An Essay on the Interdependence between Economic Growth and the Financial Sector

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Abstract

This essay surveys the theoretical and empirical literature on the interdependence between economic growth and the financial sector. It is shown that typical financial sector functions such as price discovery, risk sharing, and liquidity transformation have a non-trivial effect on the growth of the real sector of the economy. Gains come mainly from reduced transactions costs as well as better allocation of resources. International empirical evidence largely supports the proposition that more financially sophisticated countries grow at faster rates than financially repressed ones. Nevertheless, several questions regarding the effect of financial development on economic growth remain unanswered, and several suggestions for future research are given in the final section of the paper.

Keywords: economic growth; financial sector; financial development; interdependence.

Resumo

Este ensaio revisa a literatura teórica e empírica sobre a interdependência entre crescimento econômico e o setor financeiro. É apresentado que as funções típicas do setor financeiro tais como revelação de preços, compartilhamento de riscos e transformação de liquidez têm um efeito não trivial sobre o crescimento do setor real da economia. Os ganhos provêm principalmente da redução dos custos de transação assim como da melhor alocação de recursos. A evidência empírica internacional em geral apoia a proposição de que países mais sofisticados financeiramente crescem a taxas mais rápidas do que países financeiramente reprimidos. Não obstante, muitas questões sobre o efeito do desenvolvimento financeiro sobre o crescimento econômico permanecem sem resposta. Ao final do artigo, são oferecidas diversas sugestões para futuras pesquisas.

Palavras-chave: crescimento econômico, setor financeiro, desenvolvimento financeiro; interdependência.

The understanding of business on an international scale usually requires from the professional analyst the mastering of several disciplines: marketing, economics, finance, operations management, and intercultural studies, among other social and human sciences. It is tempting – in such a diverse field of study – to attribute great importance to conditions particular of a single country, such as its history, the culture of its people, its institutional arrangements, and its particular economic environment. However, as any basic science course teaches, a theoretical model must be an accurate description of the real world and yet parsimonious enough to be implemented with a finite number of variables. In my point of view, this fact poses one of the central research problems in international business studies: are universal theories suitable to understand economic agents' behavior under particular business conditions in different countries? It is within this broad framework that this paper is developed.

The main objective is to explore the interdependence between the macroeconomic environment and the financial sector and how the interactions between them affect the business conditions of firms. The paper's ultimate purpose is to derive a few lessons regarding the interdependence between the macroeconomic environment and finance that may be useful to a variety of parties such as academic researchers, economic policymakers in developing countries, managers of local and multinational private corporations, executives of international financial institutions, managers of the investment fund industry, and the staff of multilateral organizations, particularly those interested in developing countries.

The remainder of this paper is structured as follows. The next section presents an overall literature review on the relationship between economic growth and the financial sector. Section 2 presents the main empirical evidence on this subject, while the last section outlines a synthesis of this literature. From this synthesis, I suggest several prospective research topics for future investigation.

1. Theoretical Overview

The relationship between the financial and the real sector of the economy and its potential effects on

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growth were largely ignored until the late 1960s. It was with the breakthrough works of Goldsmith (1969), McKinnon (1973) and Shaw (1973) that financial markets come to occupy a major role in the growth literature. These authors argue that the development of the financial sector is not simply a byproduct of overall economic growth, but rather leverages the growth process. It can assist in the breakaway from sluggish economic performance to accelerated growth, mainly through incentives to save and invest.

Based on quantitative comparative analysis of the financial structure of between half to three dozen countries, Goldsmith (1969) tries to answer the following questions: who finances whom at different stages of financial development; to what extent; through which instruments; and with what effects on economic development. He concludes that (1) financial superstructure grows more rapidly than the infrastructure of national product and wealth (the ratio of aggregate market value of all financial instruments to the value of tangible net national wealth increases); (2) this increase is bounded upwards (between 1 and 1½); (3) LDCs have much smaller ratios than Europe and North America; (4) the main determinant of the financial superstructure is the separation of the saving and investment functions among different economic units; (5) the share of financial institutions in the issuance and ownership of financial assets increases considerably with economic development; (6) this institutionalization of saving and ownership has affected the main types of financial instruments differently: more progress on claims than on equity securities; (7) financial development started everywhere with the banking system and has been dependent on the diffusion of scriptural money through the economy; (8) the share of the banking system in the assets of all financial institutions has declined with economic development; (9) foreign financing has played a substantial role in some phase of the development of most countries; (10) transfers of technology and entrepreneurship have been easier to accomplish, and on the whole more successful, with respect to financial instruments and institutions than in many other fields; (11) the cost of financing is distinctly lower in financially developed countries than in LDCs; and (12) as real income and wealth increase, in the aggregate and per head of the population, the size and complexity of the financial superstructure grow, although the direction of causation could not be established.

