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Abstract

The aim of this synthesis paper is to provide a narrative to the empirical findings of the comprehensive literature review concerning the quantitative effects of financial development on economic growth and employment and various determinants of financial sector development. The literature review has been restricted mostly to high-quality academic research that focus on developing countries over the period of 1960-2012. Due to data constraints, this review also includes cross-country analysis, where developed and developing countries are stacked together. The main findings include (i) a positive relationship between financial development and economic growth and employment subject to a number of qualifications, (ii) a complicated relationship of regulations and supervision with financial sector development and (iii) a positive relationship between enabling institutional environment and financial sector development. This review also clarifies some missing avenues in the literature and provides a number of suggestions for future work.

Keywords: finance-growth nexus, finance-employment nexus, determinants of financial sector development, insurance/pensions-growth nexus, regulations/supervision vs. financial stability, access to finance and financial efficiency

JEL Classification: C00, E44, G00, G2, O1, O4, O5

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1 Introduction

The importance of finance in economic development trajectories of developing countries is by now widely recognized. The motivation behind this synthesis paper is to investigate causes and consequences of financial sector development by establishing an inventory of high-quality academic research with special emphasis on quantitative implications of finance on economic development in developing countries. The idea is to acquire an understanding of what has been established in the literature and provide insights for policy-making. Essentially, the following two questions drive the motivation of this paper:

- How does financial system affect economic development?
- How can countries improve their financial systems?

The Financial Sector Reform and Strengthening (FIRST) Initiative at the World Bank has identified these questions as highly policy-relevant questions based on its comprehensive conceptual framework to financial sector reform. The underlying philosophy is that once the statistically significant and economically meaningful effects of finance on economic development are established, it is crucial to identify what types of policies are associated with financial development. The main messages drawn from literature can help the FIRST Initiative provide further assistance to its clients based on their context-specific profiles.

Before moving any further, we should first clarify these two questions. By *economic development*, we restrict our attention to economic growth and employment and initially set aside other dimensions such as inequality and poverty. By *financial systems*, we adhere to a wider definition that includes banking sectors, capital markets and contractual savings institutions. By *improving* a financial system, we mean increasing financial depth, efficiency and inclusion, while ensuring financial stability.[1] Against this backdrop, the aim of this synthesis paper is to narrate the quantitative evidence on (i) the effect of financial sector development on economic growth and employment and (ii) the determinants of financial sector development with specific attention to policy variables such as regulations, supervision and enabling institutional environment.

In total, 184 out of more than 200 papers are selected for this narrative. While around 100 papers relate to the finance-growth nexus, only a handful examine the finance-employment nexus. The remaining papers dwell upon the determinants of financial sector development. In our selection, we focused on mostly high-quality academic articles with specific attention to developing countries.[2] The findings of this literature review are briefly summarized below:

- **Finance-Growth Nexus:** There exists a statistically significant and economically meaningful positive effect of financial sector depth (i.e. banking sector, capital markets and contractual savings industry) on economic growth. The magnitude of this effect is around 1 percentage point acceleration in annual real GDP per capita growth. This effect, however, is subject to numerous qualifications. A stable and

[1] While the first two components are commonly scrutinized, the latter two require more attention from academic literature.

[2] Since the literature is dominated by cross-country studies, we widened our criteria to empirical analyses that stack developed and developing countries together.

efficient financial system with accessibility also contributes positively to economic growth.

- **Finance-Employment Nexus:** There exists a statistically significant positive effect of financial sector depth on employment. Unfortunately, this conclusion derives from only a few papers that have not scrutinized the relationship as much as in the finance-growth nexus.
- **Determinants of Finance**: Institutions (i.e. creditor rights, credit registries, accounting standards, rule of law, quality of contract enforcement, etc.) matter for depth, stability, efficiency and inclusiveness of financial sector. Only various types of regulations and supervision are positively related to financial sector development (i.e. timely and easily accessible and comprehensible disclosure of information, removal of entry barriers into financial system, less extensive deposit insurance). While the extent of government ownership is associated with less deep, inefficient and unstable financial systems, the opposite holds for foreign ownership. Last but not least, while the effect of concentration on financial sector development is not yet resolved, more competitive and contestable financial systems are associated with higher financial sector development.

The structure of this paper is as follows. Section 2 presents the finance-growth nexus with six subsections that reflect the different angles academic literature has taken to examine this nexus. Section 3 briefly reviews the empirical evidence on finance-employment nexus. Sector 4 reviews determinants of each component of financial sector development. Sector 5 briefly discusses the causes and consequences of insurance and pension sector development. Section 6 concludes with suggestions for future work.

2 Finance and Growth

The lion's share of the references cited in this synthesis paper relate to the finance-growth nexus which also has the longest history among the topics covered in this paper. Even then, it is definitely not a satiated literature, as it is not difficult to come across very recent papers attempting to contribute to this literature. Given that we are faced with a large volume, we followed an intuitive categorization to ease the process of navigating through this document.[3]

First, we start by synthesizing academic research that examines the relationship between financial depth and economic growth. Without a doubt, this relationship has received the most attention in the literature. In the first subsection, we cover articles that focus on banking sector depth. Since we are mostly concerned with developing countries, the selected articles mostly focus on banking sectors, or the dominant sector in financial systems of developing countries. Having said that, there are a few articles that examine the relationship between stock market development and contractual savings institutions on one hand and economic growth on the other, including emerging and developing countries.

[3] A comprehensive survey of empirical and theoretical research on finance-growth nexus is presented by Levine (2005) who also offers various critiques of empirical methodologies and findings.

Second, we allocate some space to the critiques of initial findings of the finance-growth nexus and discuss various forms of nonlinearities and heterogeneities found therein. Recently, it has been found that the effect of finance on economic growth is not monotonically increasing and that there are various thresholds such as the level of income, financial development and inflation that affect the strength of the association found in the early literature. We also recognize important heterogeneities, as empirical evidence is sensitive to variation across regions and periods.

Third, we focus on the second "hottest" topic in finance-growth nexus, namely the effect of financial stability on economic growth. Since financial stability is a part of overall financial sector development, missing the important consequences of financial fragility in the form of growth collapses or reversals and output losses would be a grave mistake. In this context, we start by reporting the effect of financial liberalization on economic growth, then take into account the destabilizing effects of financial liberalization and emphasize the significant negative effects of financial fragility. We end this subsection by referring to papers that examine the relationship and the trade-offs between regulations and economic growth. Last but not least, we present interesting results from a rather narrow literature that examines the effects of financial efficiency and inclusion on economic growth.

There are a number of caveats worth mentioning. First, this literature review has selected out a major strand of the literature that examines the finance-growth nexus with time-series econometric methodologies (i.e. Vector-Auto Regression Models). Since our focus has been on quantitative effects, it will not be helpful to consult with this strand of literature which is in itself heavily polarized without much consensus. Second, the coefficient estimates reported in the body of the text and in our inventory should be taken with a healthy dose of care, because usually they are not fully exploitable elasticities. For our purposes, the ideal article that uses the most relevant data (i.e. only developing countries for a long period of time) with a robust identification strategy does not exist. Nevertheless, there exists quite a number of papers that come close to our ideal and provide some very useful insights. Last but not least, we present our inventory of empirical results in the appendix to this synthesis paper which consists of 18 tables associated with at least one hypothesis within each subsection. We do not refer to every article in our tables, so we recommend the reader to consult with these tables while reading a specific subsection.

2.1 Financial Depth & Economic Growth

2.1.1 Banking Sector Development and Economic Growth

The empirical literature on the relationship between financial sector development and economic growth essentially starts with the seminal work by King and Levine (1993)[4]. Apart from opening the "Pandora's box", they also have set the standards for the use of variables in empirical research. On the left-hand side, they used the growth rate of real

[4]There are at least two influential empirical articles that precede King and Levine (1993), namely Goldsmith (1969) and McKinnon (1973). However, formal econometric procedure is first used with King and Levine (1993), whose analysis represents the first attempt to move away from simple correlations to potential causation.

GDP per capita and attempted to explain cross-country variation in growth rates by the variation in various indicators of financial sector development including financial depth or size and financial intermediation. Their first measure of financial depth is the ratio of liquid liabilities to GDP (i.e. M3/GDP)[5]. Second, they consider the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets. This indicator aims to measure the level of risk sharing and information services provided by money banks. Third, they focus on financial intermediation which is proxied by the proportion of credit allocated to private enterprises by the financial system (i.e. the ratio of claims on the non-financial private sector to GDP and also to total domestic credit). These three variables are the most commonly used proxies for financial development in academic research.[6]

A large variety of formal econometric methodologies are used in this literature subject to availability of data. Among these, we can list the use of ordinary least squares (OLS), two-stage least squares (2SLS), instrumental variables (IV) and three-stage least squares (3SLS) estimators for cross-sectional data. Dynamic panel methods such as difference or system GMM are used in the context of panel data. Before moving to the results of this literature, consider the following famous descriptive insight that is often cited in the literature. As Rioja and Valev (2004) put it, countries which did not increase their financial depth experienced negative growth rates (i.e. Haiti and Senegal) but countries with moderate levels of financial depth experienced high and positive growth rates (i.e. Thailand and Cyprus). However, this positive relationship disappears when highly developed countries are considered. For instance, the effect of a marginal increase in financial depth has not much growth effects in Switzerland or in the United States. The importance of this descriptive statistic will be more clear later on when nonlinearities in the finance-growth nexus are discussed.

Table 1 in our inventory presents empirical results extracted from a body of highly cited academic research that addresses the following empirical question: to what extent does financial sector development, proxied by the banking sector depth, affect economic growth rates? Theoretically, there could be positive, negative or no effect of finance on growth. Empirically, the literature presents evidence for each option but the positive effect of finance is clearly dominant.[7] King and Levine (1993), Levine (1998), Levine and Zervos (1998), Levine et al. (2000), Beck et al. (2000) and Beck et al. (2004) provide highly cited positive effect of financial depth on economic growth. Table 1 clearly shows that the quantitative effects vary from study to study, as they use different financial development proxies, econometric specifications and data. In general, the overwhelming majority of the literature has found significant positive effects of banking sector depth on economic growth.

To give a bird's eye view, let us suggest the following upper and lower bounds for the

[5]Some articles also rely on (M3-M1)/GDP.

[6]An interesting recent study by Beck et al. (2012) find that in finance-growth nexus, what matters is the credit to enterprises, not credit to households. In addition, Japelli and Pagano (1994) show that relaxing the liquidity constraints of households during the financial deregulation period of 1980s lowered growth rates in OECD countries.

[7]The reader should keep in mind that identification of the causal relationship between finance and growth is a very difficult task and even the mostly cited articles explicitly accept this weakness.

quantitative effects:

- **Upper Bound:** A 10 percentage point increase in financial depth accelerates annual economic growth rate by an additional 1%, at best. Accumulating over the sample period, say 5 years, the best case scenario is that real output would be 5% more than what it actually was. This is an economically significant phenomenon.
- **Lower Bound[8]:** There is either no significant relationship between finance and growth or the effect is too small to be considered economically meaningful[9].

There are quite a few problems associated with cross-country growth regressions. Usually, academic research moves toward panel data methods to deal with some of these well-known weaknesses but it is also helpful to look at country studies where internal validity of econometric procedures tends to be more robust at the expense of external validity.[10] Table 2 in our inventory presents some evidence on finance-growth nexus from within countries such as China, Vietnam, Brazil and India. The articles find quite sizable effects of finance on growth. For instance, Anwar and Nguyen (2011) estimates that economic growth would accelerate by 18.3% as a consequence of a 10 percentage point increase in banking sector development in Vietnam.

So far the focus has been on the effect of financial development on the first moment of economic growth but economists also considered the effect of financial development on growth volatility. The articles cited in Table 3 make it clear that increasing financial depth significantly lowers growth volatility and thus performs a stabilizing role in developing countries. Another interesting question is to what extent can financial deepening accelerate convergence of growth rates across the world. The key insight from the remaining articles in Table 3 is that developing countries with higher financial sector development are more likely to catch-up and transition to high-income group.

2.1.2 Stock Market Development and Economic Growth

Capital markets play a crucial role in the finance-growth nexus. Since financial sectors in developing countries are dominated heavily by banking sectors, however, we can refer to only a few articles that estimate the effect of capital markets on economic growth in developing countries.[11] Table 3 in our inventory on the quantitative effects of stock market development on economic growth shows that as opposed to banking sector development, this sub-literature does not find any negative or insignificant effects of stock market development on economic growth. Specifically, the effect of stock market liquidity on

[8]In this giant literature, a few papers find negative relationship between financial intermediation and economic growth. For instance, Shen et al.(2006) suggest that a 10 percentage point increase in financial depth leads to a 0.5% decrease in GDP growth rate. This negative effect is exacerbated in middle-income countries with insufficient creditor protection and countries that suffer from banking or currency crisis, especially in Latin America and Sub-Saharan Africa.

[9]We should note that the sample period considered in these studies are usually long, around 20-40 years, so even if the effect is close to zero, over time the impact on output is substantial.

[10]Specifically, country-level studies help improve identification of a causal relationship but results cannot be generalized to other contexts.

[11]The literature has often used stock market depth and liquidity to measure its development (i.e. total value traded/GDP ratio and stock market capitalization/GDP).

economic growth is significantly positive and ranges between 0.5% and 1.14% in response to 10 percentage point increase in stock market proxy. Stock market liquidity is found to be more robustly (both statistically and economically) associated with economic growth compared to stock market capitalization. Shen et al. (2006) argue that the effect of stock market development is higher than the effect of banking sector development on economic growth. Yet, they argue that this positive effect is higher for developed countries. A tempting question is whether banking structure plays an important role in economic growth. Levine (2002) and others offer an important insight in that what actually matters is the level of financial activity which includes both stock market liquidity and banking sector depth.

2.1.3 Contractual Savings Institutions and Economic Growth

The finance-growth nexus is not exclusive to the growth effects of banking sector or stock market development. A burgeoning literature[12] has focused on the impact of insurance and pensions sector development on economic growth. In the insurance-growth nexus, various mechanisms hypothesized to link insurance development and growth. Essentially, insurance market is an institutional investor that can (i) offer risk diversification, (ii) mobilize savings, encourage accumulation of new capital and ease efficient allocation of existing capital in the domestic economy and (iii) contain financial fragility.[13] In terms of data, there are two proxy variables used to measure the level of insurance sector development, namely insurance penetration (i.e. the ratio of insurance premium volume to GDP) and insurance density (i.e. premiums per capita). This growing literature mostly focuses on life insurance penetration and density. Looking at Table 5 on our inventory, we see some conflicting results in that some papers identify growth effects of insurance sector development above the growth effects of banking sector and stock market development, while others find smaller effects. Another conflicting result is that while some argue that the effect is larger in developed countries, others provide evidence for higher growth effects in low-income countries. Overall, this small literature finds significant and positive effect of insurance sector development on economic growth. The magnitude of the effects are, at times, too good to be true.

In the pensions-growth nexus, the main mechanism cited by the selected papers is that growth rates accelerate thanks to higher saving rates, better capital markets and lower labor market distortions. An additional channel on economic growth is the improvement of corporate governance in response to accumulation of pension assets. While Holzman (1997) and Hu (2005) focus on pension sector reform (i.e. a switch from pay-as-you-go systems toward funded systems), Davis et al. (2008) and others consider the effect of pension sector assets on economic growth and find positive effects on pension sector reform and development on economic growth. Consequently, our reading of the literature suggests that both insurance and pensions sector development are positively associated with economic

[12]For an extensive literature review with 80 empirical papers, we refer the reader to Outreville (2011). Since our focus is only on developing countries without time-series econometrics, our inventory is much narrower.

[13]Even though the papers in Table 5 do not attempt to specifically identify each channel, they still try to see if there is an overall association between the two variables.

growth. Further research is necessary, however, to clarify the conflicting results found in the literature.

2.1.4 Nonlinearities and Heterogeneities

Recent research has challenged the finance-growth nexus on the implicitly held assumption that the relationship is linear and presented evidence for various forms of nonlinearities. For instance, the positive effect of finance disappears for countries beyond a certain threshold, be it the level of income, financial development, inflation or employment in the financial sector. Also, more and more region specific analyses are being conducted including Latin America and the Middle East and North Africa (MENA). Table 6 in our inventory presents some very interesting results from the literature[14].

The "hottest" topic in nonlinearities relates to the threshold for the level of financial development. This topic received quite a bit of attention, especially during the recent Global Financial Crisis. The legitimate question in mind is whether the positive effect of finance on growth turns insignificant or negative beyond a certain threshold. Focusing on financial depth, Arcand, Berkes and Panizza (2012) estimated that finance starts exerting a negative effect on economic growth when financial depth reaches 100% of GDP. Eschenbach and Francois (2005) estimate this threshold between 70-100%. Aghion, Howitt and Meyer-Foulkes (2005) present an interesting descriptive statistic in that the positive effect of finance on growth vanishes after a country goes beyond the level of financial depth in Greece (i.e. private-credit-to-GDP ratio above 39%). Using a different financial depth proxy (liquid-liabilities-to-GDP ratio, Rousseau and Wachtel (2009) estimated the critical threshold at around 40%. Even though there is convincing evidence that financial development beyond a certain threshold is not good for economic growth, it is not yet clear why this is the case. Further research should clarify various mechanisms that could generate such nonlinearities.

