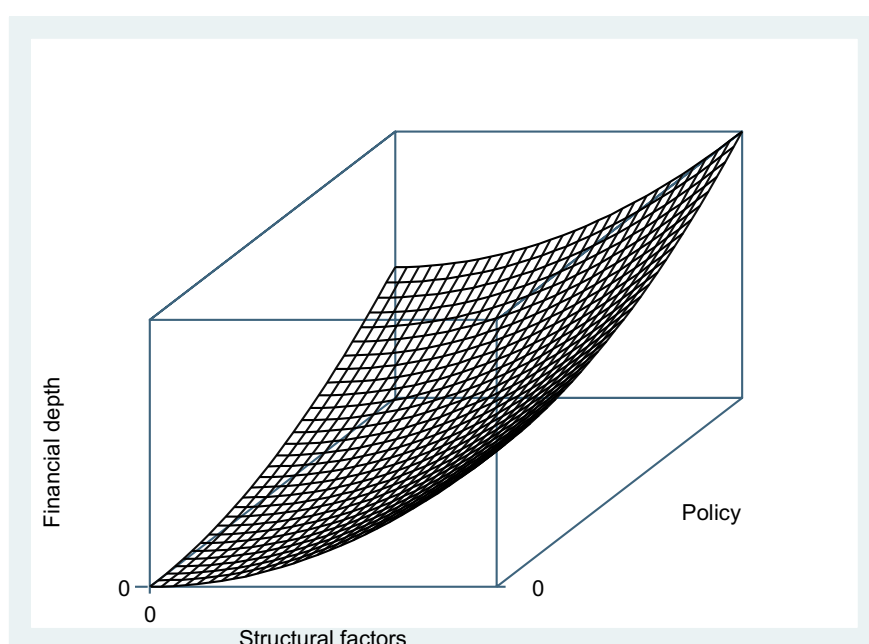
In addition to costs, the depth and outreach of financial systems, especially in credit and insurance services, is constrained by risks, particularly default risk. These risks can be either contract specific or systemic in nature. While idiosyncratic risks are specific to individual borrowers, projects or policyholders, the systemic risk environment influences their management. High macroeconomic uncertainty and deficient contract enforcement institutions exacerbate agency problems, while the lack of diversification possibilities can hinder the ability of financial institutions to diversify non-agency risks. As systemic risk increases, it enlarges the set of borrowers and projects that are effectively priced out of capital markets. Similarly, it makes insurance policies unaffordable for larger 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), fuelling financial instability.

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 can constrain participation on the demand-side and have been discussed in the previous section. In broad terms, we can distinguish between two types of state variables: (i) structural characteristics of the socio-economic environment in which financial institutions and markets operate and which impose a limit on their development and (ii) long-term policy variables that either foster or limit financial deepening. While structural variables relate to the broader socio-political and structural environment in which the financial system operates, including market size, population distribution, demographic structure, while policy variables are directly related to the financial sector, as, e.g., macroeconomic fundamentals, the available technology, contractual and information frameworks underpinning the financial system, as I discussed above

Using the concept of state variables allows defining the long-term finance frontier as a rationed equilibrium of realized supply and demand, variously affected by market frictions. Figure 4.1 illustrates the long-term frontier and the difference between structural and policy variables among the state variables. The vertical axis denotes financial depth in general or the provision of long-term finance. The horizontal axis is a one-dimensional representation of structural variables as discussed above. I assume—for ease of illustration—the structural state variables to be linearly related to sustainable financial depth. The structural depth line therefore represents the expected level of financial depth given a country's structural characteristics. The third axis denotes policies and institutions conducive to long-term finance, again a one-dimensional representation. The plane is the combination of structural

characteristics and policies/institutions consistent with a given level of long-term finance in an economy. Points above the plane are unsustainable levels of long-term finance, while points below are inefficient, as they do not exploit the opportunities provided by structural characteristics and policies/institutions in an economy. The separation in structural characteristics and policies underlines an important point – the same set of policies will not lead to the same results in terms of long-term finance provision across countries with different characteristics. Second, policies have to be tailored to the structure of an economy, as expectations have to.

Figure 4.1 Long-term finance frontiers



Source: Beck and Feyen (2013).

The relative position of financial systems with respect to the long-term finance frontier illustrates several challenges. First, a financial system can face the challenge of a very low frontier, related to the lack of macroeconomic stability or deficiencies in the institutional framework. This problem requires long-term policy efforts, as discussed in section 3. Another challenge can be the small size of the economy, which can consequently not support large and liquid capital markets or does not allow sufficiently for risk diversification. This would require opening up of capital accounts to attract the necessary additional international resources to complement domestic long-term resources. Accessing the vast risk-pooling and diversification opportunities offered by international capital markets, while adopting appropriate macro-prudential policies to dampen the impact of potentially disruptive volatile international capital flows, can be important for such economies. It might also enable domestic users of long-term financial resources to tap non-local intermediaries and markets.

While this seemingly undermines the development of a domestic system of long-term finance, it raises the question of whether the availability of long-term financial service providers is more important than their location. It certainly raises the question of macroeconomic management related to cross-border flows, a topic I will return to below.

A second challenge is a point well below the frontier. This suggests a financial system that does not use the possibilities offered by structural country characteristics and macroeconomic/institutional environment. There could be several reasons for this, as already discussed above in section 3.3. First, there could be simply too little demand for long-term finance, on firm-, household and government-side. While this might be of concern, it is less of a problem for financial sector policymakers. Second, incentives within the financial system might not be appropriately designed to focus on long-term finance, as I have discussed above in the case of private pension funds in Chile. Third, there might be a lack of competition within the financial system. Fourth, there might be regulatory restrictions, such as in the form of Solvency II, currently being implemented in the case of the insurance sector. It is important to note, however, that there is clearly a trade-off in this case between stability and efficiency

A third challenge might be that of moving beyond the frontier to an unsustainable level of long-term finance. As already discussed above, maturity miss-match is at the core of financial fragility, both for financial intermediaries and financial markets. Overexpansion of credit, for example in the case of housing bubbles, for projects with negative NPV or to finance consumption, is at the core of such overexpansion of the long-term finance system. In many cases, this expansion is funded with short-term liabilities; the recent crisis has shown that such maturity miss-match can result in liquidity and ultimately solvency crises in the financial system. Given the close interconnectedness of different segments of the financial system, including on the global level, this can easily lead to meltdowns of different financial markets as we saw in 2008. Reliance on cross-border flows is critical in this context, given the threat of sudden stops, resulting in financial and macroeconomic fragility. The stability concerns related to an overexpansion of long-term finance puts a premium on sound and effective macro-economic and –prudential regulatory systems as well as an incentive compatible financial safety to reduce aggressive risk taking and the build-up of asset-price bubbles. A more detailed discussion is beyond the scope of the current paper (see Freixas, Laeven and Peydro (2015) for a detailed and up-to-date discussion).