McKinnon (1973) focuses on the extraordinary distortions commonly found in the domestic capital markets of developing countries. He finds that the impact of monetary and financial policies on LDCs capital markets is much greater than is generally supposed, and that policies often stifle incentives to save and invest. Repression of the financial sector is paralleled by the use of tariffs and quotas in an effort to promote development by manipulating the foreign trade sector. The author suggests that a more effective strategy for economic growth would proceed from a thorough liberalization of domestic financial markets, the liberalization of the foreign exchange market, and the lifting of restraints on foreign trade. This strategy, which he calls a "bootstrap" approach for development, aims at securing a country's own economic development without having to rely on foreign aid, foreign capital investment, and multinationals' direct investment, technology, and managerial skills.

Shaw (1973) argues that the financial sector of an economy does matter in economic development. It can assist in the break from plodding repetition of repressed economic performance to accelerated growth. Numerous economies with low levels of per capita income and wealth have been attracted at times to a development strategy that results in "shallow" finance. By distorting financial prices including real money balances, interest rates and foreign exchange rates, it has reduced the real rate of growth and the size of the financial system relative to non-financial activity. The author elaborates on the classical approach of money, finance and capital accumulation by introducing uncertainty and rigidities in output and financial decisions. Also, his model diverges from the Keynesian Liquidity Trap by considering money not as wealth but as debt of the monetary system. After outlining the principles of his model, the author discusses financial repression, its negative impact on growth, and its interrelations with the monetary system, fiscal policy and international trade and finance. As a subsidiary result of his analysis, the author argues that financially repressed economies not only sacrifice the leverage for growth that could be realized from financial deepening, improved fiscal performance and closer integration with external markets, but also suffer from a higher degree of short-term instability in the growth process. The author concludes that financial deepening along with compatible reforms in the fiscal and international sectors may make growth paths both steeper and smoother.

In traditional growth theory, it was believed that financial intermediation could have an effect on the levels of the capital stock per worker or to the level of productivity, but not on growth rates. The breakthrough work of Romer (1986), however, allowed the emergence of endogenous growth models in which institutional arrangements influence the growth rate endogenously, thus providing the theoretical basis for a relationship between financial markets and economic growth.

Pagano (1993) provides a simple example of how the financial structure can affect growth. Assume a competitive economy where N identical firms produce output y_t with individual capital stock k_t according to:

$$y_t = Bk_t^{\alpha} \qquad \text{(Eq. 1)}$$

Where B is the average capital stock in the economy, given by:

$$B = Ak_t^{1-\alpha} \qquad \text{(Eq. 2)}$$

B it is taken as a parameter by the individual firm and A is regarded

as the social marginal productivity of capital. Aggregate output is then given by:

$$Y_t = Ny_t = NBk_t^{\alpha} = AK_t \quad \text{(Eq. 3)}$$

Aggregate investment is given by:

$$I_t = K_{t+1} - (1-\delta)K_t \quad \text{(Eq. 4)}$$

Where *d* is the rate of depreciation of capital. For simplicity, assume a constant population and a closed economy with no government sector. This implies that in capital market equilibrium, savings must equal investment. However, let's consider that a fraction *1 – f* of savings is captured by the financial sector in the form of fees and spreads (it is assumed that these rents are totally consumed instead of reinvested). Therefore:

$$\phi S_t = I_t \quad \text{(Eq. 5)}$$

Using Eq. 3, Eq. 4, and Eq. 5, the growth rate *g* at *t + 1* is given by:

$$g_{t+1} = \frac{Y_{t+1}}{Y_t} - 1 = \frac{AK_{t+1}}{Y_t} - 1 =$$

$$= \frac{A(I_t + (1-\delta)K_t)}{Y_t} - 1 = \quad \text{(Eq. 6)}$$

$$= \frac{A\phi S_t}{Y_t} + \frac{(1-\delta)AK_t}{Y_t} - 1 = A\phi s_t - \delta$$