The level of income is yet another threshold that complicates the effect of finance on economic growth. One hypothesis suggests that the effect of finance on growth should be larger in developing countries than in developed countries, since the latter group already have highly developed financial sectors. However, a competing hypothesis conjectures that the positive effect of finance on economic growth is conditional on institutional quality. Since developing countries have on average lower institutional quality than developed countries, the effect of finance on growth may be higher in developed countries. Another hypothesis put forward by Rioja and Valev (2004) is that the positive effect of finance on growth in developing countries operates through speeding up capital accumulation, while the positive effect in the developed countries operates through productivity growth.

Unfortunately, there is not yet a consensus on the sign of the relationship for countries at different stages of development. For instance, while Rousseau and Wachtel (2009) and Rioja and Valev (2004a) find that the magnitude of the effect of finance on growth is higher for developed countries, Rioja and Valev (2004b) and Demirguc-Kunt, Feyen and Levine (2011) find that the effect of finance on growth is higher for countries in the lower

[14]Interestingly, there is some decent literature on the finance-growth nexus in Sub-Saharan Africa. Yet, this literature heavily relies on time-series econometrics and hence excluded from this survey.

and/or middle of the distribution than those at the higher end. Another interesting result is that while diminishing returns hit earlier in finance-growth nexus for banking sector development, it takes longer for stock market development. The latest evidence from Beck et al. (forthcoming) suggest that while financial intermediation is associated with lower volatility in low-income countries, financial non-intermediation activities are associated with higher volatility in high-income countries.

Two other interesting thresholds are discovered by recent research. First, Rousseau and Wachtel (2002), Rousseau and Yilmazkuday (2009), Yilmazkuday (2011) and Huang et al. (2010), study whether there exists an inflation threshold beyond which the positive effect of finance on growth disappears or switches sign. The quantitative evidence confirms the expectation that there exists a threshold for inflation and countries with inflation rates higher than the threshold experience slower growth because high inflation rates pull down the actual level of financial development. While Rousseau and Wachtel (2002) find this threshold to be around 13-25% inflation, others have found even lower thresholds around 6-8%. Second, Cecchetti and Kharroubi (2012) estimate that if the financial sector represents more than 3.5% of total employment (i.e. employment in financial sector divided by total employment), further increases in financial sector depth are detrimental to economic growth. Employment growth in financial sector by around 1.6% per year reduces annual growth by around 1 percentage point.

Last but not least, heterogeneities in the finance-growth nexus are detected across time and regions. For instance, Rousseau and Wachtel (2011) find that the positive effect of finance on growth exists in 1960-1989 period (i.e. similar period as in King and Levine (1993)) but not in 1990-2004 period. Their explanation for this 'fading link' is that the latter period is ridden with financial crises that pulled down the positive effect of finance on growth. Dabos and Gantmann (2010) confirm these results using an extended sample and dynamic panel methods. The latest results are reported by Beck et al. (forthcoming) who find evidence for this fading link in the 1995-2007 sub-sample. Consequently, while the recent papers have focused on shorter horizons and found evidence for fading link between finance and growth, the positive association between finance and growth remains significant and positive in the long-run.

In terms of regional variation, consider the evidence presented by Roubini and Sala-i-Martin (1992), who find that financial repression in Latin America explains the relatively slower growth performance over the 1960-1985 period. De Gregorio and Guidotti (1995) find a different result in that banking sector deepening is negatively associated with economic growth in Latin America over the 1960-1985 period. Moreover, Barajas, Chamil and Yousefi (2012) demonstrate that the effect of finance on growth in MENA region is lower than in other comparable regions, even when the level of financial development is similar. They also find that the effect of finance on growth diminishes as the level of financial development increases but at a faster rate for MENA region than others.

2.2 Financial Stability & Economic Growth

A critical component of financial sector development is financial stability. Deepening the financial system without paying attention to potential negative consequences in the

form of financial fragility is obviously sub-optimal. In this regard, this section starts with the effect of financial liberalization on economic growth and then moves to the costs of financial liberalization in terms of incidence and severity of financial crisis. We conclude with the effects of regulation on economic growth since regulations are often the immediate responses to financial fragility. The ultimate aim of this section is to clarify whether the positive effects of finance on growth is worthy given the costs associated with financial fragility.[15]

We should note that there are differential effects on growth of capital account liberalization, equity market liberalization or full-fledged financial liberalization that includes the former two and banking sector reforms. Usually, academics have come up with various indices based on specific reforms to capture financial liberalization[16]. One clear message emanating from Table 7 in our inventory is that the magnitude of the effect of financial liberalization on economic growth is higher than the effects found in the previous subsections. Specifically, the effect of financial liberalization on economic growth reaches up to over 3 percentage point acceleration in annual economic growth rate. As Bekaert, Harvey and Lundblad (2005) demonstrate, however, the effect is higher for countries with good quality institutions. In addition, the effect of equity market liberalization seems to have higher effects than capital account liberalization, which is usually associated with financial fragility, especially in developing countries. A very relevant article for the purposes of this section is presented by Tornell, Westernmann and Martinez (2003), who find that the effect of liberalization on growth is lower once financial fragility is accounted for. Nevertheless, they find that the net effect remains significantly positive and economically meaningful. Comparing India, an emerging market with a risk-averse attitude towards financial liberalization, with Thailand, a country that has gone through many booms and busts due to fragility, they find that long-run growth increases by 0.54 percentage point in response to Thailand's pro-finance trajectory.

The consequences of financial fragility on economic growth, however still remain significantly negative. In terms of growth collapses, consider Loayza and Ranciere (2005) who estimate that an increase in financial volatility (frequency of systemic banking crisis) by one-standard deviation leads to a decrease of 0.3 (0.7) percentage point in the annual growth rate of GDP per capita. Similarly, Ranciere, Tornell and Westermann (2006) find that financial liberalization raises the probability of a twin crisis thereby restraining economic growth. Bonfiglioli and Mendicino (2004) demonstrate that countries with non-systemic banking crisis episodes grow 4% more than others. However, they find that countries with capital account restrictions are more exposed to the negative effects of banking crises than financially open economies. Johnston and Pazarbasioglu (1995) show that countries that reform their financial systems without experiencing banking crisis register higher average

[15]One could argue that the effect of financial liberalization on economic growth operates through each component of financial development (i.e. depth, stability, efficiency and inclusion). The reason why we focus on financial liberalization in this section is simply to bridge a number of strands in the literature. Otherwise, we have no intention to claim that financial liberalization breeds fragility. There is an established literature emphasizing the role of institutions in the success or failure of liberalization.

[16]Usually, authors refer to de facto or de jure financial liberalization. De facto financial liberalization is measured by gross capital flows as a share of GDP, as in Levchenko et al. (2009) and de jure financial liberalization refers to various indices constructed by authors based on policy reforms, as in Bakaert et al. (2005).

growth rates.

So far, we have ignored the potential of reverse causality in the relationship between financial stability and economic growth. While the majority of the papers cited in our inventory look at the effect of financial fragility on economic growth and output, we understand that fast growth episodes may lead to instability. Even though we have not come across empirical papers studying this reversed link[17], we understand that faster economic growth especially in emerging markets may lead to financial booms which in the absence of good institutions and relevant regulations can lead to financial fragility.

Table 8 in our inventory presents some quantified the negative effects of financial, banking and currency crisis in terms of output losses in developed and developing countries.[18] One common message is that costs of crises vary by features of the crises and profiles of countries. For instance, as Cerra and Saxena (2008) show, while on average banking crisis are more costly than currency crisis, low-income countries experience the largest output losses relative to high-income countries from highly frequent currency crisis. On the other hand, while countries with high level of financial development experience higher costs, countries with better institutions experience lower costs. Historically, the largest output loss is recorded in the United States, around 29%, during the Great Depression, according to Reinhart and Rogoff (2009). Argentina follows this record with 22% of GDP lost in 2001.[19]

Basel Committee on Banking Supervision (2010) suggests that reducing crisis probability helps countries save significant amount of their output. In this context, an immediate policy-relevant question is to what extent regulations and supervision, financial structure and ownership can help mitigate the negative effects of crisis on economic growth. Even though we have not come across empirical studies that address this specific question, we report various estimates on the effects of regulations, financial structure and ownership on economic growth in Table 9 of our inventory. The first two papers relate to the effect of regulations on output. There is a consensus that the higher the capital adequacy ratios the lower the output. However, note that capital adequacy ratios can lower the crisis probability as well. Even though, banking supervision seems not to be directly associated with economic growth, there is some evidence for indirect positive effects through financial stability.

Regarding the financial structure and ownership, Fernandez, Gonzalez and Suarez (2010) find that concentration in the banking system has negative effects on economic growth but regulations in the form of activity restrictions lower the amplitude of these negative effects. In a seminal paper, La Porta, Lopez-de-Silanes and Shleifer (2002) find that in developing countries there is a negative relationship between the extent of government ownership and economic growth. As Adrianove, Demetriades and Shortland (2012) show, however, the earlier results are not robust to different specifications. Last but not least,

[17]Some of the papers in our inventory on growth-stability nexus recognize the potential of this reverse causality and address it with the use of dynamic panel data methods.

[18]If more country specific examples are needed, one can easily access quantified costs of crises.

[19]These are larger numbers than those listed in Table 8. The difference derives from the way costs are computed. For instance, some compute the cumulative effect of crisis on output over the entire crisis period rather than focusing on the first year of crisis. Also some focus on banking crisis while others on currency crisis.

regulations that ease entry of foreign banks into domestic market help improve economic growth through direct and indirect effects.[20]

2.3 Financial Efficiency and Inclusion & Economic Growth

In this section, we focus on the two remaining components of financial sector development, namely efficiency in the financial sector and access to finance, mostly by firms. As evident in Tables 9 and 10 in our inventory, there is limited research on these two components. Partly, this lack of evidence is due to data availability, since the proxy variables used for efficiency and access are not readily available for many developing countries.[21]

For efficiency, the usual proxy variables include net interest margins between lending and deposit rates, overhead costs in proportion to total assets, non-interest income in proportion to total income and various other indicators for profitability of banks such as return on assets. Demirguc-Kunt et al. (1998) find that a one-standard deviation decrease in efficiency proxy (i.e. overhead costs/total assets) raises economic growth by 1 percentage point. Koivu (2002) finds a similar effect (i.e. 1.2 percentage point) in response to a decrease in the interest rate margins based on a sample of transition economies.

For access, on the other hand, researchers usually rely on the World Bank Enterprise Survey to capture financing constraints on firms. In addition, penetration of banks and ATM machines are used to proxy access to finance by households. Access to finance has significant effects on economic growth. This is evident by the findings of the strand in literature that conducts firm-level analysis. The main message is that access to finance is a robust determinant of firm growth and access matters more for small firms than larger firms. Beck et al. (2005), however, find that as the level of financial development increases, the importance of financing constraints on small firm's growth decreases.

3 Finance and Employment

A clear finding of this literature review is that there is only a handful of articles that focus on the effects of financial sector development on employment in developing countries. Even when the sample is opened to developed countries, it is difficult to find empirical analyses that address this important nexus. Table 11 in our inventory for this subsection lists a few papers that focus on developing countries.

The seminal paper in finance-employment nexus is the theoretical and empirical analyses conducted by Gine and Townsend (2004) in Thailand between 1976-1996. They provide convincing evidence that financial deepening helped a substantial part of the workforce move from agricultural sector to formal labor markets in urban centers, thereby raising average household income in the order of 17-34%. In terms of the direct effect of financial

[20] As will be discussed below, foreign bank entry is associated with higher efficiency in the banking sector which is positively related to economic growth.

[21] The recent Global Financial Database, however, offers a great opportunity for research, as it provides information on each component of financial sector development over 200 countries from 1960s onward.

depth on employment, consider the recent paper by Pagano and Pica (2012), who find a positive effect in the order of 0.23-0.83% increase in employment growth.[22] In terms of the effect of financial stability on employment, Reinhart and Rogoff (2009) estimate that banking crisis increase unemployment rate by 7 percentage point and recovery to pre-crisis level takes a long time. The record is again held by the United States during the Great Depression with a 20 percentage point increase in unemployment rate. World Bank (2009) surveys some descriptive evidence on the rise of unemployment rates across the world after the global crisis. Last but not least, Choudry, Marelli and Signorelli (2010) suggest that a 1% increase in the systemic crisis index lowers employment rate by 0.394 percentage point. When their sample is restricted to only high and upper-middle income countries, they estimate the effects to be 1.32 and 1.01 percentage point decrease in employment rates in high and upper-middle income countries, respectively.

In terms of the effect of access to finance on employment, Aterido et al. (2007) find that not only sophisticated but also simpler forms of finance have significant positive effects on employment growth. Aterido et al. (2010) document that access to finance is a crucial constraint for micro firms in Sub-Saharan Africa (SSA) but suprisingly find that employment growth is not curtailed by financing constraints.[23] Rabbani and Suleiman (2005) evaluate the effectiveness of BRAC's SME lending program from employment perspective and find that SMEs that repeatedly borrow from BRAC manage to generate more employment in Bangladesh.

The finance-growth nexus suggests that the growth effects of finance operate through either capital accumulation or productivity growth. The findings presented in this section provides yet another mechanism through employment growth. Unfortunately, this literature is still at its infancy and more research is necessary to test a variety of hypothesis using a multitude of empirical methodologies.

4 Determinants of Financial Sector Development

The previous sections have shown that various components of financial sector development have significant positive effects on economic growth and employment. In this section, we are interested in distilling main messages from the established literature to answer a crucial question: what are the determinants of financial sector development in general and each component in particular? We restrict the aim of this section to gathering as much empirical evidence as possible linking *policy* variables to financial sector development. Within these policy variables, the focus is set primarily on regulations, supervision and the enabling institutional environment. In doing so, we refrain from investigating historical legal determinants over which policy makers have no control.[24]

[22]The lack of empirical analyses in this nexus is evident in the literature review section of this very paper on past empirical analyses.

[23]Their explanation for this anomaly is the lack of competition and market access for micro firms. When they repreat the same exercise for non-SSA countries (i.e. comparable developing countris), they find that employment growth is curtailed by lack of access to finance.

[24]We should note, however, that the institutional determinants listed below are endogenous to legal origins. Beck, Demirguc-Kunt and Levine (2001) offer an excellent review of legal theories and conduct

Similar to Section 2, we investigate the determinants of financial sector development by focusing on each components of financial sector development in the following four subsections below. Each subsection starts with how regulations and supervision affect financial sector development and then moves to other determinants such as institutional and legal environment (i.e. creditor protection and credit registries, among others) financial openness and banking reforms, financial structure (i.e. concentration and competition), ownership (i.e. government or foreign ownership) and finally engagement with the World Bank and the International Monetary Fund. Table 13 Panel A-E in our inventory present empirical results for determinants of each component of financial sector development.

Before starting with the empirical evidence, some general remarks should be useful. First, it is only recently that academic research managed to get its hands on regulation and supervision related data. While some use author-constructed indices (i.e. compliance with Basel Core Principles or Regulatory Governance Index based of FSAP), the majority of this literature relies on data collected by Barth, Caprio and Levine (2000). The most recent literature review by Levine (2012) provides very important insights regarding the effect of regulatory framework on financial sector development. The common findings in the literature is that each component of financial sector development is positively related with the following key regulatory factors:

- timely and easily accessible and comprehensible disclosure of information
- equity and debt holders incentivized to oversee the financial institutions[25]
- removal of barriers to competition

James Barth, Gerard Caprio and Ross Levine are the leading researchers who work on the effects of banking sector regulations and supervision on financial sector development, including financial depth, stability and efficiency. They have collected data since late 1990s and early 2000s from regulatory agencies all across the world and compiled a very useful data set on the quantity and quality of regulations and supervision in a large sample of countries.[26] This academic combo has been frequently publishing empirical analyses on the regulations-financial sector development nexus and they confirm the insights listed above from Levine (2012). Another important insight from these authors is that compliance with Basel II, let alone Basel III, should not be a benchmark strategy for many developing countries, as it is better for these countries first to develop their legal, information and incentive systems and then think about various specific regulations. The empirical evidence we cite below on the importance of institutions in financial sector development clearly supports this insight.

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empirical tests on various channels through which legal origins affect financial sector development. For a critical review of the literature, also see Beck and Levine (2005).

[25]In other words, as Barth, Lin, Lin and Song (2009) argue, private supervisory systems are more optimal than official supervisory power, especially in countries with greater voice and accountability.

[26]These authors collect data on a variety of regulations such as capital and disclosure requirements, regulations that restrict commercial banks in engaging securities, insurance and real estate activities and in mixing with non-financial firms.