5. A benchmarking tool and scoreboard

This section starts with references to a benchmarking exercise related to the long-term finance frontier presented in the previous section. It then proceeds to present the scoreboard for long-term finance in Latin America.

5.1. Benchmarking exercise

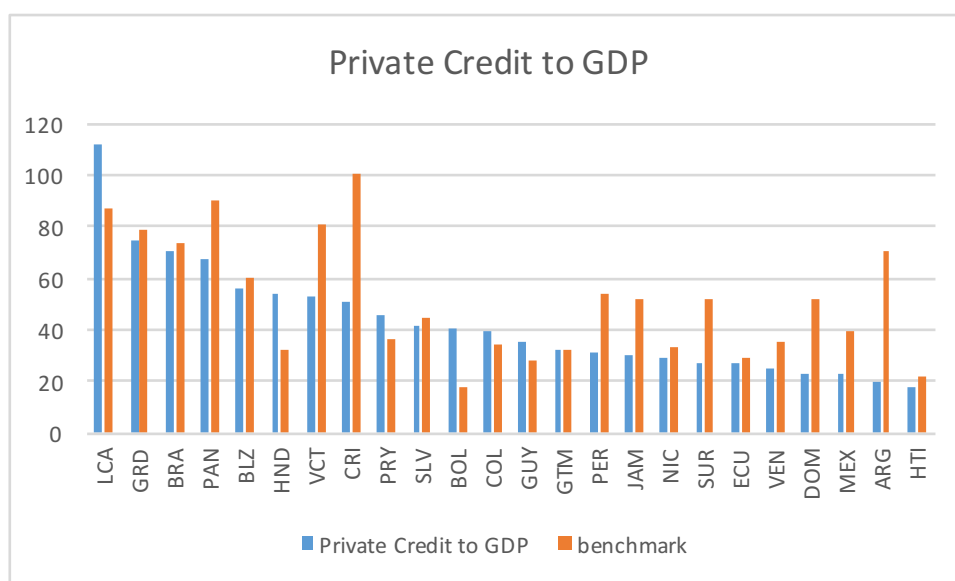
The previous section points to several policies and institutions as critical for the development of long-term finance in an economy, but also to structural constraints. Building on the concept of the financial depth frontier, referred to earlier, the World Bank Group has developed a benchmarking tool that relates structural characteristics of an economy to the level of financial development, as gauged by an array of indicators. Unlike the concept above, therefore this refers only to structural characteristics and not policy variables. We denote the level of financial depth (or long-term finance) consistent with the structural characteristics of an economy as the *structural depth line*. Gaps between the predicted and the actual level can then be interpreted in the context of the institutional and policy environment in a country. If the actual level of long-term is below the predicted level, this can be related to high and volatile inflation and a deficient institutional framework that depress the sustainable constrained equilibrium (i.e. frontier) below the structural depth line. There might also be demand-side constraints, related to a previous boom-bust cycle and the consequent burden of overindebtedness for both enterprises and households. Third, there might be barriers related to market entry or regulatory constraints that prevent the financial system from deepening. If the actual level of financial development is above the predicted level, this can also be due to several (contrasting) reasons. First, a sound and flexible institutional framework might allow the financial system to move beyond its structural depth line. If this movement beyond the predicted level has been a gradual one and in line with improvements in policy and institutional indicators, it might be indeed sustainable. If on the other hand, there is a rapid increase in financial depth indicators such as Private Credit to GDP, concentrated in specific sectors, such as household or mortgage credit or in foreign currency rather than local currency, this might indicate an unsustainable expansion (Barajas et al., 2012). Finally, bailout expectations as gauged from banks' credit ratings and funding cost differences between systemically important banks and non-systemic institutions might give additional indications of overheating.

Using a large cross-country panel, a time-variant benchmark for different financial sector indicators can be constructed by using the predicted value of regressions of financial sector indicators on an array of country characteristics proxying for the different frictions discussed above (e.g., income, size, population density, demographic structure). Specifically, the model's independent variables include structural country factors that are arguably not influenced by policy in the short term but are expected to shape a country's financial development path. The factors can be grouped into socio-economic (income and size) and demographic factors (population density and ages structure) and dummy variables (fuel exporter status, transition country indicator, an offshore center indicator, and a set of

year indicators). The gap between the actual and predicted level of financial development can then be related to different policies.

To illustrate the benchmarking exercise further and motivate its use for the scoreboard approach described below, Figure 5.1 shows the variation in the actual and predicted value of Private Credit to GDP across Latin American countries. As can be seen, there are not only large gaps between the two values for many countries, but also the ranking is quite different. Countries like Costa Rica, St. Vincent, Dominican Republic and Argentina have significantly less developed banking systems than predicted by the benchmarking exercise based on country characteristics. St. Kitts, Honduras, Paraguay and Bolivia, on the other hand, have larger banking systems than predicted. In some cases, actual and predicted values of Private Credit to GDP are relatively close, as in the case of Grenada, Brazil, Belize, and Haiti. These examples already show that the gap between actual and predicted values is not necessarily correlated with the level of financial or economic development.