Where s_t denotes the gross savings rate. Dropping the time subscripts, the steady state growth rate becomes:

$$g = A\phi s - \delta \quad \text{(Eq. 7)}$$

In short, financial markets may affect the growth rate directly through the portion *1 – f* of savings that are consumed in the financial intermediation process. There are, however, other plausible ways in which the financial sector may influence growth. Pagano (1993) makes the distinction between positive effects of financial development on growth and ambiguous effects.

Positive effects of a developed financial sector refer to the channeling of savings to firms and the improvement of the allocation of capital. As the financial sector becomes more developed, the proportion of savings consumed by financial intermediaries (*1 – f*) tends to be competed away, and the total resources available for investment increases, therefore increasing the growth rate *g* (BENCIVENGA, SMITh, and STARR, 1996). Besides fees and spreads, the size of *f* can also be affected by government specific policies such as restrictive regulations, taxation, and reserve requirements (AMABLE and CHATELAIN, 1996). Another way financial markets can positively affect the growth rate is by providing efficient allocation of capital. Financial intermediaries help investment in projects with the highest marginal product of capital by collecting and disseminating information on alternative projects, and by encouraging individuals to invest in riskier – and usually more productive – projects by providing portfolio diversification (ATJE and JOVANOVIC, 1993; LEVINE and ZERVOS, 1996; Obstfeld, 1994). This risk sharing role of the financial sector affects the marginal productivity of capital (*A*) by pooling resources and permitting the funding of less liquid projects, preventing inefficient bankruptcy, as well as creating the conditions for diversification of volatility risks. Finally, productivity may be increased by technological specialization of firms, once these higher idiosyncratic risks can be shared efficiently via the stock market.

More ambiguous effects of the financial sector over growth refer to its impact on the saving rate and the interest rate. The existence of a financial market may actually reduce *s* – and therefore *g* – for several reasons. By providing risk-sharing technology, the financial sector reduces the need for precautionary savings of households. Also, portfolio diversification may lead to a negative effect on the saving rate if the (constant) risk-aversion coefficient is bigger than unity (Pagano 1993; Devereux and Smith, 1994). The financial sector also extends credit for households under the form of mortgages and loans and this too reduces the needs for precautionary savings.[2] Finally, besides the effects of the direct financial sector cost *f* on growth, there are interest rate effects to be considered. The effect of the real interest rate on the savings rate is theoretically ambiguous and definite empirical evidence has not been presented. If the development of the financial sector helps to narrow the spread and therefore raises the interest rate paid to savers, it is still unclear what the impact should be on growth.

An interesting question however is not whether the existence of a financial sector contributes to growth but how the development of such a sector relates to economic development. In order to do so, it is essential that financial development be precisely defined. Arestis and Demetriades (1996) list three problems that financial sectors are expected to resolve: informational problems, principal/agent problems, and uncertainty problems. Informational problems refer to problems such as adverse selection. Principal/agent problems address problems such as moral hazard and incentive mechanisms. Finally, uncertainty problems relate to risk sharing technologies such as insurance and portfolio diversification. The degree of development of the financial sector would be ideally measured by how well it resolves these problems. Of course, this is not an easy task, and most empirical work in this area has chosen proxies related more to the size of financial indicators relative to aggregate output or per capita output. As a matter of fact, these indicators are more measures of depth and scope of the financial market rather than strict measures of its degree of development, but this is a typical shortcoming of empirical research.