4.1 Financial Depth

In finance-growth nexus, academic research often approximates the effect of financial depth on growth by an exogenous increase in financial depth in the order of 10 percentage point or one-standard deviation. A crucial question then is how countries can increase their financial depth.[27] This section surveys empiriacal literature that attempts to answer this important question. In general, the following key factors are found to be associated with financial depth:

- **Regulations and Supervision:** The key insight from the analyses of James Barth, Gerard Caprio and Ross Levine is that certain regulations have either negative or no effects on financial deepening. For instance, activity restrictions on commercial banks lowers financial depth but capital requirements have no significant effect. While official supervision increases financial depth, this positive effect exists only in countries with high level of political openness.[28] This result holds only in countries without government presence in the financial sector. Detragiache et al. (2008) complement Barth et al. (2004, 2012) in that they also find more stringent regulatory and supervisory requirements[29] reduce financial depth. In addition, explicit deposit insurance schemes reduce financial depth.

- **Regulatory Reforms:** Giustianni and Kronenberg (2005) find that compliance with IMF conditionalities increases the level and growth of financial depth. However, the intensity and hardness of the conditionalities are not associated with better banking performance. Cull and Effron (2005) find that countries that borrowed adjustment loans from the World Bank for regulation and supervision related reforms experienced faster growth in liquid liabilities but slower growth in private credit-to-GDP ratio. Moreover, Detragiache and Tressel (2008) construct an aggregate index of banking sector reform[30] and find that banking sector reforms are associated with large positive and long-lasting effects on banking sector depth.[31]

- **Financial Openness:** Chinn and Ito (2002, 2006) and Ito (2006) look at the relationship between financial openness (i.e. capital account openness) and stock market liquidity. They find that more open financial systems are also more active and developed. An important caveat is that this relationship works more robustly and significantly for countries with better institutions. Bonfiglioli and Mendicino (2004) focus on banking sector development and find that countries with open capital accounts have deeper financial sectors.

[27] As a reminder, financial depth or more correctly intermediation is often measured by credit from banks to the private sector divided by GDP. A few papers listed below look at stock market depth as well.

[28] One mechanism that comes to mind is that in such countries, expansion of official supervisory branch is not subject to corruption.

[29] In this article, regulations and supervision are measured by accounting, discipline and disclosure, restrictions on banking activities, audit requirements and deposit insurance.

[30] This index is based on credit controls, reserve requirements, interest rate controls, entry barriers, state ownership and banking supervision

[31] Specifically, removing restrictions on credit allocation, lowering reserve requirements, removing limits on credit growth, facilitating entry into the banking system and removing branching restrictions increase banking sector depth. They do not find any evidence for positive effects of improvements in banking regulation and supervision.

- **Ownership:** La Porta et al. (2002) find that the higher the share of assets owned by government banks, the less deep the financial sector. Detragiache et al. (2008), on the other hand, find that the larger the foreign presence in the banking system, the less deep the banking sector in low income countries.
- **Institutions:** Institutions are crucial for determinants of financial sector depth. Djankov, McLiesh and Shleifer (2007) refer to creditor protection and information sharing.[32] Essentially, creditors, who know that they are to a certain extent protected in case of default, are willing to extend more credit to enterprises. Also, having access to information regarding the financial history of firms and households, helps contain the negative effects of asymmetric information and moral hazard.
  - **Creditor Rights:** Levine (1998) considers the effect of creditor rights[33], contract enforcement and rule of law on banking sector depth and finds that a one-standard deviation increase in both creditor rights and contract enforcement leads to a sizable 0.45 percentage point increase in financial depth.
  - **Credit Registries:** The seminal work by Japelli and Pagano (2002) finds that countries with information sharing credit bureaus have 20 percentage point higher financial depth relative to those without any such institutions. In addition, they find that former countries have lower credit risk which in turn is positively associated with non-performing loans. Djankov, McLiesh and Shleifer (2007) provide more robust empirical evidence on both hypotheses with a larger data set including 129 countries over 25 years.
  - **Accounting Standards**[34]**:** Levine, Loayza and Beck (2000) find that accounting standards explain a large portion of the variation in financial depth across countries. For instance, if Uruguay could push her accounting standards to that of Chile, then Uruguay could have enjoyed higher banking sector depth than Chile.

Consequently, the coefficient estimates suggest that the effect of institutional factors can help countries achieve significant financial deepening which, as reported in Section 2, leads to higher economic growth. The effect of regulations on financial sector depth is less pronounced, given that there is no relationship between capital requirements and official supervision on one hand, and financial depth on the other, while activity restrictions curtail financial deepening. Nevertheless, intense banking sector reforms seem to be strongly and significantly associated with financial depth, giving legitimacy to engagements with international organizations for further reforms to strengthen financial sectors.

[32]These two are not mutually exclusive, as they might be substitutes in certain contexts.

[33]He measures creditor rights as having automatic stay on the assets of the firm upon filing a reorganization petition, whether the firm continues to manage its property pending the resolution of the reorganization process, whether secured creditors rank first in the distribution of the proceeds. For enforcement, he considers the ICRG law-and-order, the risk that government will and can modify a contract after it has been signed.

[34]Accounting standards are measured by an index that ranks the comprehensiveness of company reports.

4.2 Financial Stability

In finance-growth nexus, financial stability is the second most often used indicator for financial sector development. Earlier, we discussed the findings of the literature, suggesting significant negative effects of financial fragility on economic growth and output. This section attempts to identify a list of factors that are found to be robust determinants of financial stability. Our inventory offers quantitative effects of the following key determinants on financial stability[35]

- **Regulations and Supervision**
  - **Capital Requirements and Activity Restrictions:** Barth et al. (2012) find that capital requirements are associated with lower non-performing loans but this association disappears when govenrmnet banks are considered. Basel Committee on Banking Supervision (2010) argues that introducing Basel III is expected to lower the probability and severity of crisis.[36] Angkinand (2009) suggests that raising capital requirements reduces severity of financial crisis, while raising activity restrictions increases the output cost of crises except in countries with pre-crisis credit boom. Schaeck, Cihak and Wolfe (2006) fail to find a significant effect of various regulations on the timing of the crisis but they suggest that activity restrictions significantly increase crisis probability. A complementing finding is presented by Byostrom (2004), who argues that restrictive regulations are positively related to banking sector fragility as perceived by the market before the crisis.
  - **Supervision** According to Haan and Shehzad (2009), better supervision reduces the positive effect of financial liberalization on financial fragility, especially after interest-rate liberalization. Their findings are quite important because while they observe that non-OECD countries have closed the gap with OECD countries in terms of financial openness in the last decade, the former group has not taken sufficient steps to improve supervision of their financial systems.[37] Barth et al. (2012) argue that supervision by shareholders and creditors is more effective than official supervision when it comes to reducing financial fragility. Specifically, while they find no relationship between official supervision and financial stability, they find that private monitoring exerts a larger negative effect on financial fragility than capital requirements.
  - **Compliance with Basel Core Principles:** Sundararajan et al. (2001), Demirguc-Kunt et al. (2008) and Podpiera (2006) question whether compliance

[35]The literature usually uses non-performing loans (NPL) ratios as well as probability of crisis to measure financial stability. In addition, various indices are constructed for financial soundness (either individual bank level or systemic) based on NPL, capital adequacy ratios and Moody's z-scores for banks.

[36]However, they note an important nonlinearity. For instance, raising the capital ratio from 7% to 8% reduces the banking crisis probability by 1.6 percentage point but raising the capital ratio from 10% to 11% is not nearly as effective in reducing crisis probability. Since raising capital adequacy ratios also decrease output, there exists a trade-off and the authors do not recommend to raise the requirements more than necessary.

[37]In a related manner, Barth et al. (2013) argue that regulatory and supervisory approach to banking system has not converged across countries over time.

with Basel Core Principles (BCP) help countries improve financial stability. While Sundararajan et al. (2001) find no significant association between the two[38], Demirguc-Kunt et al. (2008) find that moving from largely compliant status to materially non-compliant status lower banks' soundness. They argue that among BCP, what matter most for financial stability are entry barriers and disclosure requirements.[39] Das et al. (2004) use a different measure for regulations based on FSAP (i.e. regulatory governance index) and find that countries that score higher values in this index have more sound financial systems. They also argue that the strength of this relationship is conditional on the overall quality of public sector governance. Last but not least, Papi et al. (2012) find that countries that signed an IMF lending agreement and complied with the conditionalities on financial sector reform enjoy 18.9% lower probability of banking crisis.

- **Explicit Deposit Insurance Schemes:** Demirguc-Kunt et al. (2002) argue that the larger the coverage of the deposit insurance scheme, the higher the probability of banking crisis. They find significant reductions in the probability of crisis for a variety of countries, had these countries reduced the extent of the deposit insurance to that of Switzerland. Angkinand (2009), however, demonstrates that deposit insurance schemes are associated with lower output costs of financial crises. Byostrom (2004) also finds some evidence that deposit insurance schemes are associated with lower probability of banking failure.

Let us conclude the role of regulations and supervision on financial stability by reviewing the findings of a recent paper by Cihak, Demirguc-Kunt, Peria and Mohseni-Cheraghlou (2012), who compare 21 crisis and 122 non-crisis countries based on their own categorization with respect to the recent global financial crisis. They find that crisis countries had less stringent capital requirements and activity restrictions on banks. In addition, bad loans were less strictly treated in crisis countries where there existed weaker incentives for private monitoring of banks and more extensive deposit insurance schemes. Our reading of the literature provides additional conclusions. While activity restrictions and deposit insurance schemes are found to increase financial fragility, regulations and supervision are effective tools to contain fragility in the aftermath of financial liberalization.

- **Banking Structure and Ownership**
  - **Ownership:** While the presence of foreign banks in domestic banking sector is associated with lower probability of crisis, the extent of government ownership is associated with higher probability of crisis. For instance, according to the coefficient estimates from La Porta et al. (2002), moving from the average government ownership in countries with French legal origin to those with British legal origin (i.e. around 30% decrease in the share of government ownership of assets in the banking sector) raises the stability index by 38%. As for foreign

[38]Note that Sundararajan et al. (2001) detect a statistically significant association between BCP and financial stability in countries with high loan growth rates. Demirguc-Kunt and Detragiache (2011) confirm these results

[39]In this context, an interesting study by Cihak and Podpiera (2006) show that having a fully integrated supervisory approach to financial system helps countries comply more with BCP and have more effective supervision of not only banking sector but also capital markets and contractual investors.

ownership, Yeyati and Micco (2007) find that increasing the share of assets held by foreign banks reduces the probability of systemic crisis by around 3.5%. The suggested mechanism is that entry of foreign banks raises the degree of product differentiation in the sector, which then reduces competition yielding higher profits and charter value of banks and hence less appetite for risk-taking. Gonzales (2005) finds confirms the latter relationship in that the higher the charter value of a bank, the less risk the bank would take. Interestingly, he also finds that bank charter values are lower in countries with more extensive deposit insurance and stronger regulations.

– **Concentration and Competition:** The focus on charter values of banks brings us to the important role banking structure on financial stability. The relevant question in this context is whether more concentrated and less competitive banking systems perform better than others in terms of financial stability. Beck (2008) provides an excellent review of the relevant theoretical and empirical literature and distills the following key messages:

  * The existing literature has so far mistakenly associated the notion of concentration with competition. The proxies for these two phenomena yield different results for stability.[40]

  * Related to the above point, while the literature on concentration-stability hypothesis find mixed results, the effect of competition on stability is considered to be positive.[41]

  * The enabling institutional environment is crucial for the positive effect of competition on stability. Hence, the policy course is to enhance the institutional environment while maintaining the competitiveness of the financial system.

The mixed results on concentration-stability hypothesis is evident in our inventory. For instance, Beck, Demirguc-Kunt and Levine (2006b) find statistically significant and economically large positive effects of concentration on stability.[42] Boyd, de Nicolo and Jalal (2006), however, show that more concentrated systems are more likely to incur banking failures. Noy (2004) argues in favor of a similar mechanism in that financial liberalization lowers the monopoly power of incumbent banks and encourages them to take excessive risks. He finds, however, that better supervision during financial liberalization leads to lower probability of banking crisis.[43]

[40] See Beck, Demirguc-Kunt and Levine (2006c) who show that bank concentration is not a good indicator of lack of competition.

[41] See Schaeck, Cihak and Wolfe (2006) who argue that more competitive banking systems are associated with lower probability of banking crisis.

[42] In addition, they demonstrate negative effects of various regulatory restrictions (i.e. entry barriers and activity restrictions) on banking stability. Interestingly, they also find that more banking freedom and more economically competitive environments are less likely to experience banking crisis. A better institutional environment (i.e. proxied by World Governance Indicators) is associated with lower probability of systemic crisis.

[43] We refrain from digging deeper into the reasons why there are mixed results in this nexus but our understanding from Beck (2008) is that results are not robust to the use of different proxies for financial stability (i.e. individual bank level or systemic risk.

4.3 Financial Efficiency

Intuitively, a deep and stable financial sector is likely to be an efficient one, even though this survey has not found a formal test of this statement. We find that the determinants of financial efficiency are not different than the determinants of other aspects of financial sector development. Our inventory offers quantitative effects of the following key determinants on financial efficiency.[44]:

- **Regulations**
  - **Capital Requirements and Activity Restrictions:** Demirguc-Kunt et al. (2004) find that various regulatory indicators[45] increase net interest margins, thereby decreasing financial efficiency. However, once institutional quality is accounted for, regulations cease to have a significant impact. In fact, they find that what essentially matters for financial efficiency is the quality of institutional environment proxied by Economic Freedom index of the Heritage Foundation or the World Governance Index of the World Bank.
  - **Supervision:** Barth et al. (2012) find that the private monitoring index reduces overhead costs and net interest margins, while official supervision is not significantly related to financial efficiency. Podpiera (2004), however finds, that compliance with the Basel Core Principles statistically significantly lowers the net interest margins. In addition, Pasiouras et al. (2009) find that capital requirements, market discipline and official supervisory power are negatively associated with cost and profit inefficiency.
  - **Regulatory Reforms:** Giustianni et al. (2005) and Cull et al. (2005) examine whether support from the International Organizations such as the World Bank or the IMF with respect to financial sector reforms in favor of better regulations and supervision have any tangible impacts on financial sector development. While the former finds IMF conditionalities on banking sector reform having positive effect on banking sector performance (i.e. return on assets), Cull et al. (2005) compare countries that borrowed from the World Bank for regulatory reforms with countries that did not and find that the latter group experienced larger increases in interest margins.
- **Banking Structure and Ownership**
  - **Concentration:** Demirguc-Kunt et al. (2004) find that more concentrated banking systems happen to be more inefficient ones as well. While Peria and Mody (2004) find that higher concentration raises bank spreads and administrative costs, Detragiache et al. (2005) find evidence for the contrary in developing countries.
  - **Foreign Ownership:** Table 13 Panel C in our inventory suggests that the literature on the determinants of financial efficiency is dominated by ownership

[44]The common trend in the literature is to measure financial efficiency by net interest margins between lending and deposit rates, overhead costs in proportion to total assets, non-interest income in proportion to total income and various other indicators for profitability of banks such as return on assets

[45]Among others, they focus on fraction of entry denied, activity restrictions and reserve requirements.

patterns. While the penetration of domestic banking system by foreign banks is estimated to increase financial efficiency in the entire sector, there is also some evidence on negative effects of government ownership. Demirguc-Kunt and Detragiache (1997), Denizer (2000), Barajas, Steiner and Salazar (2000) Claessens, Demirguc-Kunt and Huizinga (2001), Peria and Mody (2004), Bayraktar and Wang (2004) and Haber and Musacchio (2012) find similar results in terms of positive effects of presence of foreign banks on financial efficiency measured by, among others, reductions in profitability, net interest margins and overhead costs.[46] Among the various reasons for these effects, Claessens et al. (2001) suggest that foreign entry may "improve the quality and availability of financial services in the domestic financial market by increasing bank competition, and enabling the greater application of more modern banking skills and technology, (ii) serve to stimulate the development of the underlying bank supervisory and legal framework, and (iii) enhance a country access to international capital" (Claessens et al. 2001, pp. 892). For instance, Denizer (2000) provides some anecdotal evidence from Turkey, where penetration of foreign banks increased the level and use of technology in the sector and attracted more qualified workforce. Bhattacharya (1993) notes that various fees in the banking system significantly decreased after foreign entry in Turkey.

  - **Government Ownership:** In contrast to foreign ownership, the extent of government ownership in the financial sector is associated with lower efficiency. La Porta et al. (2002) find that overhead costs and net interest margins increase in response to an increase in government ownership. Mian (2003) and Micco and Panizza (2006) also confirm that government banks are less efficient than their foreign and private domestic counterparts, more likely to be bailed out and have excessive employment.