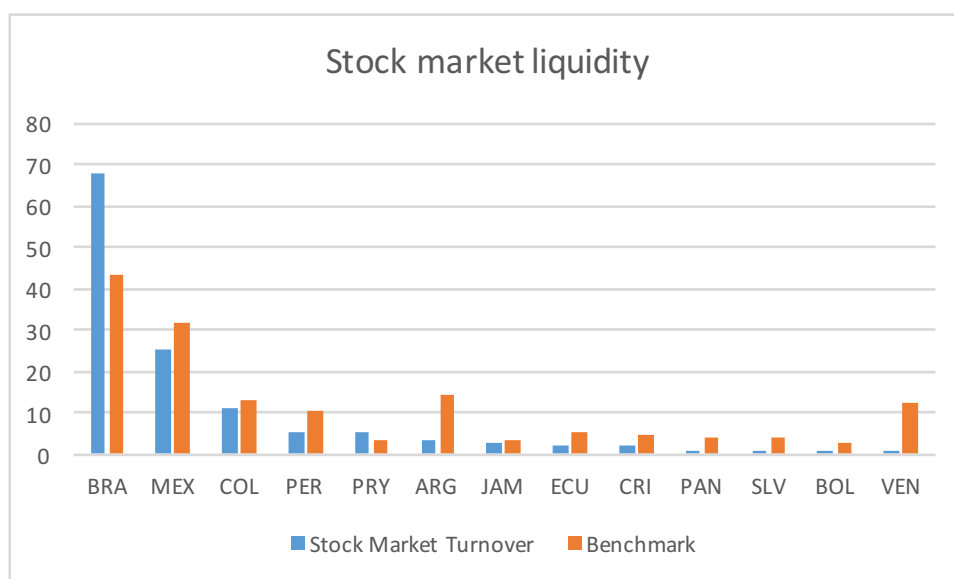
Figure 5.1: Benchmarking financial intermediary development across Latin America



Source: Global Financial Development Data, internal World Bank benchmarking model.

Figure 5.2 shows a similar discrepancy between actual and predicted values for Stock Market Turnover, with Brazil being the only country with a turnover higher than predicted and many countries with a significantly lower turnover than predicted.

Figure 5.2: Benchmarking stock market turnover across Latin America



Source: Global Financial Development Data, internal World Bank benchmarking model.

An analysis of the policy and institutional framework would have to explore for each country the reason for the gap between actual and predicted value. In addition, the development of the gap over time can provide important insights into the reasons behind any gap.

A similar benchmark methodology is applied by De la Torre, Feyen, and Ize (2013) to a large panel of countries. In addition to the variables mentioned above, the model includes economic factors that are decomposed into an initial income effect, a contemporaneous economic growth effect, and the interaction between these two factors. This approach allows for the association of economic development with financial indicators to be dependent on the economic development path of the country. More formally, the specification of the benchmark model is:

$$FD_t^{i,j} = \alpha_0^j + \alpha_1^j y_0^i + (\alpha_2^j + \alpha_3^j y_0^i)(y_t^i - y_0^i) + \alpha_4^j s_t^i + \Omega_0^j X_t^i + \Omega_1^j Z_t^i + \varepsilon_t^j$$

where is the (log of) the financial development indicator j for country i at time t , s_t^i is the (log of) the country's population size, is a vector of the remaining country-specific structural characteristics, and is a vector of policy variables.

A large α_1 coefficient implies that the financial indicator is more strongly associated with a country's initial level of income (measured by log GDP per capita in 1980), suggesting that the associated financial activities develop when a country is economically more sophisticated. Similarly, the term captures the sensitivity of the financial indicator to economic growth. The larger this term, the more strongly associated financial activities will

increase as a country grows faster. Finally, the α_4 coefficient measures the return to scale of the financial indicator.

Table 5.1 presents the regression results (excluding policy variables) and shows that the benchmark model is able to explain a significant portion of the variation for many financial indicators. The regressions also show that fuel exporters and transition countries typically lag behind while offshore centers tend to be ahead, as already illustrated above for several Latin American countries. As regards their association with economic development, all financial indicators are significantly and positively associated with initial income. In addition, financial indicators also show significant variation in their sensitivity to economic growth. In particular, the impact of initial income on the magnitude of the economic growth effect varies across indicators and, combined with the secular growth effect, gives rise to financial development paths of various shapes. For example, the economic growth effect is strong for bank credit whereas initial income does not play a large role since the interaction term is insignificant. In contrast, for some indicators such as mutual fund assets, initial income has a very large, positive impact on the economic growth effect (i.e. the interaction term is positive and significant) whereas the secular economic growth effect is negative. This implies that countries at a low level of economic growth and initial income will typically exhibit weakly developed mutual funds. Country size also matters across almost all segments of the financial system, pointing to the importance of size and – in the case of capital markets – network effects.

Table 5.2 presents benchmark regressions which add four contractual and informational policy factors to the basic model (strength of legal rights, quality of credit information, strength of investor protection index, and contract enforcement costs). To proxy for the quality of the macro-prudential management, a credit crash dummy is included which captures severe drops in private credit to GDP levels. The explanatory power of the model increases noticeably for most financial indicators, confirming that government policies and institutions matters. As such, the expanded benchmark model produces a closer proxy to the financial possibility frontier. The regressions show that the policy factors are significantly associated with most financial indicators. As expected, some policy factors matter more for some than for others. For example, better creditor rights appear to promote bank credit, capital market development, and life insurance. Similarly, lower enforcement costs facilitate bank lending and lower net-interest margins.

Table 5.1. Basic Benchmark Regression

	Bank Private Credit	Insurance Premiums (Life)	Pension Fund Assets	Mutual Fund Assets	Stock Market Turnover	Stock Market Capitalization	Domestic Private Debt Securities	Foreign Private Debt Securities
	1	2	3	4	5	6	7	8
Log Initial GDPPC	0.372***	0.619***	0.317***	0.734***	0.672***	0.415***	1.010***	1.030***
Log GDPPC minus Log Initial GDPPC	0.840***	0.745**		-1.423**				
Interaction	7.95 ^{e-05} 0.0721**	0.133***	-3.501**	0.472***	1.853***	0.253	2.332***	-0.426
Log Population	*	0.0424**	-0.0994	0.135***	0.462***	0.118***	0.112***	0.122***
Log Population density	0.0193** *	0.0999** *	-0.152** *	0.00934	0.0661** *	0.0756***	-0.131** *	-0.0115
Fuel dummy	-0.272** *	-0.687** *	0.360**	-0.224**	-0.0575 -0.592** *	0.0716	-0.785** *	0.0507
Offshore dummy	0.331***	-0.130	-0.278	0.960***	*	0.391***	-0.0158	0.150
Transition dummy	-0.0350	-0.779** *	-1.834** *	-1.421** *	0.722***	-0.669***	-0.504** *	-0.499** *
Constant	0.285***	-6.126** *	0.247	-5.554** *	-4.359** *	-0.975***	-6.488** *	-7.983** *
Observations	4,075	2,138	568	613	1,682	1,818	889	985
Pseudo R ²	0.388	0.384	0.169	0.383	0.375	0.274	0.353	0.382

Source: De la Torre, A., E. Feyen, and A. Ize (2013).