It is easy to identify a typology of financial systems. There are two basic types often mentioned in the literature: *bank-based* financial systems and *market-based* financial systems. Bank-based systems rely on the involvement of the banking firm with industrial firms as the main way to

[2] Notice however, that if households take loans to finance the accumulation of human capital, then the effect on growth may be ambiguous: a lower saving rate but perhaps a higher productivity of capital.

transfer resources into production. Banks collect the savings of the households and invest such funds according to its valuation techniques and private information of the firms they work with. In such a system, the industrial firm's ownership is concentrated in a small number of shareholders, each with a large stake in the company. Banks participate actively in the board of directors, management performance is evaluated by the small group of shareholders, and changes in management are decided usually within the scope of the firm. The market for corporate control is small, and mergers and acquisitions are rare. Firms rely heavily on bank loans for their financing and not so much on equity. Banks exercise an important role in monitoring corporate performance and providing liquidity transformation technology for the economy. Germany and Japan are usually mentioned as examples of a bank-based financial system.

The market-based system on the other hand, relies on capital markets as the main source of funds for long-term investment, either as debt or equity. Banks do not get closely involved with industrial firms, corporate ownership is dispersed among a large number of small shareholders, and the market for corporate control is very active. Management performance is monitored by marked-based mechanisms such as hostile takeovers. Examples of such system are the United States and the United Kingdom. Besides these two "pure" types of financial systems, there is a continuum of intermediary possibilities in between. Also, one cannot underestimate the role of banks in market-based systems: investment banks provide much of the financing for hostile takeovers in the United States.

With respect to the three problems that financial systems should resolve, it is generally accepted that – under appropriate incentives – bank-based systems are more capable of addressing those problems than market-based systems (Arestis and Demetriades, 1996). However, one cannot really establish that one system is *a priori* more developed than the other. Moreover, one can observe countries with similar types of financial systems but at different stages of financial development. Finally, some empirical evidence exists for a complementary role between the capital market and the banking system (BOYD and SMITH, 1996; DEMIRGÜÇ-KUNT and Levine, 1996b).

In this sense, it is useful to introduce yet another dimension of financial development: the government's role in administering prices and quantities in the financial sector, as in the case for interest rate controls, capital rationing, and directed lending. A financial system is said to be repressed when such kinds of government intervention are common. Liberalized financial systems, on the other hand, are those in which the economic agents decide the allocation of capital based on market rates. The effects of repression on growth, in a government-administered framework like the one discussed above, can occur in three ways: firstly, interest rate controls, taxation, and capital requirements all depress f which in turn reduces growth. Secondly, directed lending may allocate investment to sub-optimal projects, reducing the marginal product of capital.[3] Finally, repressive policies may artificially reduce the real interest rate, which in turn may have an ambiguous effect on the saving rate. One can observe that bank-based financial systems allow for a more active role of the government in implementing repressive policies. Under a specific set of conditions, however, it can be shown that government intervention on the financial market may indeed boost growth. Hellmann, Murdock, and Stiglitz (1996) focus on interventionist policies to enhance deposit mobilization, while Levine (1996) contends that intervention and/or regulation may be growth enhancing in the presence of pervasive market failures, but admits that interventions themselves may at times cause or aggravate other market failures. Finally, Amable and Chatelain (1996) suggest that government policies that reduce the problem of asymmetric information are likely to have a positive effect on growth.

So far the financial sector as a whole has been discussed. One important element of a financial system is the stock market. That is particularly true not only for market-based financial systems but also for many emerging economies, which observed a great increase in international portfolio investment in their domestic markets since the early 1990s. Demirgüç-Kunt and Levine (1996c) summarize the role of stock markets in economic growth under four topics: creation of liquidity, risk diversification, incentives to governance, and price discovery.

Stock markets provide liquidity for equity investment and therefore create incentives for longer-term investment. The liquidity generated by a stock market reduces the transaction costs associated with holding equity and therefore improves the allocation of capital towards higher productivity projects. The positive effects of improved liquidity are two-fold: first, it allows the economy to grow faster because of an improvement in marginal returns (Boyd and Smith, 1996); second, because investment in equity can be cheaply reversed by selling shares in the market, higher volumes of savings are allocated in such projects (Bencivenga, Smith, and Starr, 1996). However, one can list at least three potentially negative effects of liquidity on growth: by reducing the savings rate through income and substitution effects generated by higher average returns, by reducing the need for precautionary savings, and by encouraging investor myopia and therefore relaxing monitoring (Demirgüç-Kunt and Levine, 1996b). Although there is theoretical research on these effects, the empirical evidence is still scarce.