4.4 Financial Inclusion

Financial inclusion is a key component of financial sector development. Even though the effect of financial inclusion on economic growth is not as heavily scrutinized as the effects of financial depth or stability, it is crucial to survey the determinants of financial inclusion, as there are many financially constrained firms and households across the world. Our inventory offers quantitative effects of the following key determinants of financial inclusion:

- **Regulations**
  - **Entry Barriers and Activity Restrictions:** According to Barth et al. (2009), entry restrictions in the banking system raises the probability of firms reporting bank corruption as a major obstacle. On the other hand, disclosure and auditing requirements lower bank corruption and ease firms financing constraints. Beck et al. (2004) suggest that the probability of firm's reporting finance as a major obstacle increases in the intensity of the activity restrictions.[47]

[46] An interesting insight from this literature is that while foreign banks have lower interest margins, overhead expenses and profitability in developed countries, the opposite holds in developing countries.

[47] Not only firms but also households are negatively affected by activity restrictions.

- **Supervision:** According to Cull et al. (2011), the cost of compliance with regulations in the form of adapting to regular on-site supervision leads Micro-Finance Institutions (MFIs) to curtail their outreach to maintain financial self-sufficiency. As Beck et al. (2011) demonstrate however, supervision in the form of private monitoring improves firms access to finance.
- **Deposit Insurance:** While Barth et al. (2009) find that the existence of deposit insurance schemes raise the probability of firm's reporting bank corruption as a major obstacle to their growth, Franklin et al. (2012) show that the probability of households owning and using a bank account increases in the coverage of the deposit insurance schemes.

- **Institutions**
  - **Creditor Rights and Credit Registries:** Institutions matter for increasing firms and households access to finance, as they lower the monitoring costs incurred by formal financial institutions. Galindo and Micco (2005) find that the higher the creditor rights, the easier the small firms access to finance. Beck, Demirguc-Kunt and Peria (2007) find that the higher the credit information index, the higher the penetration of bank branches across the country. Barth et al. (2009) similarly argue that the existence of private credit bureau lowers corruption in lending but public credit bureau has no significant association. An important distinction emphasized by Love and Mylenko (2003) is that while public registries may be associated with financial depth, they are less likely to be associated with access to finance. In their empirical study, they confirm this hypothesis and find a negative association between the presence of private credit registries and financing constraints perceived by firms. Brown, Jappelli and Pagano (2009) study a similar hypothesis using firm-level panel data covering transition countries and present more robust results. They document positive and significant effects of information sharing on access to finance but this effect is more pronounced for opaque firms and countries with weaker creditor rights protection.
  - **Bank branch and ATM penetration**: Franklin et al. (2012) and Beck et al. (2007) study the impact of distance barriers and pro-access policies on the probability of households owning a bank account and firm managers reporting finance as an obstacle to firm growth. Both studies identify the crucial positive impacts of bank branch and ATM penetration on access to finance for firms and households. In addition, Franklin et al. (2012) consider various pro-access policies[48] that lower the negative perceptions associated with opening and using a bank account. For instance, they find that the probability of using bank accounts is three times higher in countries where government makes payments through bank accounts as well as in countries where savings schemes and tax incentive programs are established.

[48] Among others, they consider, policies that require banks to offer basic or low-fee accounts, exempt some depositors from costly documentation requirements, using bank accounts to make government payments.

- **Banking Structure and Ownership**
  - **Concentration:** Beck, Demirguc-Kunt and Maksimovic (2004) find that higher concentration in the banking sector raises the probability that firms report financing as a major obstacle, especially for small firms. Yet, they emphasize that this relationship is subject to various nonlinearities. For instance, the negative effect of concentration on access to finance is more prominent in low-income countries and in countries with weak institutional environment. They also suggest that existence of credit registries lowers the negative effect of concentration on firms access to finance. Barth et al. (2009) finds a complementary result in that as banking concentration increases, the probability that a firm rates bank corruption as a major obstacle to its growth increases significantly.
  - **Government vs. Foreign Ownership:** La Porta et al. (2002) find that countries with higher government stake in the banking sector provide more restrictive access to finance (i.e. exclusive access to top ranking firms). Detragiache et al. (2008), however, suggest that in low-income countries, the larger the share of foreign bank assets, the lower the bank branches and ATMs, loans and deposits per capita. Gormley (2007) confirms this result and suggests that due to information costs the clientele of foreign banks are restricted to firms that are located at the top of the distribution of firms in terms of their profitability. From a different perspective, Clarke, Cull and Peria (2006) find that increasing the share of foreign banks in the country leads to reductions in the negative perceptions of firms managers to access finance (i.e. interest rate and long-term financing opportunities) and that this result applies to firms of all sizes. Barth et al. (2009) also argue that greater private or foreign ownership reduces bank corruption which is a key constraint for firms.

5 Causes and Consequences of Insurance and Pension Sector Development

Initially, the aim of this section was to present a list of academic articles that study the determinants of insurance and pension sector development. Unfortunately, this literature is at its infancy and apart from Beck and Webb (2003) and Feyen, Lester and Rocha (2011), this survey could not find any papers that examine the regulatory and institutional determinants of pensions and insurance sector development. In fact, the aforementioned two papers only focus on the insurance sector, leaving the pension sector unexplored. Table 14 in our inventory, therefore, presents 5 papers that examine the effect of pension sector development on banking sector and capital market development.

Focusing on the insurance sector first, the recent paper by Feyen et al. (2011) examine the factors associated with life insurance market activity. They find that life insurance markets are more active and developed in countries with better institutions (i.e. creditor rights) and well developed banking sector. In addition, they find that insurance sectors that are less concentrated and that are dominated by private sector are more active than more concentrated and public dominated sectors. Beck and Webb (2003) argue that countries

with more developed banking sectors and better institutions have larger insurance sectors. They also suggest that life insurance and other forms of contractual savings might foster the development of capital markets through demand for long-term financial investment. In fact, the remaining articles in Table 14 provide evidence for this link but proxying contractual investors as pension funds. More specifically, they consider the aftermath of pension reforms that result in significant increases in pension assets to GDP ratio. For instance, Davis (2000) draws attention to the significant increases in pension sector in Chile and Malaysia in the aftermath of pension reforms towards funded systems. For more specific mechanisms on the relationship between pension reform toward funded system on economic growth via capital market development, see Davis (2000), Meng and Pfau (2010) and Hu (2005).

Impavido, Musalem and Tressel (2004) finds a positive effect of pension sector development (i.e. proxied as the share of pension assets in total financial assets) on stock and bond market capitalization but not on stock market liquidity. They find the effects to be larger in countries with mandatory pension systems. Hu (2005, 2012) also finds positive and significant effect of pension sector development on stock market capitalization but also stock market liquidity. Meng and Pfau (2010) find similar results but also detect the effect to be nonlinear conditional on the level of overall financial development. Last but not least, Walker and Lefort (2002) study indirect effects of pension sector development on capital markets. Specifically, they find that the more developed the pension sector, the less is the cost of capital and market volatility.

6 Conclusion and Ideas for Future Work

More than 180 papers have been surveyed for this literature review to get a glimpse of the quantitative findings of various strands of a giant literature. Leaving the demanding econometric qualifications aside, the following points can provide helpful insights for policy-making:

- **Finance-Growth Nexus:** There exists a statistically significant and economically meaningful positive effect of financial sector depth on economic growth. The magnitude of this effect can be quantified as around 1 percentage point acceleration in annual real GDP per capita growth, when banking sector depth is considered. Larger effects are detected for stock market development and financial liberalization. In addition, contractual savings institutions have positive effects on economic growth. However, the positive effect of finance on growth is sensitive to various forms of thresholds such as level of income, financial development and inflation and varies across regions and periods. Furthermore, a stable, efficient and inclusive financial system contributes positively to economic growth.
- **Finance-Employment Nexus:** There exists a statistically significant positive effect of financial sector depth on employment. While financial fragility is associated with higher unemployment, easing firms access to finance contributes positively to employment growth. Unfortunately, these conclusions derive from only a few papers that have not scrutinized the relationship as much as in the finance-growth nexus.

- **Determinants of Finance**: Our reading of the literature suggests that institutions (i.e. creditor rights, credit registries and accounting standards) are crucial for each component of financial sector development. However, only various types of regulations and supervision are positively related to financial sector development (i.e. timely and easily accessible and comprehensible disclosure of information, removal of entry barriers into financial system, less extensive deposit insurance schemes and lower activity restrictions). While the extent of government ownership is associated with less deep, inefficient and unstable financial systems, the opposite holds for the extent of foreign ownership. Last, the effect of concentration in the financial system on financial sector development is not yet resolved but there is strong evidence for positive effects of competition.

A definitive conclusion of this synthesis paper is that there is room for further work. First, as we have mentioned throughout the text, there are quite a few empirical weaknesses in the literature that could be circumvented with the use of a larger empirical toolbox and alternative data sets. Cutting-edge econometric methodologies can be applied to improve the robustness of the results, especially in the relationship between regulations and financial stability.

Second, the "perfect" paper that caters to the specific questions raised in the beginning of this survey still does not exist in the literature. For instance, we still do not know the quantitative effects of "overall" financial sector development on economic growth. Knowing how each component of financial sector development is associated with economic growth should indeed be the ultimate aim to gain rich insights for policy design but what about a measure of financial development that varies across countries and time and that incorporates each component of financial sector development? To our knowledge, there exists no such statistic. In a related manner, we still do not know how various policies discussed in Section could affect economic growth through their effect on financial sector development. This would require a system of equations approach that could link the two questions we raised earlier. Third, a variety of research questions can be answered within the finance-employment nexus. In essence, whatever is researched in finance-growth nexus can essentially be studied within the finance-employment nexus.

We hope to address these issues in our future work and contribute to this giant literature with further empirical evidence specifically from developing countries.

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APPENDIX

Table 1. Finance-Growth Nexus: Banking Sector Depth	
References	**Empirical Findings**
King and Levine (1993)	• As the authors interpret, if Zaire in 1970 were to increase the share of domestic credit allocated by banks as opposed to the central bank from 26% to the mean value for developing countries in 1970 (57%), then Zaire would have grown 0.9 percent faster each year in the 1980s and by the end of 1980s real GDP per capita would have been about 9 percent larger than it actually was. • Real GDP per capita growth rate would accelerate by 1% per year between 1960 and 1990, if the ratio of liquid liabilities-to-GDP ratio is pushed from the mean of the slowest-growing countries to the mean of the fastest-growing countries. • As Levine (2005) interprets, consider an exogenous increase in financial depth of Bolivia in 1960 in the order of 13%. Such financial deepening would accelerate GDP growth 0.4% more and help Bolivia achieve an increase of 13% in real GDP per capita in 1960. • On average, a 28 percentage point increase in financial development leads to a 1% increase in annual average GDP growth rate.
Levine (1998)	• This is an ideal paper for our purposes. The author finds that increasing the creditor rights and enforcement by one-standard deviation would raise financial depth by 0.45 percentage points which then would accelerate the rate of GDP per capita growth by 2% per year. Accumulating over 18 years, sample period, the real GDP per capita would be close to 40% higher at the end of the period than it actually was.
Levine et al. (1998)	• Authors compute that a one-standard deviation increase in financial depth (0.5 percentage point) would increase growth by 0.7 percentage point per year. Consider a country-specific example. If Mexico had had the sample mean value of banking development in 1976 (0.65), instead of its actual value (0.13), growth rate would have been 0.8 percentage points faster per year.
Loayza et al. (2005)	• An increase in financial depth by one-standard deviation increases economic growth by 0.9 percentage point. If a country moves from 25th to 50th percentile in the distribution of financial depth (i.e. 11 percentage points), GDP growth rate would increase by 1.45 percentage points.
Levine et al. (2002)	• As Levine (2005) interprets, consider an exogenous increase in financial depth of India by around 5% toward the sample mean of developing countries. This scenario would accelerate economic growth by an additional 0.6 percentage point annually. Consider Argentina under the same scenario (i.e. a 9% increase in financial depth). Such an increase would have incredible effects (i.e. over 1 percentage point acceleration of economic growth rate) especially given that average economic growth rate in Argentina was around 1.8% in sample period.
Beck et al. (2000)	• As Levine (2005) interprets, an exogenous increase in financial depth of Mexico in the order of around 5%, which would move Mexico to the sample median value of financial depth, would increase economic growth rate by 0.4 percentage point per year.
Benhabib and Spiegel (2000)	• Authors argue that a one-standard deviation increase in financial development raises annual growth by between 0.5 and 0.7%.
De Gregorio (1995)	• A 10% increase in the banking sector development proxy leads to an increase of 0.44 percentage points in average real GDP per capita growth. In Latin America, however, the same scenario leads to a reduction in growth rate by 0.92 percentage points.
Beck and Levine (2004)	• As the authors interpret, moving Mexico's financial depth (16%) to the average of all OECD countries (71%) would accelerate economic growth by 2.6 percentage points annually. Similarly, an improvement of Egypt's financial depth from (24%) to the sample mean of 44% would accelerate economic growth by 0.7 percentage point annually over the period of 1975-98.
Wachtel (2003)	• A 10 percentage point increase in the private credit-to-GDP ratio from its mean of 27.5% results in an increase in the annual growth of 0.69% with the cross-section and 0.74% with the panel. More conservative specification finds the range as 0.5 and 1%. • A 10 percentage point increase in the broad-money-to-GDP ratio, particularly in countries without high inflation, increase the rate of growth by between 0.6 and 1 percentage point a year. Accumulating over a five years, real GDP would have been between 3 and 5% higher. With panel VAR, estimates indicate that the same scenario raises output per capita over five years by 4.1%, or 0.8% per year.
Rousseau et al. (2009)	• While a 10% increase in liquid-liabilities-to-GDP ratio leads to a 0.42 percentage point increase in economic growth in 1960-1989 period, there is no significant association between the two in the 1990-2004 period. • The effect of finance on growth during major crisis is 0.17 percentage point less than non-crisis period. This negative effect is smaller but still significant for minor crisis. Essentially, the effect of finance on growth is pulled down by to the incidence of crisis.
Hasan (2009)	• A one-percentage point increase in financial development indicator accelerates GDP growth by 0.4-0.6 percentage points.
Favara (2003)	• If Argentina's private-credit-GDP ratio was at the sample mean during the period of 1996-1998 (48%) rather than 21%, Argentina would have grown 0.35% faster per year, leading to close to 7% larger GDP per capita in the long-run.
Cojocaru et al. (2011)	• If Romania's private-credit-to-GDP ratio in 2008 were 108% of GDP (France's private-credit-GDP ratio) instead of 38.5%, Romania's economic growth rate would have been 3.26% faster per year.
Hassan et al (2011)	• In South Asia, a 1% increase in gross domestic savings results in a 2.35% increase in growth. In East Asia, a 1% increase in domestic credit by banks leads to a 1.20% increase in growth. In Latin America, this effect is lower at 0.68%. • A 1% increase in M3/GDP leads to a 3.22% decrease in growth rate in East Asia and Pacific and 0.61% decrease in SSA.
Becchetti et al. (2012)	• Authors find that a 100% increase in bank assets is associated with a 2-3% decrease in growth rate. They include a post-crisis dummy and find 2% less economic growth relative to pre-crisis period. This negative growth effect is larger in the second specification (i.e. 6-8% with a post-crisis dummy of 4-7%). The OTC has positive effect on growth but the magnitude is limited with an elasticity of less than 1%.
Shen et al. (2006)	• A 10 percentage point increase in private-credit-GDP ratio leads to a 0.5 percent decrease in GDP per capita growth. The negative effect of banking sector development is mitigated in financially liberalized, high-income countries with good shareholder protection, and lower corruption. However, the negative effects are worsened in a middle-income country, in regions of Latin American, Sub-Saharan Africa, and East Asia, in a country suffering from banking and currency crises, and in a country with bad creditor protection.
Nazmi (2005)	• Financial development as measured by liquid liabilities/GDP ratio has a positive and highly significant impact on the investment–GDP ratio. In response to a 1% increase in financial development increases this ratio by 0.4%. Also higher inflation is detrimental to the ratio.
Beck et al. (forthcoming)	• A one-standard deviation increase in financial intermediation leads to on average 0.6 percentage point increase in economic growth.
Greenwood et al. (2013)	• In their calibration, the authors find that had Uganda had the best practices in financial sector such as in Luxembourg, then Ugandan output could increase by 116%.