Note: This table displays the median regression results of equation (1) using a panel of country-year data for the 1980–2010 period. GDPPC stands for gross domestic product per capita.

Table 5.2. Extended Benchmark Regressions

	Bank Credit	Private Credit	Insurance Premiums (Life)	Pension Fund Assets	Mutual Fund Assets	Stock Market Turnover	Stock Market Capitalization	Domestic Private Debt Securities
	1	2	3	4	5	6	7	
Log initial GDPPC	0.266***	0.508***	-0.0629	0.713***	0.593***	0.481***	1.173***	
Log GDPPC minus Log initial GDPPC	0.456***	0.391	-2.166	-2.300***	1.268***	0.644*	5.861***	
Interaction	-0.00235	0.0998**	0.285	0.476***	-0.0795	-0.000579	-0.487***	
Log population	0.0406***	0.0626***	-0.0525	0.287***	0.619***	0.155***	-0.0301	
Log population density	0.0465***	0.139***	-0.142***	-0.119***	0.00520	0.0397**	-0.0740*	
Fuel dummy	-0.233***	-0.519***	0.182	-0.335**	-0.183**	0.0137	-0.380***	
Offshore dummy	0.271***	-0.195*	0.121	1.230***	-0.334***	0.0959	-0.567***	
Transition dummy	-0.373***	-1.645***	-3.052***	-1.387***	0.635***	-0.926***	-0.744**	
Private credit crash	-5.963***	-1.782***	-5.985***	-7.414***	-6.495***	-4.187***	4.262**	
Strength of legal rights index	0.0288***	0.277***	0.189***	0.000925	0.00960	0.0372**	0.176***	
Credit information index	0.0425***	0.0546***	0.275***	-0.324***	-0.0881***	-0.132***	0.181***	
Strength of investor protection index	0.0167	-0.0250	0.0476	0.0617	0.157***	0.121***	0.0480	
Enforcement costs	-0.00326***	0.00668***	-0.00971	-0.00576	-0.0127***	0.00268	0.00390	
Observations	2,148	1,805	565	567	1,292	1,344	645	
Pseudo R ²	0.710	0.633	0.378	0.669	0.598	0.490	0.567	

Source: De la Torre, A., E. Feyen, and A. Ize (2013).

Note: This table extends table 1 by adding the following additional policy variables: *Private credit crash* (which assumes a value of 1 if private credit to GDP drops by over 20 percent for a particular country-year) and a set of variables taken from the World Bank Doing Business Database, including the *Strength of legal rights index* (the extent to which creditors are legally protected), the *Credit information index* (the quality of credit information), the *Investor protection index* (the extent to which investors are protected by law), and *Enforcement costs* (the cost to enforce a contract). The contract enforcement index is the first principal component of the following indicators (also from Doing Business): contract enforcement costs, number of days to enforce a contract (in logs), and number of procedures to enforce a contract. GDPPC stands for gross domestic product per capita.

***, **, and * indicate $p < 0.01$, $p < 0.05$, and $p < 0.1$

5.2. Scoreboard

The analysis so far allows several conclusions:

1. The level of long-term finance is partly related to structural characteristics of the economy, exogenous to policies and institutions. Among these, size and income level are among the most prominent factors. This calls for an assessment of the availability of long-term finance benchmarked to the structural characteristics of the country.
2. As important as it is to gauge actual indicators of long-term finance in an economy, it is to assess the necessary policy conditions and institutions for long-term supply, most prominently macroeconomic stability and institutional framework.

In line with these two preliminary conclusions, I propose to use both financial sector indicators and policies/institutions related to long-term finance in the score board. The following criteria are critical in the choice of indicators. Table 5.3 assesses the different indicators according to these criteria:

- *Relevance*: the indicator must be an appropriate instrument to measure constraints to long-term finance and help policy makers formulate and adjust their policies and programs
- *Availability*: data to construct indicator should be readily available for Latin American countries
- *Feasibility*: if not publicly available, there should be only modest costs to collect them
- *Timeliness*: information should be available on timely manner, so that evolving conditions can be monitored over time
- *Comparability*: indicators should be relatively uniform across countries

I suggest three groups of indicators: (i) indicators of the size (and liquidity) of financial intermediaries and markets focused on long-term finance; (ii) use of long-term finance based on household and enterprise surveys and other data source; (iii) policies and institutions conducive to long-term finance. In addition, I suggest considering the benchmarked version of the indicators in the first two groups to thus directly account for differences in structural characteristics of countries.

The first group is a mix of size and liquidity indicators. First, I suggest collecting data from regional central banks on the share of long-term credit among total credit. Critical in this context is consistency across countries, in, for example, defining the maturity threshold and

a consistent maturity definition (at origination not outstanding).¹⁰ Second, I suggest including stock market liquidity rather than size, as extensive research has shown that it is liquidity that is associated with higher growth rather than higher liquidity, most likely explained by the fact that many large stock exchanges in developing countries experience very little free float. Only deep and liquid markets allow proper pricing and thus provide the necessary risk diversification and capital raising services for providers and users of equity. Data on stock market turnover (trading over market capitalization) is readily available from the World Federation of Exchanges or the Emerging Market Database. Third, given the absence of similar data for corporate bond market liquidity, I suggest focusing on the size of corporate bond markets rather than their liquidity, even though this measure mixes short- and long-term bonds. Data on the total amount of domestic nonfinancial corporate bonds and notes outstanding are available from the BIS, from 1989 onwards. Fourth, the size of three segments of contractual savings institutions (insurance companies, mutual funds and pension funds) is an important gauge for the availability of non-bank long-term finance, even in the absence of more detailed data on their efficiency and activity. For the sake of reducing the number of indicators to be tracked and presented, one can consider combining these three into one indicator. These data are available either from country-specific sources or could be obtained from the nonbanking financial database of the World Bank.¹¹ Finally, nonresident holding of long-term debt securities relative to GDP (bonds, debentures, and notes with original terms to maturity of more than one year, held by nonresidents) proxies for a country's reliance on international long-term debt markets. The data are available from the IMF Coordinated Portfolio Investment Survey, from 2009 onwards.

¹⁰ Alternative data source would include Bankscope, but the sample of banks and countries with such information is limited.

¹¹ An alternative indicator could be life insurance penetration, which is the premium volume of life insurance policies, divided by GDP, with raw data available from the Sigma Reports, published by Swiss Re.