The technology to diversify risks of specialized projects through the stock market affects growth by shifting a higher proportion of savings towards riskier, higher return invest-

[3] Not to mention moral hazard and rent seeking.

ment projects. This boosts economic growth provided that the effects on the savings rate (income and substitution effects, reduction of precautionary savings) do not offset the higher productivity of capital.

Large and more liquid stock markets may provide incentives that reduce the principal/agent problem between management and shareholders. The creation of an active market for corporate control is an effective incentive to keep management's interests aligned with shareholder interests. Moreover, the development of the stock market and the creation of new financial instruments such as derivatives help in the design of incentive mechanisms for managers to maximize shareholders wealth.

Finally, the price discovery function of the stock market may affect growth in two ways. In relatively inefficient markets, it pays investors to research firms carefully before making their investment decisions, since they can profitably trade using their better information. This leads to an improvement of the quality of the projects to be executed. In efficient markets, all information is quickly revealed in prices, again contributing to the quality of projects. However, this may lead to the free-rider problem: investors will not spend resources collecting information about firms if they cannot profit from it.[4]

2. Empirical Evidence

Despite the obvious implications that the relationship between financial development and economic growth may suggest, the empirical literature in this field is not as comprehensive as one might expect. Beyond the early studies of Goldsmith (1969) and McKinnon (1973), empirical tests of such relationship are in general recent. In a well-known paper, King and Levine (1993) study the empirical link between a range of indicators of financial development and economic growth. They find that indicators of the level of financial development (the size of the formal financial intermediary sector relative to GDP, the importance of banks relative to the central bank, the percentage of credit allocate to private firms, and the ratio of credit issued to private firms to GDP) are strongly and robustly correlated with growth, the rate of physical capital accumulation, and improvements in the efficiency of capital allocation. Also, the predetermined components of these financial development indicators significantly predict subsequent values of the growth indicators. The data are consistent with the view that financial services stimulate economic growth by increasing the rate of capital accumulation and by improving the efficiency with which economies use that capital. The authors concluded that Schumpeter might have been right about the importance of finance for economic development.

Similarly, Atje and Jovanovic (1993) empirically test whether financial development (especially stock market development) affects the level and/or the growth rate of economic activity, and they find a substantial effect on both. They find no effect when the financial development proxy used is credit extended by private and government banks as a ratio to gross domestic product (GDP). However, when the proxy is the ratio of annual value of all stock market trades to GDP, the data strongly supports the model. As for level effects, the authors also find significant coefficients, although the estimates do not seem fully consistent with the tendency for intermediation's share in income to rise with the level of development.

Murinde (1996) estimates an endogenous growth model in which growth derives from the behavior of economic agents in markets for credit, bonds and shares using the Zellner (1962) procedure for a group of seven Pacific Basin countries. The empirical investigation is further extended by using growth accounting exercises and by extending the analysis of the role of stock markets as suggested by Atje and Jovanovic (1993). In particular, the empirical analysis indicates that stock market development is significantly linked to economic growth.

Odedokun (1996) provides an in-depth empirical analysis of the relationship between financial development and the efficiency of investment, proxied by the incremental output-capital ratio. For his analysis, the author constructs a wide range of alternative indicators for financial intermediation, government intervention in the financial sector, interest rates, exchange rates, and inflation. His findings show that financial intermediation (measured in terms of flow variables) is positively related to investment efficiency. By contrast, government intervention appears to be negatively related to efficiency. He also finds that policies of real exchange rate appreciation, as well as high inflation are adversely related to investment efficiency. The relation between interest rates and efficiency remains undetermined in his analysis however.

Fry (1996) investigates the role financial conditions have played in producing the virtuous circles of high saving, investment, output growth and export growth in a sample of Pacific Basin countries during the past few decades. High saving and investment stimulate output growth and export growth. In turn high growth raises saving and investment levels. The author finds that the relatively undistorted nature of both financial and foreign exchange markets in these countries has been important to raise their saving, investment, output and export levels over a long period of time.