APPENDIX

Table 2. Finance-Growth Nexus: Country Studies	
References	**Empirical Findings**
Hao (2006)	• Over the period 1997–1999, Hubei province's value of loan-to-budget ratio was 2.34, while the mean value for the whole country was 5.52. Therefore, if exogenous factors had pushed Hubei province's ratio to the country's mean, Hubei province would have grown by an additional 2.29 percentage points per year during this period. • Similarly, if its savings ratio had been at the mean value for the whole country (0.66) instead of the actual 0.43, it would have grown 2.19% points faster per year during this period.
Anwar et al. (2011)	• A 10 percentage point increase in the private-credit-GDP ratio raises real GDP growth rate (per province) by 18.3 percent. Note that Vietnam's Credit/GDP ratio stood at around 20% as of 1997 so a 10% change is not an easy scenario. This is interesting also because over the sample period Vietnam has passed the inflation thresholds estimated from cross-country regressions.
Kendall (2011)	• For districts in the sample, moving from the 75th percentile of credit/net domestic product to the 25th percentile (around 7 percentage point decrease in the ratio) implies an average loss of 4% in growth over the 1990s decade. The same inflation comment above applies to India as it passed the inflation thresholds.
Hasan et al. (2009)	• In China, a 10 percentage point increase in financial development indicator accelerates GDP growth by 4-6 percentage points.
Zhang et al. (2012)	• In China, if a city exogenously moves from the 25th percentile in the distribution of the ratio of total-loans-to-GDP (53.96%) to the 75th percentile (92.99%) will have a 2.01% larger GDP growth rate.
Liang (2011)	• The effect of financial sector development on economic growth is positive and significant when all provinces are considered. However, this positive effect is driven by the coastal regions. While a 10% increase in the financial sector output per worker increases growth by 0.29 percentage points in the coastal regions, the effects is not significant in non-coastal regions.
Barros (2009)	• A 10 percentage point increase in the ratio of deposits-to-GDP ratio raises annual GDP per capita growth by between 0.023 and 0.048%.

Table 3. Finance-Growth Nexus: Volatility and Convergence	
References	**Empirical Findings**
Denizer, Iyigun and Owen (2002)	• Authors find that a 36.8 percentage point increase in financial depth proxy leads to a 14% reduction in growth volatility, while a 20 percentage point increase in an alternative proxy leads to 28% reduction in growth volatility.
Beck, Degryse and Kneer (forthcoming)	• Authors find that a one-standard deviation increase in financial intermediation is associated with a decrease in growth volatility by 0.8 percentage point. This is an economically meaningful stabilizing effect of finance, since during the sample period between 1980 and 2007, average volatility was 3.5%.
Hausmann and Gavin (1996)	• They find that in Latin America low financial depth explains 20% of the difference in growth volatility between Latin America and industrialized countries. This is not surprising given that economic growth in Latin America is twice as volatile as in industrialized countries.
Raddatz (2006)	• The author identifies the impact of finance on growth volatility with the methodology introduced by Rajan and Zingales (1998). Comparing the industrial machinery sector with paper boxes industry between Spain and Egypt, he finds a reduction of 5.4 percentage point in volatility as a result of financial development.
Easterly, Islam and Stiglitz (2000)	• Authors' estimates suggest that moving from the average level of financial development in non-OECD countries to that of OECD countries (i.e. 39 percentage points) lowers growth volatility by 3.2%.
Fung (2009)	• Author argues that countries above a certain threshold of GDP per capita and financial development converge to a parallel growth path. The author conjectures that poor countries with relatively well developed financial sectors are more likely to transition into middle and high income countries than those with less developed financial sectors.
Aghion et al. (2005)	• Authors find that countries with private-credit-to-GDP ratio of and above 25% converge to frontier growth rate. They also find that a one-standard deviation increase in financial depth (i.e. 28 percentage points) would raise steady-state GDP by around 1% for countries like South Africa, Thailand and Malaysia.
Yilmazkuday (2011)	• Author finds that the catch-up effect of finance on growth starts for countries with GDP per capita beyond $1636.

APPENDIX

Table 4. Finance-Growth Nexus: Stock Market Depth and Liquidity	
References	**Empirical Findings**
Levine and Zervos (1998)	• As Levine (2005) interprets, consider 0.3 percentage point increase in stock market liquidity in 1976. This scenario would accelerate economic growth on average by 0.8 percentage points annually which means that in 1993, GDP per capita would be 15% higher than the counterfactual. • For a specific country example, imagine Mexico moving from its level of stock market liquidity to that of sample average. Such a move would accelerate economic growth by around 0.4 percentage points faster annually, thereby having Mexico enjoy around 7.5% GDP per capita in 1994. • Consider a country at the sample average increasing both stock market liquidity and banking sector depth by one-standard deviation in 1976. Such a scenario would lead to around 30% higher GDP per capita by 1994. More specifically, consider Mexico again. If both stock market and banking sector development improved at the same time in 1976, Mexico could have enjoyed almost 23% GDP per capita by 1994.
Rajan and Zingales (1998)	• As Levine (2005) interprets, the coefficient estimates from the difference-in-difference estimator can be read by comparing two industries (i.e. Machinery at the 75th percentile of external finance dependence and Beverages at the 25th percentile of dependence) along with two countries (i.e. Italy at the 75th percentile of the sample and the Philippines at the 25th percentile of stock market depth). The coefficient estimates from this study suggests that Machinery industry registers 1.3% higher growth than Beverages industry in Italy relative the Philippines.
Atje et al.(1993)	• A 12 percentage point increase in the annual value of stock market trades/GDP raises growth rate by 1 percentage point.
Harris (1997)	• A one percentage point increase in stock market development leads to a 0.02 percentage point increase in growth, whereas the above study finds a higher effect. Indeed, the size of the effect found by Harris is quite small.
Rousseau et al. (2000)	• The average value-traded-to-GDP ratio over 1988-1995 for 47 countries was 17.05%. Raising this ratio by 10 percentage point would raise GDP growth rate of over 0.5 percentage points. In a different specification, the same scenario leads to 1% increase in annual growth rate per capita.
Beck and Levine (2004)	• As the authors interpret, consider an increase in Mexico's turnover ratio by 0.32 percentage point which would move Mexico to the average of OECD countries in 1996-98. This scenario would accelerate economic growth rate by 0.6 percentage point per year. • If Egypt's Turnover Ratio (10%) had been the sample mean of 37%, Egypt would have enjoyed nearly 1 percentage point higher annual growth.
Shen et al. (2006)	• A 10 percentage point increase in stock market liquidity leads to a 1.14 percent increase in economic growth.
Levine (2002)	• The level of financial activity, as measured by the authors, in Peru and Argentina was. −6.6 and −6.0, respectively. Had this level increased to the level of financial activity in Chile (i.e. -4.0) over the 1980–1995 period, real per capita GDP growth would increase by 1.15 percentage points for Peru and 0.89 percentage points in Argentina. As the authors suggests, this is a large effect because over this period, Peru shrank at a rate of −1.8% per year while Argentina stagnated with an annual growth rate of 0.04%. • If Chile were to raise the same variable to the level of Thailand (i.e. similar countries in terms of GDP per capita in the sample period)- a change from -4.0 to -2.0-, Chile would have grown 0.86 percentage points faster each year (Chile's real per capita annual growth over the period averaged 3.7%).
Rousseau and Wachtel (2002)	• Raising stock market liquidity by 10 percentage points would accelerate growth rate by 0.5%. Authors find similar results in terms of the effect of banking sector development and stock market development.

APPENDIX

Table 5. Finance-Growth Nexus: Contractual Savings Institutions Depth	
References	**Empirical Findings**
Chen et al. (2012)	• A 1% increase in life insurance market development raises economic growth by 0.01-0.05 percentage points. When conditioned on the level of financial development (i.e. capital market development), the effect of life insurance on economic growth turns negative and significant. Authors interpret this as an indicator for a trade-off between life insurance and stock market development. • The effect of life-insurance market development on economic growth is positive in Latin America (i.e. 0.06 percentage points) while not significant in Sub-Saharan Africa. The effect of life-insurance market development on growth is larger and significant in low-income countries (i.e. 0.02 percentage points) compared to middle-income countries (i.e. 0.001).
Webb et al. (2002)	• A 2% increase in life insurance penetration results in 1.12% increase in average GDP per capita. A 1% increase in average GDP per capita growth leads to a 0.4% increase in life insurance penetration. Raising private-credit-GDP by 10% leads to a 0.42% increase in average GDP per capita growth. Authors also find the development of the banking sector and the insurance sector has a larger effect jointly than their individual effects and the sum of their individual effects (i.e. a 2% increase in the interaction term leads to a 2.2% increase in real GDP per capita growth).
Arena (2008)	• A one-standard deviation increase in life-insurance-premiums-to-GDP implies an increase of 0.37% in economic growth, while the same scenario leads to 0.39% on economic growth for non-life insurance premiums. When combined, real GDP growth would increase by 0.47%. The effect of life insurance is driven by high-income countries (0.58%) while the effect of non-life insurance is driven by both high-income (0.53%) and developing countries (0.25%). Complementarities are detected. The larger the financial sector, the larger the effect of insurance on growth.
Curak (2009)	• A 1 percentage point increase in life insurance premium-to-GDP ratio increases economic growth by around 0.87 percent, while the effect is 1.93% and 0.53% for non-life- and total-insurance-premiums-to-GDP ratios, respectively.
Han et al. (2010)	• Economic growth accelerates by around 4.8% in response to a 1% increase in total insurance density. Let's compare this result to the effect of banking activities on economic growth which is not more than 1.8% given a 1% increase in private-credit-GDP ratio. Consider life insurance density. Economic growth accelerates by 1.7% in response to a 1% increase in life insurance density. The effect is much larger for non-life insurance density at around 4%. • Consider the effect of two indicators combined. The coefficient estimate is around 9% and 2% in developing and developed countries, respectively. Life insurance only has a significant impact on economic growth for the developing economies. Economic growth increases by 2.5% when life insurance density increases by 1% for the developing economies. In developing economies, the effect of non-life insurance density is much more strongly associated with economic growth in developing countries relative to developed countries.
Hu (2005)	• Pension reform towards fully funded systems can accelerate GDP growth by 1% annually. Regarding the pension funds' assets, author finds a negative effect on GDP growth for OECD countries but positive effect in EMEs. Specifically, a 1% increase in pension funds' assets/GDP increases growth rate by 2.8% in EMEs.
Holzmann (1997)	• Long term growth in Chile is 1-3% higher owing to the effects of the pension reform operating via financial markets.
Davis et al. (2008)	• A one-percent increase in logarithm of pension-funds-asset/GDP ratio leads to a 0.167% increase in log output per worker in emerging markets sample while the effect is around three times smaller at 0.061 percent in OECD sample.
Zandberg et al. (2010)	• The growth in pension-assets-to-GDP ratio is endogenous to capital market returns and economic growth is essentially correlated with capital market returns. Hence, when returns are controlled for, there exists no relationship between economic growth and pension's assets growth.
Avram et al. (2010)	• No statistically significant effect of insurance penetration but positive and significant effect of insurance density on economic growth. This positive effect is driven by wealthier countries with good institutions. The magnitude of this positive effect is on average 0.93% acceleration in economic growth.
Omoke (2011)	• The insurance sector did not reveal any significantly positive effect on economic growth in Nigeria between 1970 and 2008.

APPENDIX

Table 6. Finance-Growth Nexus: Nonlinearities and Heterogeneities	
References	**Empirical Findings**
Rioja and Valev (2004a)	• **Income Threshold:** A 10 percentage point increase in financial development results in a 0.20 percentage point higher growth rate in high-income countries but there is no significant association in developing countries.
Rioja and Valev (2004b)	• **Income Threshold:** A 10 percentage point increase in private-credit-to-GDP ratio would lead to a 0.61 percentage point increase in the growth rate in middle income countries but the effect is much smaller in size and significance in low-income and high-income countries.
Rousseau and Wachtel (2002)	• **Inflation Threshold:** A 10% increase in the liquid liabilities ratio (private-credit-to-GDP ratio) leads to an increase in annual growth rate by 0.15 (0.6-1.0) percentage points. To depress this positive growth effect, inflation would have to increase by more than 300 percentage points. When inflation falls between 6-8% thresholds, the positive effect of finance on economic growth turns statistically significantly.
Huang et al. (2010)	• **Inflation Threshold:** The positive effect of financial sector development on economic growth disappears for countries with inflation rates above 7.69% inflation.
Demirguc-Kunt et al. (2011)	• **Income Threshold:** The effect of stock market development on economic growth is higher for countries below the 20th percentile in the distribution of economic development compared to countries above the 75th percentile. Quantitatively, while moving to the next percentile for the former countries result in 5% increase in growth rates, the same scenario adds at best 1% to the growth rates of latter countries. • **Income Threshold:** The role of stock market development becomes more important as countries develop. While the association between banking sector development and economic growth is larger for low-income countries, diminishing returns kick in quickly as countries develop. The same result does not hold for stock market development as the diminishing returns kick in much later. According to the authors, the positive effect of banking sector development on economic growth switches sign when countries move beyond $1,032 (36th percentile) GDP per capita.
Rousseau and Wachtel (2009)	• **Finance Threshold:** The effect of liquid-liabilities-ratio-to-GDP on economic growth reaches its maximum when the ratio is around 40%. • **Income Threshold:** The magnitude of the effect of same financial depth proxy is higher for developed countries relative to developing countries (i.e. 0.08 vs. 0.35 percentage points increase in growth rates in response to a 10% increase in liquid-liabilities-to-GDP ratio).
Rousseau and Yilmazkuday (2009)	• **Inflation Threshold:** The positive effect of financial depth on economic growth is highly sensitive to changes in inflation rates when inflation is between 4-19%. A rise in inflation by 20 percentage points would make financial development act on growth as if financial depth were only about 36.4%, while in reality it is 50%. Note that low-income countries are much more sensitive to such inflation hikes relative to high-income countries. Specifically, in response to the same scenario above, real GDP per capita growth rate would decrease much more drastically in low income countries (0.9%) relative to high-income countries (around 0.4%).
Cecchetti and Kharroubi (2012)	• **Finance Threshold:** From 2005-2009, Irish and Spanish employment in the finance sectors grew by 4.1% and 1.4% per year on average. At the same time, output per worker in the economy fell by 2.7% and 1.4%, respectively. Had financial sector employment been constant in these two countries, it would have saved 1.4 percentage points from the decline in Ireland and 0.6 percentage points in Spain. In other words, financial sector employment growth is associated with 33% and 40% of the drop in Irish and Spanish output per worker, respectively. • **Finance Threshold:** Using employment measures, authors find that when the financial sector represents more than 3.5% of total employment, further increases in financial sector size tend to be detrimental to growth. Relative to a country where the financial sector's share in total employment is stable, a typical financial boom – employment growth of 1.6% per year – reduces growth in aggregate GDP per worker by roughly one half of 1 percentage point.
Barajas et al. (2012)	• **Regional Heterogeneity:** The same level of banking depth in the MENA region produces growth effects that are about one-third smaller than in other regions. For a country-specific example, authors compare Armenia (non-MENA) and Libya (MENA). These are comparable countries in terms of financial depth (i.e. private-credit-to-GDP ratio at 10%). A 20 percentage point increase in financial depth would raise economic growth by 1.3 percentage point in Armenia but only around 0.5 percentage point in Libya. • I**ncome Threshold:** Authors refer to a widely known result that finance has positive effect on growth for countries with GDP per capita above $770, which corresponds to the 73rd percentile for low-income countries in 2008.
Beck et al (2013)	• **Period Heterogeneity:** In the period of 1995-2007, the link between finance and growth disappears. • **Income Threshold:** Financial intermediation is associated with lower volatility in low-income countries.
Favara (2003)	• Author argues that the effect of financial development on economic growth is increasing monotonically only at intermediate levels of financial sector development. At very low and high levels, the effects are inverted, similar to Rioja and Valev (2004b) above.