Table 5.3: Indicators for long-term finance scoreboard**Panel A: size and liquidity of intermediaries and markets of long-term finance**

	Long-term bank credit/GDP	Stock market turnover	Corporate Market Capitalization/GDP	Bond	Insurance companies assets/GDP	Mutual funds assets/GDP	Pension funds assets/GDP	Nonresident holding of long-term debt securities to GDP
Relevance	High	High	Medium		High	High	High	High
Availability	Limited	High	Medium-high (not for all countries)		Medium-high (not for all countries)	Medium-high (not for all countries)	Medium-high (not for all countries)	High
Feasibility	To be collected from central bank	n/a	n/a		Accessible from World Bank or country sources	Accessible from World Bank or country sources	Accessible from World Bank or country sources	n/a
Timeliness	High	High	High		High	High	High	High
Comparability	Depends on cooperation by central banks	High	High		High	High	Depends on pension system structure	High

The indicators in this first group are all stock variables that measure the size of financial institutions specialized in long-term finance or outstanding claims, but do not indicate primary activity in these markets or the accessibility of their services. A second group of indicators therefore focuses on the users of long-term finance, rather than on the overall supply. Some of these indicators also mix the inclusion dimension with the depth dimension, such as in the case of the first two indicators – adults with loans for home purchase and proportion of fixed investments that survey firms finance with bank or equity funding. Both indicators rely on surveys, which are not available on an annual basis. Specifically, the first is collected through the Global Findex, currently every three years and the second through the Enterprise Surveys, conducted every three to five years. The two indicators measure respectively, access by households and enterprises to long-term financial resources. The other two indicators are available on a higher frequency basis, but additional data collection efforts would have to be made. The first relates to bond and the second to equity markets. Data for both are available from the World Federation of Exchanges, though not for all countries. Alternatively, one could use country-specific sources and/or information the commercial database DCM Analytics, Dealogic.

Panel B: user-focused indicators of long-term finance

	Adults with loans for home purchase (%)	Proportion of fixed investment financed by banks, equity or stock sales (%)	Issuance volume of corporate bonds by private non-financial firms to GDP (%)	IPOs or SEOs on local stock exchange
Relevance	High	High	High	Medium (focuses on large firms)
Availability	High (Global Findex)	Medium-high (Enterprise Survey)	Medium (has to be collected for most countries)	Medium (has to be collected)\
Feasibility	Good, but not annual frequency	Good, but not annual frequency	Currently n/a for all countries	Currently n/a for all countries
Timeliness	Medium (every three years)	Low-medium (infrequent)	High	High
Comparability	Dependent on representativeness of sample	Dependent on representativeness of sample	High (but function of firm population in a country)	High (but function of firm population in a country)

The third group refers to policies and institutions that support long-term finance and have been discussed in section 3. Specifically, they relate to macroeconomic stability (long-term, as inflation expectations and their repercussions are persistent), the contractual and the information framework and restrictions to cross-border capital flows. The first is based on data from the International Financial Statistics; I would recommend using both the level and the standard deviation over the past five years, as theory predicts an effect not only of the level but also the volatility of macroeconomic stability on the provision of long-term finance.

The second and third indicators are based on Doing Business indicators. In the area of contractual framework, one can consider the cost of contract enforcement or creditor rights. While the first refers more generally to the cost of enforcing claims through the legal system, the second refers more specifically to the rights of secured creditors during restructuring or insolvency proceedings. For credit information sharing I would recommend the indicator of depth of credit information sharing, which is a summary of the extent to which information about borrowers is being collected and shared.¹² The fourth policy indicator refers to differences between official and market-determined exchange rates, the black market premium.¹³ Differences between the two indicate restrictions in foreign exchange markets and thus constraints to capital flows. While this is a relatively general indicator of capital flow distortions, it seems broader than capital account restrictions on the book (which can or cannot be relevant) or capital flow restrictions (such as reserve requirements), which might serve macro-prudential purposes. Data can be computed from country-specific

¹² There is a variety of different indicators of institutional quality across countries. Indicators based on expert opinion (such as ICRG) suffer from the shortcoming that they perception-based and often based on economic success. An alternative to the indicators suggested here are the Kaufman, Kraay and Mastruzzi Governance Matters indicators, collected by the World Bank, which are in turn based on many underlying data collection efforts. One shortcoming of these indicators is that they are relative to the overall sample mean and variation (so benchmarking in the cross-country is automatically implied, but not possible within country over time).

¹³ The black market premium has also been used in the empirical growth literature as a general indicator of price distortions in an economy.

sources. Commercial databases such as Global Financial Data also have these data available. All four indicators are available on an annual basis.

Panel C: policies and institutions conducive to long-term finance

	Inflation (first and second moment)	Contractual framework	Credit information sharing	Black market premium
Relevance	High	Medium-high	High	Medium-high
Availability	High (IFS)	High (DB)	High (DB)	Medium
Feasibility	n/a	n/a	n/a	Might require some data collection
Timeliness	High	High	High	High
Comparability	High, but subject to local manipulation	High, but only covers formal framework	High, captures one important element of transparency	High, though very general indicator

I suggest benchmarking the first and second groups of indicators only with respect to country characteristics and not policy and institutional frameworks, given that there is an array of different policy areas associated with long-term finance, there are greater concerns on measurement on such variables than with socio-economic variables and analysis of policies and institutions should be part of exploring the gap between the actual and predicted values. In terms of constructing the benchmark, I recommend following Beck and Feyen (2013) and using a large panel of countries over time (i.e. beyond Latin America) and regress each indicator of long-term finance on the following explanatory variables. First, the log of GDP per capita and its square (to account for possible non-linearities) proxy for general demand and supply-side constraints related to low income, Second, the log of population proxies for market size, in line with the above discussion on scale economies. Third, the log of population density proxies for geographic barriers and thus the ease of financial service provision. Fourth, the log of the age dependency ratio is included to capture demographic trends and corresponding savings behaviour. Finally, dummy variables for off-shore centers, transition countries and oil-exporting countries are included to control for specific country circumstances, as these countries face specific challenges and development experiences that impact their financial systems. Based on this regression, we can then define the Gap as the difference between the predicted and actual values.