Levine and Zervos (1996) examine whether there is a strong empirical association between stock market development and long-term growth. The authors use cross-country regressions to examine the association between stock market development and economic growth. Using data of

[4] One can argue that recent developments in the U.S. stock market (e.g. Tyco, Enron, Worldcom, etc) cast doubt on the depth of the financial analysis carried on. In this case, free-riders have been punished for complacent reliance on market-generated information. I am thankful to Prof. Jan J. Jorgensen for pointing this out.

forty-one countries over the period from 1976 to 1993, they split the sample period so that each country has two observations with data averaged over each subperiod. The authors regress the growth rate of GDP per capita on a variety of variables designed to control for initial conditions, political stability, investment in human capital, and macroeconomic conditions. Then, they include the composite index of stock market development. Thus they evaluate whether there is a relationship between economic growth and stock market development that is independent of other variables associated with economic growth. They find a strong correlation between overall stock market development and long-run economic growth. After controlling for the initial level of GDP per capita, initial investment in human capital, political instability, and measures of monetary, fiscal, and exchange rate policy, stock market development remains positively and significantly correlated with long-run economic growth.

Studies such as the one mentioned above generally assume that financial development causes economic growth. However, the direction of causality between financial development and economic growth has been a controversial issue in economics. Arestis and Demetriades (1996) challenge the causal interpretation of previous empirical work that is based on a fragile statistical basis. Once contemporaneous correlation between the financial indicator and economic growth has been accounted for, there is no longer any evidence of causality from financial development to economic growth. The second goal of the authors is to demonstrate that cross section data sets cannot address the question of causality in a satisfactory way. The authors conduct cointegration and causality tests using time series data for twelve representative countries. The results in all cases tend to justify their claim for the importance of institutional considerations and policy differences. The results depends very much on the institutional characteristics, including the type of financial system and the type of financial policies followed, as well as the efficiency in implementing such policies. Also, the authors find that the definition of the financial indicator used in the analysis also has considerable importance for the results.

The empirical definition of "stock market development" is the main concern of Demirgüç-Kunt and Levine (1996b). They contribute to the literature by collecting and comparing a broader array of empirical indicators of stock market development than any previous study. Using data on forty-four developing and industrial countries from 1986 to 1993, the authors examine different measures of stock market size, market liquidity, market concentration, market volatility, institutional development, and integration with world capital markets. The goal is to produce a set of stylized facts about various indicators of stock market development that facilitates and stimulates research into the links among stock markets, economic development, and corporate financing decisions.

These authors find enormous cross-country variations in stock market indicators and attractive correlations among the indicators. Although many stock market development indicators are significantly correlated in an intuitively plausible fashion, the individual indicators produce different country rankings. Although richer countries generally have more developed stock markets than pioneer countries, many markets labeled emerging are more developed than those in France, the Netherlands, Australia, Canada, Sweden, and Norway. Using measures of size, liquidity, and international integration, the authors evaluate which markets have been developing fastest over the years. The article documents the relationship between the various stock market indicators and measures of financial intermediary development. Since debt and equity are frequently viewed as alternative sources of corporate finance, stock markets and banks are sometimes viewed as alternative vehicles for financing corporate investments. The authors document the cross-country ties between stock market development and financial intermediary development using measures of the size of the banking system, the amount of credit going to private firms, the size of non-bank financial corporations, and the size of private insurance and pension companies. They find that most stock market indicators are highly correlated with the development and efficient functioning of banks, non-bank financial corporations, and private insurance companies and pension funds. Countries with well-developed stock markets tend to have well-developed financial intermediaries. Also, developing countries with well-developed financial systems are growing faster than developing countries with under-developed financial sectors.[5]

Demirgüç-Kunt and Maksimovic (1996) empirically explore the effect of financial market development, particularly stock market development, on financing choices of firms. The authors use aggregated firm-level data for a sample of thirty countries from 1980 to 1991. They measure stock market development by the ratio of market capitalization to GDP, the ratio of total value of shares traded to GDP, and the ratio of total value of shares traded to market capitalization. Taking all the countries in the sample together, the authors find that there is a statistically significant negative correlation between stock market development, as measured by market capitalization to GDP, and the ratios of both long-term and short-term debt to total equity of firms. There is also a statistically significant positive relationship between the size of the banking sector and leverage. The relationship between leverage and stock market development loses significance when they control for variables that have been identified in the corporate