APPENDIX

Table 7. Finance-Growth Nexus: Financial Liberalization	
References	**Empirical Findings**
Roubini and Sala-i Martin (1992)	• Moving from low level of economic distortions to high level of economic distortions reduces growth rate by 3.1% per year. • Having excessively negative real rates (<-5) significantly harm economic growth at around 1.1% per year.
Henry (2003)	• Compared to the pre-liberalization average growth rate of output per worker, the author finds that emerging economies accelerate their growth rates on average by 2.3 percentage points from 1.4% to 3.7% thanks to equity market liberalization. Also see Henry (2000) where the author detects, in a sample of 11 developing countries, private investment booms following stock market liberalization for the majority of the countries. On average, countries experience 22 percentage point increase in sample mean of private investment in the three years after stock market liberalization.
Levchenko et al. (2009)	• A one standard deviation change in de facto financial openness is associated with a 1.3 percentage point increase in the output growth rate or 0.16 standard deviations. The positive effect occurs within the first 6 years.
Ranciere et al. (2006)	• The authors decompose the two effects of financial liberalization: the direct positive effect and indirect negative effect through crisis propensity. On net, they find that the effect of financial liberalization on growth is around 1% increase in per-capita annual growth rate.
Mattoo et al. (2006)	• Countries with fully open financial sectors grow 1.2% faster than those without fully open financial sectors. This effect is larger for developing countries among which those with fully opened financial systems grow 2.1% faster than the others.
Bekaert et al. (2005)	• Authors show that equity market liberalization raises long-term growth by about 1% per year. Countries with higher than median private-credit-to-GDP ratio experience significantly faster economic growth after liberalization (i.e. 0.57 percentage point difference between two groups). • The growth effect of financial liberalization is conditional on the quality of institutions. Countries with higher than median level of quality institutions grow 0.84 percentage points faster than countries below the median. A specific example is accounting standards. Countries with higher than mean accounting standards grow 1 percentage points faster than those below average.
Bekaert et al. (2001)	• The real GDP per capita growth rate increases on average by 1.4% per annum following equity market liberalization. • The total impact on economic growth over the 5-year period is 4.1%. Over half of the additional growth (2.3%). occurs in the first 2 years and 87% of the 5-year growth impact occurs in the first 3 years.
Klein and Olivei (1999)	• An increase in capital account liberalization from zero to the mean value in the sample of the non-zero observations (0.40 p.p.) would raise growth by 2.7 (5.3) percentage points when liquid-liabilities-to-GDP (private-credit-to-GDP). These are estimates from 3SLS procedure. Note that the results apply only to OECD members so we consider it as a benchmark study. In non-OECD, the effect of capital account liberalization is not statistically significant.
Tornell et al. (2004)	• Following capital account liberalization, growth of GDP per capita accelerates by 2.4 percentage points per year. In different specifications, the effect changes from 1.7 to 2.5 percentage points. The increase in GDP growth is greater following financial liberalization than following trade liberalization (2.8% vs. 1.6%) • Liberalization without fragility is ideal but not the case for developing countries. Compare India and Thailand. Moving from a risk-averse country like India to a risk-lover country like Thailand with booms and busts increases the average long-run GDP growth rate by 0.54 percentage point a year. Since Thailand grew about 2 percentage points faster per year than India, a quarter of this differential can be attributed to credit risk taking.
Bonfiglioli and Mendicino (2004)	• Capital account openness on its own has no significant effect on growth. Equity market liberalization does. Countries which liberalized their equity market grow on average 1.2% faster than those who did not. Once the occurrence of bank crises is controlled for, capital account openness has a significant and positive effect on growth. Countries with open capital accounts grow 9.1% faster than others.
Bonfiglioli (2005)	• The author studies the effect of capital account liberalization and equity market liberalization on the sources of growth and finds that developing countries that liberalized their capital markets (equity markets) experienced 13% (8.3%) increase in their total factor productivity while no robust evidence is found on capital accumulation.

APPENDIX

Table 8. Finance-Growth Nexus: Growth Collapses, Output Losses and Fiscal Costs	
References	**Empirical Findings**
Cerra and Saxena (2008)	• Persistent and negative effects of currency, banking and twin crisis on output. Magnitude of output losses vary by income groups. Average output loss followed by a currency crisis is 5% for low- and middle-income countries. Banking crisis leads to larger output losses at 7.5% loss. When twin crisis are considered, average output loss increases to 10% percent after three years following the crisis. Rebound from crises considered above is only less than 1 percentage point even after 10 years following the crisis. • There exists a monotonic relationship between income and frequency of crises. Low-income countries experience crises almost twice as frequent as high-income countries. The larger output losses in low-income countries relative to high-income countries partly emanate from high frequency of crises.
Laeven and Valencia (2010)	• This article presents a database on systemic banking crisis and output losses for a large sample of countries. For instance, they estimate that Argentina lost 71% of its output (i.e. difference between actual and trend real GDP as a percentage of trend real GDP over four years during 2001-2003 period.)
Reinhart and Rogoff (2009)	• Output falls on average by over 9 percent, although the duration of the downturn is considerably shorter than for losses in employment. The drop in output is less for advanced economies compared to emerging economies. • Historically, the largest output losses occurred in the US during the Great Depression (around to 29%), Argentina in 2001 (around 22%) followed by Indonesia and Thailand around (14-12% respectively) during the Asian crisis.
Fallon and Lucas (2002)	• GDP growth decreased during the Asian financial crisis (1998) by 13.7% in Indonesia, 5.8% in Korea, 7.6% in Malaysia, 0.4% in Thailand, 4% in Argentina (1995), 6.2% in Mexico (1995) and 5.5% in Turkey (1994).
Furceri et al. (2012)	• Financial crises are estimated to lower potential output by around 1.5–2.4% on average, with most of the impact coming from the effect on capital. The magnitude of the effect increases with the severity of the crisis. (Estimates from OECD sample so take it as a benchmark.) • The impact of financial crises depends on the level of financial development and institutional quality of countries. For instance, while more financially developed countries incur larger costs, countries with better institutions incur smaller costs.
Kroszner et al. (2007)	• In the framework of Rajan and Zingales (1998), the authors find that during a banking crisis, sectors that heavily depend on external finance in countries with high external financial dependence experience larger contractions (i.e. 1.6%) in growth in value added relative to sectors that do not heavily depend on external finance in countries that also do not heavily depend on finance. They suggest that external financial dependence account for 50% of the contraction in average growth in value added.
Hoggarth et al. (2002)	• Cumulative output losses incurred during crisis periods are 15-20% of GDP on average. The losses are higher in developed countries. Banking crisis are costly for emerging economies when there is a currency crisis. In the literature, the finding is that the cost of banking crisis on average is around 6-8% for single banking crisis but if combined with a currency crisis then the cost is over 10% of annual GDP. The cumulative resolution costs of banking crises appear to be larger in emerging-market economies (on average 17.5% of annual GDP) than in developed ones (12%). The average resolution cost for a twin crisis in is 23% of annual GDP compared with 'only' 4.5% for a banking crisis alone.
Hawkins et al. (2001)	• Estimated cost of crisis as a percentage of GDP: Chile (1978-1983) 41%, Mexico (1995-1997) 14%, Argentina (1995) 2%, Brazil (1995) 5-10%, Thailand (1997) 24%, South Korea (1997) 17%, Indonesia (1997) 58%, Malaysia (1997) 10%, Philippines (1998) 7%, Turkey (2000) 6% of GDP.
BCBS (2010)	• Authors provide various important estimates based on their own literature review. They find the median drop in output across crises and across studies to be around 10%. They also refer to some studies that find 2-10% difference between pre- and post-crisis growth paths. Finally, the cumulative output losses are said to range from 20% to 100% and even more of pre-crisis output. • A 1 percentage point reduction in the probability of crises generates a benefit on the order of 0.2% of GDP per year. The more severe the crisis, the more the gain from crisis probability reduction, up to 1.6% of GDP.
Barajas et al. (2012)	• Authors find that in the MENA region financial crisis pull down the positive effect of financial depth on economic growth on average by around one half.
Ranciere et al. (2006)	• Financial liberalization increases the probability of a twin crisis on average by around 1.45 to 1.93 percentage points. The growth cost of financial liberalization ranges from -0.14 to -0.19 percentage points. Even then, the net positive effect of financial liberalization is between 1 and 1.5 percentage points.
Koivu (2002)	• If Romania's average share of non-performing loans of all loans had been the average of the sample at 19.8% instead of 37%, GDP growth would have been 1.9 percentage points higher.

APPENDIX

Table 9. Finance-Growth Nexus: Regulations, Banking Structure and Ownership	
References	**Empirical Findings**
BCBS (2011)	• Potential effects of Basel III on output: "Each percentage point increase in the capital ratio causes a median 0.09 percent decline in the level of steady state output, relative to the baseline. The impact of the new liquidity regulation is of a similar order of magnitude, at 0.08 percent." The central estimate is that level of GDP will be 3.2% lower than it would otherwise be (i.e. relative to the baseline scenario) after five years with an output loss of 0.7% per annum.
Cournede and Slovik (2011)	• Authors find the following results, "To meet the capital requirements of Basel III, lending spreads by banks will have to increase on average by around 15 basis points. A 1 percentage point increase in the ratio of bank capital to risk-weighted assets could result in an average negative impact of 0.20% on the GDP level five years after implementation, leading to a 0.04 percentage point decline in annual GDP growth. For adjustment taking place ahead of the schedule, the negative impact of Basel III on annual GDP growth was estimated to be in the range of 0.05 to 0.15 percentage points over the medium term." This empirical estimate comes from OECD sample. So again a benchmark.
Rossi (1999)	• The author finds that prudential regulations have positive and statistically significant effect on economic growth. The economic effect is quantified as follows: a one unit increase in the prudential regulation index (ranging from 1-4) leads to increases real GDP per capita growth rate by 2.29%. Supervision is found to have no direct effect on economic activity.
La Porta et al. (2002)	• A 10 percentage point increase in the proportions of assets of the largest banks owned by the government is associated with a decline in the annual growth rate of about 0.24 percent. This effect works only in developing countries, not in industrial countries. Moving from the average government ownership in French legal origin sample to English legal origin (i.e. a 30 percentage point increase) implies a 0.72% decrease in annual GDP growth.
Adrianova et al. (2012)	• A replication of the above study with additional institutional covariates. In an updated sample from 1995-2007 they find that a 50% increase in government ownership raises long-run GDP growth by 1.8 percent per annum.
Bayraktar and Wang (2006)	• A one-percent increase in the share of foreign bank assets in the economy raises economic growth by 0.171%. Once various bank variables are controlled for, this effect is reduced to 0.130% and 0.091% and turns insignificant when overhead costs are controlled for. • As for the indirect effect, a one-percent increase in the foreign bank asset share leads to a 0.038% decrease in the net interest margin. No significant effects are found on costs and profits. Yet, a one-percent increase in profits lead to 0.6% increase in growth while a one percent decrease in overhead cost to total assets ratio leads to 0.4% increase in economic growth.
Fernandez et al. (2010)	• Activity restrictions on commercial banks are found to have a mitigating effect for the negative effect of concentration on growth. Specifically, a one-standard deviation increase in regulations reduces the negative effect of bank concentration on economic growth on average by more than 4 times the standard deviation of economic growth. Supervision does not seem to have a significant effect.

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Table 10. Finance-Growth Nexus: Banking Sector Efficiency	
References	**Empirical Findings**
Berger et al. (2004)	• An increase in small banks' market share by 10 percentage point leads to an increase in GDP growth on average by around 1-2 percentage points. An increase in the efficiency of small banks leads to about half of percentage point increase in GDP growth.
Cojocaru et al. (2011)	• If Bulgaria were to achieve the interest spread of Czech Republic (i.e. 34.22 vs. 5.38), then Bulgaria would have grown 3.77% faster than the counterfactual. • If Uzbekistan were to reduce the concentration from 0.92 to the level of Slovenia (0.68), then Uzbekistan would have grown 0.79% faster.
Koivu (2002)	• If the average interest rate margin in Bulgaria were to be at the average of the transition countries (23 percentage points) instead of 51 percentage points during the period of investigation, Bulgaria's annual GDP growth would have been 1.2 percentage points faster. Georgia would have grown 4.6 percentage points faster if its interest margin had been on the average level of the data. The average interest rate margin stands at 4.1 percentage points in Estonia at lowest, and at 74.4 percentage points in Tajikistan. Thanks to this difference in margins, Estonia grew 3 percentage points faster annually than Tajikistan.
Demirguc-Kunt et al. (1998)	• A one-standard deviation decrease in bank overhead expenses as a share of total bank assets implies that real per capita GDP growth would have been one percentage point faster. If Mexico had the sample mean value of overhead/ta (3.5) instead of its own (4.9), Mexico would have grown 0.8 percentage points faster.
Levine (2002)	• If Chile were to have the same level of financial efficiency (0.20) as Thailand (2.33), Chile would have grown by 1.12 percentage points faster. The effect of financial efficiency here is larger than the effect of financial depth.

Table 11. Finance-Growth Nexus: Banking Sector Inclusion	
References	**Empirical Findings**
Burgess and Pande (2005)	• A 10% increase in the number of rural locations banked per capita leads to a decrease in rural poverty by around 4.2%. The same scenario leads to an increase in total output by around 3.4%.
Bhattacharya and Wolde (2010)	• Reducing access to finance constraint from the MENA region average (32.9) to World average (30.7) could have increased real per capita income growth, by about 0.1 percent annually. Authors estimate the growth effects for various MENA countries. Under the same scenario, the growth effect would be 0.88% in Algeria, 0.55% in Mauritania, 0.49% in Lebanon, 0.24% in Pakistan and 0.20% in West-Bank and Gaza.
Beck et al. (2005)	• The composite index for financing obstacle negatively affects small firm's growth more severely than the large firms' growth. The differential effect is both statistically and economically significant at around 4%. The largest differential impact is for one of the financing obstacle of "having connections with the bank" with 5.1% differential growth effect. • Given the financial constraints, a 1% increase in private-credit-to-GDP raises firm growth by 3.9%. So, while financing constraint has negative effects on firm growth, firms in better financially developed countries do not suffer from such financing constraints. • Last but not least, a marginal increase in the level of financial development relaxes the constraints on smaller firms much more than it does for larger firms (i.e. the differential impact is 12.6%).
Beck et al. (2004)	• Compare the growth of an industry with a relatively large share of small firms and an industry with a relative low share of small firms across two countries with different levels of financial development. Finance relaxes constraints on small firm growth. • The furniture industry (75th percentile of Small Firm Share) should grow 1.4% per annum faster than the spinning industry (25th percentile of Small Firm Share) in Canada (75th percentile of Private Credit) than in India (25th percentile of Private Credit). Since the average growth rate in their sample is 3.4%, this is a relatively large effect.
Ayyagari et al. (2006)	• Firms that report minor financing constraints as opposed to no constraints at all grow 3.2% slower.
Demirguc-Kunt et al. (1998)	• Authors calculate how much external financing firms need to invest in profitable investment projects that would expand their businesses. They find that firms in countries with more active stock markets and better legal systems are more likely to experience higher growth.
Demirguc-Kunt and Maksimovic (2002)	• Authors find that the effect of financial sector development on firm growth varies by the quality of the contracting environment in the country. A larger proportion of firms obtain outside financing when the contracting environment is conducive to the development of a large banking sector and an active stock market. While the development of securities markets is more related to long-term financing, the development of the banking sector is more related to the availability of short-term financing.

APPENDIX

Table 12. Finance-Employment Nexus	
References	**Empirical Findings**
Pagano et al. (2012)	• They compute the percentage differential in the real growth rates between industries at the 75th and 25th percentile in terms of external dependence (i.e. textiles vs. non-metal products) when they are located in countries at the 75th and the 25th percentile in terms of financial development (i.e. Ireland vs. Panama or Spain vs. El Salvador). The differential ranges between 0.23% and 0.83% for employment. Hence, the effect of financial development on employment growth is between 0.23 and 0.83%. • Authors also refer to ILO's estimate that recovering back to pre-crisis levels of employment will take creation of 20 million jobs.
Reinhart and Rogoff (2009)	• Banking crises are associated with drastic declines employment. The unemployment rate increases by 7 percentage points over the down phase of the cycle, which lasts on average around four years. The record is held by the US in the aftermath of the Great Recession where unemployment rose by 20 percentage points. Note that there is some heterogeneity across countries. For instance, the performance of advanced economies is worse than that of Asian emerging economies with regards to unemployment rates.
World Bank (2009)	• Descriptive statistics on the loss of employment following the recent global financial crisis. "Preliminary survey evidence from Eastern Europe and Central Asia (ECA) indicates that on average, registered unemployment increased by approximately 20 percent from March 2008 to March 2009. However Russia, Turkey, and the Baltic states have been hit particularly hard with increases of more than 200 percent in Latvia and Lithuania, 300 percent in Estonia, and more than 60 percent in Turkey." • "In India, the Ministry of Labor indicates that more than 500,000 jobs were lost during the last three months of 2008 in export-oriented sectors alone, including gems and jewelry, autos, and textiles." • According to ILO, "the number of workers categorized as working poor (using the US$1.25 per day poverty line) is estimated to increase by 233 million between 2007 and 2009. This is an increase of 7.2 percentage points, with 103 million additional working poor in South Asia and 36 million in Sub-Saharan Africa. With the US$2 per day poverty line, the additional number of working poor rises to 1.2 billion (up 1.5 points), with the largest increase in East Asia (67 million), followed by South Asia (52 million)."
Furceri (2012)	• Financial crises are estimated to lower employment by around 0.7%. The main effect of the financial crisis is on capital so the effect of financial crisis on output operates mainly through capital, not labor or TFP. Theoretically, the effect of financial crisis on labor force participation is ambiguous because the encouraged and discouraged worker effects operate in opposite directions. Yet, the effect on structural unemployment rate is evident due to hysteresis. This is evidence from OECD countries.
Aterido et al. (2007)	• Firms that have access to overdraft facilities have on average close 1 percentage point faster employment growth, while mean employment growth is 10.3%. • In Argentina and Mexico increasing the share of external financing for investments by 10 percentage points would increase overall employment by 5 percentage points. The same increase in finance for working capital would raise employment by 8 percentage points. • In Argentina, reducing the incidence of corruption by 10 percentage points would increase overall employment in the business sector by 0.5 percentage point.
Park et al. (2013)	• Authors consider the effect of financial liberalization on corporate employment. A one percentage point increase in foreign loan to total loan ratio leads to 0.0003 units increase in employment. Yet, the ratio increased quite a lot after liberalization (i.e. mean ratio is 0.542 and 1210.43 after liberalization.)
Choudhry et al. (2010)	• A one-percent increase in the index of systemic crisis reduces employment rate by 0.394 percentage points. However, this significant negative effect is driven mostly by high- and upper middle-income countries and there seems to be no significant association between financial crisis and employment rate in lower middle income and low-income countries. The effect is a 1.32 and 1.01 percentage point's decrease in employment rate in high and upper middle income countries. • Disaggregating by the type of crisis: there are negative and statistically significant effects of currency crisis (1.07) and debt crisis (1.44) and the sum of bank, currency and debt crisis (0.612). Looking at the unemployment rate, it seems that financial crisis have positive effects on unemployment that is statistically significant. However, the effect of financial crisis peaks in the second-to-third year after the crisis and after five years there seems to be no association between the two. Specifically, the effect peaks at the third year with a coefficient estimate of 1.166 while the measure is 1.222 for the second year. The first year it is 0.754.
Aterido et al. (2010)	• In Sub-Saharan Africa, a one-standard deviation increase in the share of investments financed externally would reduce employment growth by 5.8%. Since sample average for employment growth is 11%, authors detect a large effect. As noted in the text, this surprising association is driven by micro-firms. The same scenario would lead to an increase of 3.6% in employment growth in non-African low income countries.