How can comparisons of the actual level of financial development with the predicted level help in the assessment of a financial system, in assessing whether a financial sector is “too hot, too cold or just right”? If the actual level of long-term finance is below the predicted level (thus a positive Gap), several additional empirical analyses can give insights into the reasons. First, what are the macroeconomic and institutional conditions for financial deepening in the country? This can be gauged with indicators of the third group. Second, there might be demand-side constraints, related to a previous boom-bust cycle and the consequent burden of over-indebtedness for both enterprises and households. This requires

an analysis over time. Third, there might be barriers related to market entry or regulatory constraints that prevent the financial system from deepening. Analysis of the market structure and degree of competition in the financial system might be useful in that context.

If the actual level of financial development is above the predicted level, this can also be due to several reasons, which can be gauged with different data sources. First, a sound and flexible institutional framework might allow the financial system to move beyond its structural depth line. If this movement beyond the predicted level has been a gradual one and in line with improvements in policy and institutional indicators, it might be indeed sustainable. This can be assessed with analysis over time and taking into account the indicators of the third group. If on the other hand, there is a rapid increase in funding to specific sectors, such as household or mortgage credit or in foreign currency rather than local currency, this might indicate an unsustainable expansion. Finally, bailout expectations as gauged from banks' credit ratings and funding cost differences between systemically important banks and non-systemic institutions might give additional indications of overheating.

It is important that such a benchmarking and comparison exercise does not rely on a single year, but over several years to thus control for business cycle effects and developments within a country over time. The accuracy of this benchmarking exercise depends on the cross-country and time-series dimensions. Some of the indicators in the first and second group are not available for as large a cross-country dimensions as desirable and only for a few data points over time for each country. While this adds noise to the benchmarking exercise, it should simply be noted in the discussion of the findings.

6. Conclusions and next steps

One of the critical conclusions of this paper is that the lack of long-term finance in an economy is often a symptom for deeper structural problems. The lack of market-based long-term finance in Brazil until recently was the result of decades of high and volatile inflation. The lack of deep and liquid capital markets across many Latin American economies is the results of small economies. The lack of efficient contractual and informational frameworks across most of Latin America is a deep-seating cause for the limited access by firms, households and governments to long-term financial resources. Addressing these deficiencies will take a long-term and deep reforms. While shorter-term policies, including private-public partnerships will allow pushing long-term finance out towards the frontier, only these longer-term reforms can push out the frontier and allow economies to benefit from more long-term finance in a sustainable manner.

Designing policies and institutions to expand long-term finance in a sustainable way requires measuring it properly. However, as important as measuring it is to properly

benchmark it. This paper suggested one way to do it, based on regression analysis of a broad cross-country panel dataset. When scoring the efficiency of long-term finance frameworks, there will be differences between the predicted and the actual value. It will be interesting in a next step to explore the reasons for such differences; specifically, to which extent they are related to some of the policy variables included in the third group of indicators or can be explained by country-specific factors not captured in broad cross-country indicators.

References

- Adelino, Manuel, Antoinette Schoar, and Felipe Severino. 2015. House Prices, Collateral and Self-Employment. *Journal of Financial Economics* 117, 288-306.
- Aggarwal, Reena, Isil Erel, Miguel Ferreira, and Pedro Matos. 2011. Does Governance Travel around the World? Evidence from Institutional Investors. *Journal of Financial Economics* 100, 154–81.
- Aghion, Philippe, Marios Angeletos, Abhijit Banerjee and Kalina Manova. 2010. Volatility and Growth: Credit Constraints and the Composition of Growth. *Journal of Monetary Economics* 57, 246-65.
- Almeida, Heitor, Murillo Campello, Bruno Laranjeira, and Scott Weisbenner. 2011. Corporate Debt Maturity and the Real Effect of the 2007 Credit Crisis. *Critical Finance Review* 1, 3–58.
- Altunbas, Yener, Alper Kara, and David Marques Ibañez. 2010. Large Debt Financing: Syndicated Loans versus Corporate Bonds. *European Journal of Finance* 16, 437–58.
- Anginer, Deniz, Aslı Demirgüç-Kunt, Vojislav Maksimovic, and Mete Tepe. 2015. Is Short-Term Debt a Substitute or a Complement to Good Governance? World Bank, Washington, DC.
- Badev, Anton, Thorsten Beck, Ligia Vado, and Simon Walley. 2014. Housing Finance across Countries: New Data and Analysis. Policy Research Working Paper 6756, World Bank, Washington, DC.
- Bae, Kee-Hong, and Vidhan K. Goyal. 2009. Creditor Rights, Enforcement, and Bank Loans. *Journal of Finance* 64, 823–60.
- Barajas, Adolfo, Thorsten Beck, Era Dabla-Norris, and Seyed Reza Yousefi. 2013. Too Cold, Too Hot, Or Just Right? Assessing Financial Sector Development Across the Globe. IMF Working Paper 13/81
- Beck, Thorsten. 2012. The Role of Finance in Economic Development – Benefits, Risks, and Politics, in: Dennis Müller (Ed.): *Oxford Handbook of Capitalism*, 161-203.
- Beck, Thorsten. 2013. Finance, Growth and Fragility: The Role of Government, *International Journal of Banking, Accounting and Finance* 5, 49-77; based on Maxwell Fry Global Finance Lecture 2012.
- Beck, Thorsten, Berrak Buyukkarabacak, Felix Rioja and Neven Valev, 2012 Who Gets the Credit? And Does it Matter? Household vs. Firm Lending Across Countries (*B.E. Journal of Macroeconomics: Contributions* 12.
- Beck, Thorsten and Augusto de la Torre. 2007. The Basic Analytics of Access to Financial Services, *Financial Markets, Institutions and Instruments*, 16, 79-117.