APPENDIX

Table 13. Determinants of Financial Development A. Financial Depth	
References	**Empirical Findings**
Barth et al. (2004)	• In Egypt, where many restrictions on bank activities are imposed (1.2), a decrease in activity restrictions to the sample mean (0) would increase bank development by 0.14 percentage points. This would increase Egypt's bank development from 0.49 to 0.63, which is about the level in Italy (whose restrictions index around the mean value of zero.) • In a country like Korea with an intermediate level of political openness, a one standard deviation increase in Official Supervisory Power would decrease bank development by 0.09 percentage points. This large change would move the level of bank development in Korea (0.73) toward that of Chile (0.63), which is near the sample average. In contrast, the same increase in official supervisory power in France would be associated with an increase in bank development by 0.07 percentage points. • A one unit increase in the Private Monitoring Index in a country like Bangladesh with both weak private monitoring and low bank development would increase bank development by about 32%.
Detragiache et al. (2005)	• Authors find that a one-standard deviation increase in credit registry leads to a 0.22 standard deviation increase in financial depth.
Bonfiglioli et al. (2004)	• Countries with open capital accounts have 56 percentage point higher private-credit-to-GDP ratios than others. We take this estimate more of a descriptive statistic.
Chinn and Ito (2002)	• In LDCs, a one unit increase in financial openness index leads to a 0.5% increase in the growth rate of the stock market liquidity. • The impact is higher in emerging markets compared to LDCs. Between 1992 and 1997, Argentina increased financial openness by 3.08 units which led to an increase of 2.1% in the annual growth rate of stock market value traded and 4.3% stock market turnover. The same amount of change in openness would lead to a 1.6% increase in value traded in LDCs but no effect on stock market turnover. • A one unit increase in openness leads to a 0.5% increase in private credit growth in EMG. This magnitude is larger than the effect of openness on private credit growth in the full sample.
Chinn and Ito (2006)	• Peru increased its financial openness level from –1.84 to 2.27 between 1990 and 1995. Given its low level of institutional quality index (–1.65), the increase in financial openness would reduce the growth rate of stock market total value by 4.1% point annually. In order for capital account openness to contribute to the development of equity markets, countries must score a level of legal/institutional development greater than –0.68. • Emerging market countries with an average value of institutional quality index of –0.28 on average benefit from opening their capital accounts. Take Tunisia which has a value of index closest to the threshold level (its value is –0.683). Countries marginally above the threshold level include India and Morocco (–0.561 and –0.566, respectively) among others, while those closely below include Mexico and Iran (–0.793 and –0.738, respectively) among others.
Ito (2006)	• A one-unit increase in capital account openness leads to a 0.24 percentage point increase in stock market total value traded in Asia but reduces it by 0.40 percentage points in Latin America and 0.12 percentage points in non-Asia LDCs. In Emerging markets, the total effect is 0.41 percentage points. So without good legal/institutional environment, no positive effects on the stock market development. • Thailand increased its openness by 1.10 but since it is better in institutional setup, this smaller increase is expected to lead to an increase of 1.2 percentage point annually. The sample average for developing countries for growth of stock market total value traded is 1.99% per year.
Yartey (2008)	• A one percentage point increase in banking sector development increases stock market development by 0.197 percentage points. The effect of stock market liquidity is even higher at more than 0.4 percentage point increase under the same scenario. We take these as simple correlations.
Levine (1998)	• A one-standard deviation increase in creditor rights (1.1) would lead to a 0.10 percentage point increase in bank development which is around 12% of the mean value of bank development. Enforcement has a larger effect; a one-standard deviation increase (2.2) would lead to a 0.35 percentage point increase in Bank (around 40% of the mean value of Bank.) Also a one standard deviation increase in both creditor rights and enforcement would raise bank development by 0.45 percentage point.
Pistor et al. (2000)	• If Russia and Poland had the same rating for rule of law, 20% of the difference in market capitalization between the two could be explained. • For shareholder protection, the quality of securities market regulations has positive and significant effect. A one point increase (index is from 0-6), leads to 1.5 percentage point increase in market capitalization. In a different specification, they find that a one point increase in the creditor protection index leads to 5 percent increase in Private-Credit to GDP.
Detragiache et al. (2008)	• Intense banking reform episodes lead to drastic financial deepening. Specifically, the ratio of Private Credit-GDP increases by about 10 percentage points over five years. The magnitude of banking sector deepening after banking reforms in developing countries is twice as large as in developed countries. • The long-run effect of the banking reforms is significant in countries with above the median property rights index. Banking reform index have no effect on financial development in countries with better supervisory environment. • At a five year horizon, the private credit to GDP ratio increases by 30 percent in countries with good property rights thanks to a large banking reform. A typical country, however, would experience an increase 8 percentage points thanks to the large reform. In countries with weak political institutions, the estimated effect is close to zero.
Djankov et al. (2007)	• While a one-point increase in the score of creditor rights leads to a 4 percentage point (minimum) increase in financial depth, introduction of credit information bureaus (both public and private) leads to 17 percentage point (maximum) increase in financial depth.
Levine, Loayza and Beck (2000)	• According to their coefficient estimates, if Uruguay, the lowest ranked country in accounting standards with a score of 31 out of 90, were to increase her standards to Chile's level with median (!) accounting standards in the sample (i.e. 52 out of 90), then Uruguay would have improved her banking sector depth by 37.8% which would imply Uruguay passing over Chile in terms of financial depth. Chile's banking sector depth in the sample is 27.81% while Uruguay's average banking sector depth stood 21.21%.

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Table 13. Determinants of Financial Development B. Financial Stability	
References	**Empirical Findings**
Sundararajan et al. (2001)	• Authors do not find any statistically significant relationship between BCP non-compliance and financial system soundness. Yet, in countries with high loan growth, BCP non-compliance matters for financial soundness. Demirguc-Kunt et al. (2010) arrives at a similar conclusion.
Das et al. (2004)	• A one-unit increase in regulatory governance index based on FSAP leads to a 0.696 unit increase in financial system soundness index based on capital adequacy and NPL ratio weighted by the bank credit/GDP ratio.
Demirguc-Kunt et al (2006)	• A decline in compliance with BCP from largely compliant to materially non-compliant status would lower banking soundness (i.e. Moody's financial ratios and z-scores) by one category (i.e. the rating of a bank from D to D-). The results are not robust to inclusion of institutional covariates. Chapters 2 and 5 of BCP are the drivers of this relationship (entry and disclosure).
Demirguc-Kunt et al. (2002)	• If the coverage of the deposit insurance scheme were to be at Switzerland's level, the crisis probability in Kenya would have declined from 26.8% to 16.6%. In the Philippines, from 21.0% to 3.8%. In Venezuela, from 17% to 12.5%. • This significant positive relationship does not hold in countries with good institutions.
Angkinand (2009)	• The effects of bank regulation in reducing the severity of crises are substantial and economically significant. Note that the sample average of output cost of 3% of GDP per banking crisis episode. A 1% increase in the deposit insurance coverage limit relative to deposit per capita decreases the output cost around by 1 percentage point. • A one unit increase in the capital requirement stringency (on a scale 0–10) lowers the output cost by 0.8 percentage point. A one unit increase in the restrictions on bank activities (on a scale 0–14) increases the output cost by 0.4 percentage point.
BCBS (2010)	• Introducing Basel III is expected to decrease the severity and probability of crisis. Increasing the capital ratio from 7% to 8%, with no change in liquid assets, reduces the probability of a banking crisis from 4.6% to 3.0%. The decrease in the likelihood of crises is three times larger when capital adequacy ratio is increased from 7% to 8% than when it is raised from 10% to 11%. • A 1 percentage point increase in capital requirement (with no change in liquidity ratios) translates into a 0.09% median loss in level of output, with a range from 0.02% to 0.35%. Hence, net benefits are positive for non-excessive capital adequacy ratios.
Gonzales (2005)	• The higher the charters value of a bank, the lower the probability of risk-taking. The charter value of banks with low regulatory restrictions is 0.15 basis points higher than for banks in countries with high regulatory restrictions. Similarly, the charter value of banks in countries with deposit insurance is 0.24 basis points higher than for banks in countries without deposit insurance. • A 1% increase in Tobin's Q reduces non-performing loans by around 18% and stock price volatility by 13% in countries with a weak contracting environment and fewer regulatory restrictions. The effect of charter value on bank risk-taking (i.e. non-performing loans) in banks with weaker regulation but high-quality legal system and enforcement is a decrease of 11.3%. • Deposit insurance in countries with a poor contracting environment and stricter regulation still leads to an increase in the average ratio of non-performing loans of 5.89 basis points.
Beck et al. (2006a)	• Concentrated banking systems are less vulnerable to systemic banking crisis. A one standard deviation increase in concentration leads to a decrease in the probability of crisis by 1%. Given that crisis probability is around 5%, the magnitude is quite large.
De Haan et al. (2009)	• Having better supervision reduces the positive effect of financial liberalization on banking crisis by 1.7%, where the probability of systemic banking crisis is 18.9% in their sample. This reduction in probability thanks to supervision peaks for the interest rate control dimension of financial reform. Having better supervision reduces the probability of systemic banking crisis by 4.4% in the presence of interest rate liberalization. They also find that supervision has no effect on non-systemic banking crisis.
Papi et al. (2012)	• The probability of banking crisis is 18.9% lower for countries which signed an IMF lending agreement and were compliant with the IMF conditionality on financial sector reform. A lending agreement without compliance lowers the probability of banking crisis only by 6.8%.
Yeyati and Micco (2003)	• A one-standard deviation increase in the share of assets held by foreign banks reduces systemic banking risk by 1.13 percentage points. Note that the mean of systemic risk is 35.04.
Micco and Panizza (2006)	• In developing countries, the share of NPL of public banks is higher than that of private domestic banks (i.e. 6.5%). Difference is quite large given that the average NPL ratio developing country average 12%.
Schaeck et al. (2006)	• Competitive banking systems have lower probability of banking crisis and have longer time period for bank survival. A one standard deviation (0.13) increase in the H-statistic (towards more competitive system) leads to a 1.8% decrease in the probability of observing a crisis. • Various regulations (i.e. activity restrictions, capital adequacy ratio and government ownership) are not significantly associated with timing of the crisis. However, activity restrictions increase the probability of banking crisis in the logit specification.

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Table 13. Determinants of Financial Development C. Financial Efficiency	
References	**Empirical Findings**
Demirguc-Kunt et al. (2004)	• A one-standard deviation drop in activity restrictions would lead to a 0.6 of a standard deviation drop in the net interest margin. For instance, if Mexico had the same level of activity restriction as in Korea, this would lead to a 1 percentage point decrease in net margins. However, once institutional framework is controlled for, regulations cease to have an impact on efficiency. Better institutional environment (WGI) and economic freedom is strongly associated with lower net interest margins. Specifically, a one standard deviation improvement in economic freedoms (0.54) would lower interest margins by 1.1 percentage point). • If Romania had the same banking concentration of Poland, then the net interest margin would drop from 8.45 to 7.97. Also if Burundi could have the same banking concentration as Kenya, then the net interest margin would drop from 10.74 to 9.95.
Pasiouras et al. (2009)	• A one-unit increase in capital requirements reduces bank's cost inefficiency by 9%. Under the same scenario, market discipline, activity restrictions and official supervisory power leads to 10%, 9% and 8% reductions in cost inefficiency. The effect of official supervision on profit inefficiency is around 6.6% while market discipline leads to a 25% reduction in profit inefficiency.
Bayraktar and Wang (2004)	• A one-standard deviation increase in the asset share of foreign banks in the economy (i.e. 15.9%) leads to 0.03 percentage point decrease in net interest margins, 0.14 percentage point decrease in non-interest income, 0.11 percentage points decrease in before tax profits, 0.05 percentage point decrease in overhead costs. The efficiency gains are more pronounced in countries that liberalized their stock markets first (i.e. 0.06 percentage point decrease in before tax profits/ta and 0.03 percentage point decrease in overhead costs/ta.). • Foreign bank entry lowers efficiency in countries that liberalized their domestic financial markets first (i.e. 0.24 percentage point increase in net interest margin, 0.26 percentage point increase in non-income interest, 0.33 percentage point increase in overhead costs/ta). The effect in countries which liberalized their capital accounts is similar to the first case but weaker.
Claessens et al. (2001)	• A one standard deviation change (i.e. 0.30) in the share of foreign banks in domestic economy reduces non-interest income/total assets by 0.7, before tax profits by 0.84 and overhead costs by 0.45 percentage points. • In low-income countries net-interest margins of foreign banks are higher than domestic banks (3.71 vs. 2.72). In upper-middle income countries the net-interest margin of domestic banks are higher as well as overhead costs/ta (i.e. 4.23 vs. 3.78 and 4.31 vs. 3.60). In developed countries, all variables are higher for domestic banks than foreign banks.
Denizer (2000)	• The higher the share of foreign banks in the country, the lower the overhead costs. Specifically, a 10% increase in the share of foreign banks in the domestic economy leads to a 0.37 percentage point decrease in the overhead costs to total asset ratio. • While foreign banks have higher return on assets (ROA) than domestic banks (i.e. 0.5-to-4.1 percentage points), a 10% increase in the share of foreign banks in the domestic economy reduces ROA by 3.2 percentage points. • As noted by Bhattarcharya (1993), fees on letters of credit declined from 1.5 percent to 0.5 percent and fees on letters of guarantees fell from 4 percent to 1 percent in response to foreign entry.
Barajas et al. (2000)	• Whether market share or penetration indicators are used, foreign entry appears to have a significant effect in lowering spreads (-0.1394 - 0.2131), reducing non-financial costs (0.0321 and 0.1282), and improving loan quality (reducing NPL by 0.2164 and 0.2606) in the banking system. Controlling for foreign entry, domestic entry is also associated with better banking performance and more often more significantly than foreign entry.
Peria and Mody (2004)	• A one standard deviation increase in concentration results in a 0.13 to 0.25 standard deviation change in bank spreads. A one standard deviation increase in foreign bank share (i.e. 0.119) leads to a 0.20 percentage point decrease in administrative costs in the entire banking system. • Note that the positive effect of banking concentration on administrative costs dominates the negative effects of foreign participation. Specifically, a one standard deviation increase in banking concentration (i.e. 0.105) leads to a 0.36 standard deviation increase in administrative costs (or 0.47%).
Haber and Musacchio (2012)	• Foreign banks tend to charge lower interest rate margins. Even though the magnitude of the coefficients decreases over time, the difference between foreign banks and the industry average in 2004 was still 0.69 percentage points. • Mexican banks, on average, have become progressively more efficient over time: the ratio of administrative costs to assets in 2002-04 was more than 0.9 of a percentage point lower than in 1997. • The coefficients on the 2003 and 2004 time dummies are significant at the five percent level and indicate quarterly rates of return of 8 to 9 percentage points above their level in 1997.
Demirguc-Kunt et al. (1998)	• A one-percent increase in the share of foreign banks reduces bank profits by 2.7% and overhead costs by 3.4%. Even though they do not detect a direct link between long-run growth and foreign entry, banking efficiency is related to economic growth.
Gormley (2007)	• The average foreign bank in a developing country has an ROA 0.31 percentage points higher than that of a comparable private domestic bank (this is about one quarter of the average ROA in the sub sample of developing countries).
Micco and Panizza (2006)	• State-owned bank has a return on assets 0.7 percentage points lower than the average private domestic bank. Since the average ROA in developing countries is 1.7%, this is a sizable difference. In industrial countries, public banks have overhead costs that are between 8-10 percent higher than group average. The corresponding value for developing countries is 5 percent. • In developing countries public banks have higher employment ratio than private banks (the difference is about 9 percentage points) and that foreign banks tend to have lower employment (the difference is about 25 percent of the group average).
Detragiache et al. (2005)	• A one-standard deviation increase in banking sector concentration, proxied by the market share of top five banks, reduces overhead costs to total assets ratio (net interest margins) by 0.9 (1.83) percentage point. Clearly, concentration matters for net interest margins more.

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Table 13. Determinants of Financial Development D. Access to Finance	
References	**Empirical Findings**
Barth et al. (2008)	• Authors find that a one standard deviation increase in number of application of banks denied for entry into the banking system leads to 1.7 percentage point increase in the probability that a firm rates bank corruption as a major obstacle and a 3.5 percentage point decrease in the probability that a firm rates bank corruption as not an obstacle to firm growth. In a similar fashion, a one standard deviation increase in entry barriers would lead to a 3 percentage point increase in the probability that a firm rates bank corruption as a major obstacle and a 6.2 percentage point decrease in the probability that a firm rates bank corruption as not an obstacle to firm growth. • The disclosure of audited financial statements would lead to a 4.2 percentage point decrease in the probability that a firm rates bank corruption as a major obstacle and a 9.9 percentage point increase in the probability that a firm rates bank corruption as not an obstacle to firm growth. • The existence of a deposit insurance scheme would result in a 5.8 percentage point increase in the probability that a firm rates bank corruption as a major obstacle.
Franklin et al. (2012)	• Reducing distance barriers (measured by a one-standard-deviation increase in branch or ATM penetration) would increase the likelihood of bank account ownership by 6 percentage points. A higher share of deposits covered by the deposit insurance system would raise the likelihood of having an account by 4 percentage points. • Pro-access to finance policies raise the likelihood of high-frequency use by 5.5 percentage points. These policies would almost cancel the negative effects of the higher costs variables (around 7 percentage points). • If people perceived the costs associated with opening a bank account low, then the probability of opening an account in a bank would be around 6 percentage points higher in Malawi and 15 percentage points higher in Peru. • Average predicted probability of having an account at a formal financial institution would be around 7 percentage points higher in Angola and India if the number of bank branches per 1,000 square kilometers were to increase by one-standard-deviation (36). Under the same scenario, the average predicted probability of having an account at a formal financial institution would rise by 3 percentage points in the United States but by 8 percentage points in Peru.
Clarke et al. (2006)	• Increasing foreign bank participation from that in the 20th percentile of countries in the sample, 5%, to that in the 80th percentile, 48%, decreases the probability that the average enterprise manager would perceive interest rates and access to long-term loans to be a major constraint by 16 and 17%, respectively. The estimates suggest that the impact is slightly less for small enterprises at 14 and 15%, respectively, than for large enterprises at 17 and 16%, respectively.
Beck et al. (2007)	• A one standard deviation increase in outreach indicators is associated with 0.07, 0.11, 0.05 and 0.16 percentage points lower financing obstacles in the case of geographic branch penetration, demographic branch penetration, geographic ATM penetration, and demographic ATM penetration, respectively. This is economically significant since the standard deviation of financing obstacles across countries is 0.44. • Increasing the number of branches (ATMs) from the 25th percentile to the 75th percentile decreases the probability that firms rate financing constraints as a major obstacle by over 3 (8) percentage points in the case of branches (ATMs) per population, respectively. The same scenarios would leads to less than 1 (0.5) percentage point reductions in case of branches (ATMs) per area. A similar change in the ratio of loans per population decreases the likelihood that finance is rated as a major obstacle by over 8 percentage points. These marginal effects compare to 36% of firms in the sample rating financing as a major obstacle. • A one-standard deviation increase in the credit information index raises access to finance (i.e. demographic branch penetration) by 3.6%. A one standard deviation increase in the restriction of banking activities lowers demographic branch penetration by 4.15%. A one-standard deviation increase in the entry restrictions of banks lowers loan accounts per capita by 8.5%. A one-standard deviation increase in the cost of contract enforcement lowers demographic ATM penetration by 11.41%. • A one-standard deviation increase in concentration in the banking system raises deposit accounts per capita by 43% but reduces deposit income ratio by 55.82%. A one-standard deviation increase in the share of assets of government banks reduces demographic branch penetration by 3.86% and demographic ATM penetration by 9.6%.
Gormley (2007)	• Foreign banks finance only a small set of very profitable firms upon entry (i.e. top 10% firms in terms of return on assets), and firms were 7.6 percentage points less likely to have a long-term loan of any size after foreign bank entry because of a systematic drop in domestic bank loans.
Galindo and Micco (2005)	• Significant effect of creditor rights on access to finance by firms: small firms finance nearly 10 percentage points less of investment with bank credit than large firms, and medium-sized firms nearly 5 percentage point less than large firms. As creditor rights improve, the gap gets smaller. • An increase in effective creditor rights from the 20th to the 80th percentile of the distribution reduces the financing gap of small and large firms in nearly 10 percentage points. These are large numbers if we consider that for a country in the 20th percentile of creditor rights the estimated size of the gap between access to bank finance of small and large firms is close to 25 percentage points. • In common law countries, the difference in the share of investment financed with bank credit between large and small firms is approximately 9 percentage points. In non-common law countries this difference is 25 percentage points.
Beck et al. (2004)	• Moving from the 25th percentile of Concentration (Peru) to the 75th percentile (Senegal) increases the probability that finance is perceived as a major obstacle by 5 percentage point, compared to the sample mean of 38%. This effect is stronger for small enterprises (6 percentage points) than for large enterprises (2 percentage points). • Nonlinearity: For Ethiopia (GDP per capita, $108), moving from the 75th to the 25th percentile of concentration would imply a 4 percentage points decrease in the probability that a firm rates financing as a major obstacle, while for Moldova (GDP per capita $666), the decrease would be only 2 percentage points. • While Mexico has a value of - 0.07 for Institutional Development, Chile has a value of 0.88. Bank concentration in Mexico is 0.63 and in Chile 0.46. According to this study, the probability that firms in Chile (Mexico) rate financing as a major obstacle is 25.1% (39.7%). Among the regulatory variables, restrictions on banking activities and Credit registries matter. While the former exacerbates the effect of bank concentration on firm's financing constraints, the latter reduces the negative effect.

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Beck et al. (2011)	• Had Chile have Canadian supervisory approach, the probability that a firm reports bank corruption as a major obstacle would drop by 2.5 percentage point. If Chile had the Canadian private monitoring, then the same probability would drop by 3 percentage point. If Chile were to move on both fronts, then the same probability would decrease by 5.3 percentage point.
Cull et al. (2011)	• The cost of complying with regulations in the U.S. is 12-13% of banks' non-interest expenses. For MFIs, speculatory statistic is that the cost of compliance with prudential regulations reaches 5% of assets in the first year and then 1% for following years. • MFIs facing regular onsite supervision have Financial Self-Sufficiency level that is 0.18 percentage points less than other MFIs. However, correcting the sample selection bias with Heckman procedure turns this result insignificant. • Supervision is associated with increases in loan sizes almost two times the average income of the lowest quintile. So outreach is curtailed and restricted to relatively safer clients. Also more staff is sent to headquarters, leaving field staff weaker.
Love and Mylenko (2003)	• Comparing average financing constraints between 1 and 4 (i.e. 4 being access to finance as a major obstacle to firm's operations) in countries with no private registry (i.e. 3.04 out of 4) with those that have private credit registries (i.e. 2.57), they find a statistically significant difference between the two groups that suggest moving from a non-registry country to a registry-country reduces financing constraints by 0.47 percentage points or 40% of one standard deviation of financing constraints. Public registries have smaller effects. Firms also rely more on banks for financing in countries with private credit registries.
Brown et al. (2009)	• An increase in information sharing index from sample minimum (0) to sample maximum (4.6) leads to 0.41 unit increase in access to credit proxy. This increase is quite sizable since it amounts to 24% of the sample mean of access indicator. While they find no evidence for differential effect of information sharing across firm size, they do find evidence for transparent companies benefiting less than opaque firms. In addition, they find that the effect of information sharing is higher in countries with weaker creditor rights.
Love and Peria (2012)	• The probability of an average firm having access to finance (i.e. access to loan, line of credit or overdraft) decreases by 5 percentage points in response to a one-standard deviation increase Lerner index (i.e. proxy for competition, higher values indicate less competition). This average effect varies by the level of financial development, the presence of credit information institutions and the presence of government banks. • While the same scenario above (i.e. one standard deviation or 0.07 units increase in Lerner index) leads to larger reductions (8 percentage points) on the probability of access to finance, in countries with average financial development, the reduction in probability is halved (4 percentage points). In financially developed countries, no impact is detected. • In response to the same scenario, the probability of access to finance would have been 13 percentage point lower in countries with low information sharing. No significant association is detected in countries with high information sharing. • Decreasing competition is not associated with access to finance, when governments are not involved in finance. However, if government presence is significant, then the same scenario above would lead to 10 percentage point reduction in the probability of access to finance.

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Table 13. Determinants of Financial Development E. All Aspects of Financial Development	
References	**Empirical Findings**
Barth et al. (2012)	• Capital regulatory index has no effect on banking sector depth and efficiency but negative effect on banking stability (NPLs). Specifically, a one-unit increase in the capital regulatory index leads to 1.9% decrease in the NPL ratio. A one unit increase in the private monitoring index reduces NPL ratio by 3%, increases Private Credit by 0.5% and reduces overhead costs and net interest margin by around 0.7%. • Official supervisory index has no effect. While entry restrictions increase overhead costs and net interest margins by (0.4-0.5%), restrictions on banking activities reduce banking depth and raises net interest margins by 0.6% and 0.5%, respectively. • If government-owned banks are controlled for then the effect of capital and official supervision has no effect. Only private supervision leads to reductions in overhead costs and activity restrictions lead to higher net margins and lower banking sector depth.
Podpiera (2006)	• The effect of quality of regulation and supervision (i.e. measured by compliance with BCP) on banking sector stability (NPL) and efficiency (net interest margin) is quantified as follows. If an emerging economy could push its quality of regulations to the average of advanced countries (15 units increase), then NPL would decrease by 0. 05 percentage points and net interest margins would decrease by almost 0.10 percentage points.
Cull and Effron (2005)	• Reforms aimed at improving bank regulation and supervision are associated with substantial reductions in the private credit ratio (7 percentage points per adjustment loan). The improvement in M2/GDP is significantly larger for borrowers than non-borrowers (5% versus 3%). • When selection problem is corrected, borrowers seem to have outperformed non-borrowers by a wider margin. Simple averages indicate that the matched non-borrowers sample had slower growth in M2/GDP (2% versus 4% per year), less reduction in Cash/M2 (+1% versus –2% per year) and concentration (–2% versus –3%), and more rapid increase in spreads (+5% versus +1%) than borrowers. Matched non-borrowers did, however, have more rapid private credit growth (4% versus 3%).
Giustianni et al. (2005)	• On average, a 10 percentage point increase in the ratio of compliance with IMF conditionalities leads to a 0.03 percentage point increase in ROA, around 2% increase in the Private Credit/GDP growth and 1.4% in deposit/GDP growth.
Detragiache et al. (2008)	• An increase in the foreign share of banking sector assets by one standard deviation leads to a decline in private credit to GDP ratio of about 6 percentage points. This is about a third of the average ratio of private credit to GDP in the sample. • An increase in the foreign share of one standard deviation would lead to a decline in the growth rate of credit of about 20 percent. This scenario does not hold in developing countries. • In developing countries, the presence of foreign banks is associated with lower overhead costs and net interest margins. Specifically, a one-standard deviation increase in the foreign share of assets in the banking sector is associated with 0.68 (0.31) percentage point reduction in overhead costs and net interest margins. • A one-standard deviation increase in foreign bank presence leads to 2.40% less demographic branch penetration (bank branches per population), 6.8% decrease in geographic branch penetration (ATMs), 41% decrease in loan accounts per capita and 270% decrease in deposit accounts per capita.
La Porta et al. (2002)	• Government ownership has negative effects on financial sector deepening, access to finance, banking sector efficiency and stability. Moving from the average of government ownership in countries with French legal origin to the average of those with English legal origin (a decrease of approximately 30 percentage points) raises Private Credit/GDP ratio by 1.22 percentage points and liquid liabilities by 0.45 percentage points. • The same scenario leads to a 9.7 percentage point increase in Private claims of non-top 20 firms/GDP and 17.84 percentage point increase in loan availability. In terms of efficiency, the same scenario leads to a 0.72 percentage point increase in overhead costs/total assets ratio and a 6.87 percentage decrease in interest rate spread. • In terms of stability, the same scenario increases the stability index by 38%. The capital market development is more heavily tied to government ownership of banks as the same scenario leads to a 22.9 percentage point increase in stock market capitalization.

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Table 14. Causes and Consequences of Pension/Insurance Sector Development	
References	**Empirical Findings**
Impavido et al. (2003)	• A 1% point increase in the share of contractual savings (CS) in total financial assets leads to 1.89% point increase in stock market capitalization to GDP ratio. A shallower effect is found on depth of bond market. No effect on stock market liquidity. A 1% increase in the CS assets leads to 2.21% increase in stock market capitalization in countries with market-based financial systems while the same increase leads to a 1.07% increase in bond market capitalization in the bank-based countries. • The effect on the stock market capitalization is larger in countries with mandatory pension systems (i.e. 3.39%). Also in those countries, there is a significant effect on stock market liquidity (2.52%) as well as on bond-market capitalization. In addition, the CS assets have significant effect on stock market liquidity in countries with better accounting standards. Note that the sample is mostly OECD countries but there are a few emerging economies as well.
Walker and Lefort (2002)	• Specifically, a 1% increase in the pension-funds-assets/GDP ratio leads to a 0.9% decrease in the cost of capital, measured as dividend yields and increases price-to-book ratio by 0.9%. At the same time, market volatility decreases by 0.2%.
Hu (2012)	• A 1% increase in pension assets-to-GDP ratio decreases the ratio of deposit money banks assets to deposit money and central bank assets by 0.05% in less developed economies in the sample but not in developed countries. • Pensions have no effect on net interest margins in richer Asian countries but they have negative effects in the less rich countries (i.e. 0.5% reduction in net interest margin). • In terms of the stock market, pension funds growth leads to improvements in stock market liquidity and capitalization in all countries (0.2-0.7%) for market capitalization in rich vs. less rich Asian countries and 0.5-1.33% for value traded. • In the bond market, the effect of pension funds growth on private and public bond markets: while there is a positive relation in public bond markets for low income countries (0.12%), there is a larger effect in the private bond markets (0.19%).
Meng and Pfau (2010)	• A 1 percentage point increase in pension fund financial assets relative to GDP, on average, leads to 0.30 and 0.625 percentage point increases in stock market capitalization and stock value traded, respectively, while private bond market capitalization relative to GDP increases by 0.094 percentage points. • Splitting the sample into high and low financially developed countries, a one percentage point increase in pension fund financial assets over GDP in countries with 'high' financial development leads to an increase in market capitalization and value traded of 0.397 and 0.488 percentage points, respectively. Private bond market capitalization increases by 0.114 percentage points. Insignificant impacts in low financially developed countries.
Hu (2005)	• A one percentage point increase in the pension assets leads to a 0.04% increase in bank development. This positive relationship exists only for the EMEs, not for OECD countries. • The effect of pension assets on deposit money bank assets/total financial assets is positive and significant in EMEs (again usually insignificant and negative in OECD sample). • Both in the long run and in the short run, pension funds growth leads to a larger stock market with more liquidity, which is both statistically significant and economically meaningful. A 1% increase in pension asset growth to a 0.4% increase in private bond market capitalization, a 0.3% increase in public bond market capitalization, and 0.2% increase in stock market capitalization in the EMEs. • Across all countries, a 1% increase in the pension assets leads to a 0.3% increase in stock market capitalization, 0.3-0.8% increase in stock market value traded (short-to-long-run), and 0.95% increase in stock market turnover in the long-run.
Beck and Webb (2003)	• A 1 percent increase in banking sector development leads to a 1.82-2.29 percent increase in life insurance development. On the other hand, a 1-percent increase in institutional development leads to a 0.79 percent increase in life insurance development.
Feyen et al. (2011)	• Countries with private sector dominated insurance sectors exhibit significantly more insurance activity (i.e. 16.8 percentage point difference between private and non-private contexts in total insurance assets/GDP ratio). • In concentrated markets, insurance assets are 8.8% of GDP, vs. 25.4% in non-concentrated markets. • Life insurance premiums to GDP are almost twice as large in the high creditor rights group (2.03% vs. 1.14%). • Financially more developed countries exhibit significantly more insurance activity. For example, the ratio of insurance assets to GDP is only 3.5% in the group with low ratios of credit to GDP, versus 31.5% in the group with developed credit markets. • A one-percent increase in the log of private credit to GDP is associated with a 1.12 percent increase of life insurance premiums, implying that deeper credit markets spur personal loans, which often requires life insurance as collateral.