- Beck, Thorsten and Erik Feyen. 2013. Benchmarking Financial Systems: Introducing the Financial Possibility Frontier. World Bank Policy Research Working Paper
- Beck, Thorsten, Vasso Ioannidou and Larissa Schafer. 2012. Foreigners vs. Natives: Bank Lending Technologies and Loan Pricing, Working Paper.
- Beck, Thorsten, Christoph Kaserer and Marc Rapp. 2015. Kapitalmarktfinanzierung im deutschen Finanzsystem: Zustand und Entwicklungsperspektiven. Report for the German Ministry of Economic Policy.
- Beck, Thorsten, Leora Klapper, and Juan Carlos Mendoza. 2010. The Typology of Partial Credit Guarantee Funds around the World. *Journal of Financial Stability* 6 (1): 10–25.
- Beck, Thorsten, and Ross Levine. 2002. Industry Growth and Capital Allocation: Does Having a Market- or Bank-Based System Matter? *Journal of Financial Economics* 64, 147–180.
- Beck, Thorsten and Ross Levine. 2004. Stock Markets, Banks, and Growth: Panel Evidence, *Journal of Banking and Finance* 28, 423-442.
- Beck, Thorsten, Ross Levine and Normal Loayza. 2000. Finance and the Sources of Growth (, *Journal of Financial Economics* 58, 261-300.
- Beck, Thorsten, Samuel Munzele Maimbo, Issa Faye, and Thouraya Triki. 2011. Financing Africa: Through the Crisis and Beyond. Washington, DC: World Bank.
- Beck, Thorsten, and Ian Webb. 2003. Economic, Demographic, and Institutional Determinants of Life Insurance Consumption across Countries. *World Bank Economic Review* 17 (1): 51–88.
- Borensztein, Eduardo, Barry Eichengreen and Ugo Panizza. 2006. Debt Instruments and Policies in the New Millennium: New Markets and New Opportunities. IDB Working Paper 6708.
- Brunnermeier, Markus, and Martin Oehmke. 2013. The Maturity Rat Race. *Journal of Finance* 68 (2): 483–521.
- Burger, J., and F. Warnock. 2006. Local Currency Bond Markets IMF Staff Papers 53, International Monetary Fund, Washington, DC.
- Büyükkarabacak, B., & Valev, N. (2010). The role of household and business credit in banking crises. *Journal of Banking and Finance*, 34, 1247-1256.
- Calderón, Cesar, and Luis Servén. 2014. Infrastructure, Growth, and Inequality: An Overview. Policy Research Working Paper 7034, World Bank, Washington, DC.
- Carvalho, Daniel. 2014. The Real Effects of Government-Owned Banks: Evidence from an Emerging Market. *Journal of Finance* 69 (2): 577–609.
- Cifuentes, Rodrigo, Jorge Desormeaux and Claudio González. 2002. Capital Markets In Chile: From Financial Repression To Financial Deepening. Economic Policy Papers. No. 4. Central Bank of Chile.

- Claessens, Stijn, Erik Feyen, and Luc Laeven. 2008. Political Connections and Preferential Access to Finance: The Role of Campaign Contributions. *Journal of Financial Economics* 88: 554–80.
- Claessens, Stijn, Daniela Klingebiel, and Sergio Schmukler. 2007. Government Bonds in Domestic and Foreign Currency: The Role of Institutional and Macroeconomic Factors. *Review of International Economics* 15 (2): 370–413.
- Claessens, Stijn, Daniela Klingebiel, Mike Lubrano and Sergio Schmukler. 2000. Corporate governance reform issues in the Brazilian equity markets. World Bank Policy Research Working Paper.
- Claessens, Stijn, Ayhan Kose, and Marco E. Terrones, 2012, How Do Business and Financial Cycles Interact? *Journal of International Economics* 87,178-90.
- Claessens, Stijn, and Sergio Schmukler. 2007. International Financial Integration through Equity Markets: Which Firms from Which Countries Go Global? *Journal of International Money and Finance* 26 (5): 788–813.
- Cole, Shawn A. 2009a. Financial Development, Bank Ownership, and Growth: Or, Does Quantity Imply Quality? *Review of Economics and Statistics* 91 (1): 33–51.
- . 2009b. Fixing Market Failures or Fixing Elections? Elections, Banks, and Agricultural Lending in India. *American Economic Journal: Applied Economics* 1 (1): 219 –50.
- Coleman, Nicholas S., and Leo Feler. 2015. Bank Ownership, Lending, and Local Economic Performance during the 2008–2010 Financial Crisis. *Journal of Monetary Economics* 71: 50–66.
- Corbo, Vittorio, and Klaus Schmidt-Hebbel. 2003. Macroeconomic Effects of the Pension Reform in Chile. In *Pension Reforms: Results and Challenges*, 241–329. Santiago: International Federation of Pension Fund Administrators.
- De la Torre, Augusto, Erik Feyen, and Alain Ize. 2013. Financial Development: Structure and Dynamics. *World Bank Economic Review* 278, 514-41.
- De la Torre, Augusto, and Sergio L. Schmukler 2004. Coping with Risks through Mismatches: Domestic and International Financial Contracts for Emerging Economies. *International Finance* 7, 349-90.
- De la Torre, Augusto, Juan Carlos Gozzi, and Sergio Schmukler. 2008. “Innovative Experiences in Access to Finance: Market Friendly Roles for the Visible Hand?” *Stanford University Press and the World Bank*.
- ___ 2007. “Capital Markets Development. Whither Latin America?” World Bank Policy Research Working Paper 4156.
- Demirgüç-Kunt, Asli, and Vojislav Maksimovic 1998. Law, Finance, and Firm Growth. *Journal of Finance* 53 (6): 2107–37.

- . 2002. Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm-Level Data. *Journal of Financial Economics* 65: 337–63.
- Demirgüç-Kunt, A., E. Feyen und R. Levine, 2013., The Evolving Importance of Banks and Securities Markets, *World Bank Economic Review* 27, 476-490.
- Diamond, Douglas. 1993. Seniority and Maturity of Debt Contracts. *Journal of Financial Economics* 33: 341–68.
- . 2004. Committing to Commit: Short-term Debt When Enforcement Is Costly. *Journal of Finance* 59 (4): 1447–79.
- Diamond, Douglas, and Philip Dybvig. 1983. Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy* 91 (3): 401–19.
- Diamond, Douglas, and Raghuram Rajan. 2001. Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking. *Journal of Political Economy* 109: 287–327.
- Didier, Tatiana, Ross Levine, and Sergio L. Schmukler. 2014. Capital Market Financing Firm Growth, and Firm Size Distribution.” NBER Working Paper 20336, National Bureau of Economic Research, Cambridge, MA.
- Djankov, Simeon, Caralee McLiesh, and Andrei Shleifer. 2007. “Private Credit in 129 Countries. *Journal of Financial Economics* 84 (2): 299–329.
- Ehlers, Torsten. 2014. Understanding the Challenges for Infrastructure Finance. BIS Working Paper 454, Bank for International Settlements, Basel.
- Eichengreen, Barry, and Pipat Luengnaruemitchai. 2006. Why Doesn't Asia Have Bigger Bond Markets? In *Asian Bond Markets: Issues and Prospects*, 40–77. Basel: Bank of International Settlements.
- Fan, Joseph P. H., Sheridan Titman, and Garry Twite. 2012. An International Comparison of Capital Structure and Debt Maturity Choices. *Journal of Financial and Quantitative Analysis* 47: 23–56.
- Feyen, Erik. 2010. Finances of Egyptian Listed Firms and the Performance of the Egyptian Stock Exchange. World Bank Policy Research Working Paper 5213.
- Flug, Karnit, Antonio Spilimbergo, and Erik Wachtenheim. 1998. Investment in Education: Do Economic Volatility and Credit Constraints Matter? *Journal of Development Economics* 55 (2): 465–81.
- Freixas, Xavier, Luc Laeven and Jose Luis Peydro. 2015. *Systemic Risk, Crises and Macroprudential Regulation*. MIT Press.
- G-20 (Group of 20). 2013. Long-Term Investment Financing for Growth and Development: Umbrella Paper.
- Giannetti, Mariassunta. 2003. Do Better Institutions Mitigate Agency Problems? Evidence from Corporate Finance Choices. *Journal of Financial and Quantitative Analysis* 38: 185–212.

- Giannetti, Mariassunta and Luc Laeven, 2009. Pension Reform, Ownership Structure, and Corporate Governance: Evidence from Sweden. CEPR Discussion Paper 6489.
- Gopalan, Radhakrishnan, Abhiroop Mukherjee, and Manpreet Singh. 2014. Do Debt Contract Enforcement Costs Affect Financing and Asset Structure? Mimeo.
- Group of Thirty. 2013. Long-term Finance and Economic Growth
- Hicks, John. *A Theory of Economic History*. Oxford: Clarendon Press, 1969.
- Hsu, P-H., X. Tian und Y. Xu. 2014. Financial Development and Innovation: Cross-Country Evidence., *Journal of Financial Economics* 112, 116-135.
- Impavido, Gregorio, Alberto Musalem, and Thierry Tresselt. 2003. The Impact of Contractual Savings Institutions on Securities Markets. Policy Research Working Paper 2948, World Bank, Washington, DC.
- Jiraporn, Pornsrit, and Shengui Tong. 2010. Debt Maturity Structure, Agency Costs, and Firm Value: Evidence from 1973–2004. Pennsylvania State University, College Station, PA.
- Jorda, Oscar, Moritz Schularick and Alan Taylor. 2016. The Great Mortgaging: Housing Finance, Crises, and Business Cycles. *Economic Policy*, forthcoming.
- Khwaja, Asim, and Atif Mian. 2005. Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market. *Quarterly Journal of Economics* 120 (4): 1371–411.
- King, R., Levine, R., 1993. Finance, entrepreneurship, and growth: theory and evidence. *Journal of Monetary Economics* 32, 513-42.
- Kirch, Guilherme, and Paulo Renato Soares Terra. 2012. Determinants of Corporate Debt Maturity in South America: Do Institutional Quality and Financial Development Matter? *Journal of Corporate Finance* 18: 980–93.
- Kose, M. Ayhan, Eswar Prasad, Kenneth Rogoff and Shang Jin-Wei. 2009. Financial Globalization: A Reappraisal. *IMF Staff Papers* 56, 8-62.
- La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2006. What Works in Securities Law? *Journal of Finance* 61, 1–32.
- Laeven, Luc. 2014. The Development of Local Capital Markets: Rationale and Challenges. IMF Working Paper 14234, International Monetary Fund, Washington, DC.
- Lazzarini, Sergio, Aldo Musacchio, Rodrigo Bandeira-de-Mello, and Rosilene Marcon. 2015. What Do State-Owned Development Banks Do? Evidence from BNDES, 2002–09. *World Development* 66, 237–53.
- Levine, Ross. 1991. Stock Markets, Growth, and Tax Policy. *Journal of Finance* 46, 1445–1465.
- Levine, Ross. 2002. Bank-Based or Market-Based Financial Systems: Which Is Better? *Journal of Financial Intermediation* 11, 398–428.

- Levine, Ross. 2005. Finance and Growth: Theory and Evidence. In *Handbook of Economic Growth*, edited by P. Aghion and S. Durlauf, 865–934. Amsterdam: North-Holland Elsevier.
- Levine, Ross and Sergio Schmukler, 2007. Migration, Spillovers, and Trade Diversion: The Impact of Internationalization on Domestic Market Activity. *Journal of Banking and Finance* 31, 1595-1612.
- Levine, Ross and Sarah Zervos. 1998. Stock markets, banks, and economic growth. *American Economic Review* 88, 537-58.
- Love, Inessa. 2003 Financial development and financing constraints: International evidence from the structural investment model, *Review of Financial Studies* 16, 765-91.
- Lustig, Hanno and Stijn Van Nieuwerburgh. 2004. A Theory of Housing Collateral, Consumption Insurance and Risk Premia. NBER Working Paper 10955.
- Martínez Pería, María S., and Sandeep Singh. 2014. The Impact of Credit Information Sharing Reforms on Firm Financing. Policy Research Working Paper 7013, World Bank, Washington, DC.
- Nenova, Tatiana (2003). The Value of Corporate Voting Rights and Control: A Cross-Country Analysis, *Journal of Financial Economics* 68, 325-51.
- Park, Joonkyu. 2012. Brazil's Capital Market: Current Status and Issues for Further Development. IMF Working Paper 12/224, International Monetary Fund, Washington, DC.
- Tasić, Nikola, and Neven Valev. 2008. The Maturity Structure of Bank Credit: Determinants and Effects on Economic Growth. Andrew Young School of Policy Studies Research Paper Series 08-12, Georgia State University, Atlanta.
- Trew, Alex. 2010. Infrastructure Finance and Industrial Takeoff in England. *Journal of Money, Credit and Banking* 42, 985-1010
- Vermoesen, Veronique, Marc Deloof, and Eddy Laveren. 2013. Long-Term Debt Maturity and Financing Constraints of SMEs during the Global Financial Crisis. *Small Business Economics* 41, 433–48.
- World Bank, 2012. *Financial Development in Latin America and the Caribbean*. Washington, DC.
- World Bank. 2015. Long-term finance. *Global Financial Development Report*. Washington, DC.
- Zervos, Sara. 2004. The Transactions Costs of Primary Market Issuance: The Case of Brazil, Chile, and Mexico. Policy Research Working Paper 3424, World Bank, Washington, DC.