[5] Demirgüç-Kunt and Levine's (1996b) data ends in 1993, before the Mexican and Asian crises. Thus, it would be interesting to test for the robustness of their results after these episodes.

finance literature as determining firms' financial structures.[6] An interesting pattern emerges when the full sample is broken down into subsamples. In developed markets, further development leads to a substitution of equity for debt financing, especially for long-term debt. In developing markets, large firms become more levered as the stock market develops, but small firms do not appear to be significantly affected by market development. These findings suggest that the development of a stock market initially affects directly the financial policies of only the largest firms. This may be because diversification of ownership and the aggregation of information provided by the development of stock markets initially benefits the larger firms more because of the need to spread fixed issuance costs and traders' costs of information acquisition.

Demirgüç-Kunt and Levine (1996a) discuss the relationship between the initial state and reform of the financial system on the one hand and public enterprise reform on the other hand. Based on detailed information of nine country case studies, they find that private enterprise reform is more successful in countries with initially relatively well-developed financial systems. Moreover, they find that private enterprise reform is implemented much more successfully if such a reform is supplemented by substantial and well-designed financial sector reforms. However, they underline the fact that the causal relationship between the two kinds of reforms runs in both directions, and that exogenous factors are important in determining the ultimate outcome of both reforms.

Berthélemy and Varoudakis (1996) empirically test an endogenous growth model, which exhibits multiple steady state equilibria due to reciprocal interactions between the financial and real sectors in the economy. The model shows that depending on the nature of steady state, there may exist a poverty trap in which the financial sector "disappears" and where the economy stagnates, or endogenous economic growth may be positive and financial intermediation follows a normal development path. They support their model by testing empirically the existence of multiple steady states linked to the initial state of financial development in a cross-section of 95 developed and developing countries. Their results show that while education is a pre-condition for growth, financial under-development may become a major obstacle in countries where the educational pre-condition is satisfied. Moreover, they show that the optimality of other policies such as trade policy and government expenditure policy depend on a reasonably well-developed financial system. This result leads to the conclusion that second-best policies in countries that have not succeeded in developing a financial system might be quite different from the policies usually advocated in a first-best framework.

3 Synthesis

In summary, there is a vast theoretical literature going back three decades explaining the linkages of financial sector development and economic growth. Under competitive markets the role of the financial system in channeling savings towards the highest return projects is beneficial to welfare and allows faster growth. Moreover, as the financial market develops and becomes more competitive, transaction costs tend to fall and the net savings directed to investment increase. Therefore, given these conditions, the financial sector plays an important role as a catalyst for growth. More recent literature, however, questions the direction of the impact of financial development on aggregate savings because of income and substitution effects. Also, improvements in risk diversification may induce investors to become reckless in their research for projects because of the free-rider problem, which may in the aggregate lead to less efficient resource allocation.

The available empirical evidence in general supports the view that overall financial development has a positive effect on economic growth and that stock market development in particular has an even more substantial impact than banking development. There is however plenty of evidence on the complementary roles between banking system and stock market development as the financial system becomes more developed. Government intervention on the financial sector has been shown to be in general adverse to development, except in the presence of very specific market failures. Finally, the evidence on the effect of financial integration with the global market is as yet ambiguous.

A few aspects are not explored in the literature and should deserve more detailed investigation. For instance, how do different financial intermediation systems (market-based versus bank-based) compare in terms of their contribution to growth? Is competition policy in the banking sector a major element of financial development and therefore economic growth? Given different initial conditions (income, deposits, liquidity, etc), what are the policies that developing countries should address in order to develop their financial sectors? Similarly, given imperfect competition in the banking sector and incompleteness in capital markets that characterize developing countries, how should policymakers proceed in order to develop the financial sector in a sustainable fashion? Is there an optimal sequence of measures? How does the recent experience of developing countries contrast to theory with respect to financial liberalization? What are the causality linkages between the real sector and the financial sector of the economy? To what extent do macroeconomic factors influence the degree of indebtedness of households and firms?

These are all interesting questions whose answers will greatly contribute to our understanding of the subtler interrelations between finance and growth. Of course, ad-

[6] Such as the ratio of net fixed assets to total assets, the ratio of earnings to total assets, the ratio of net sales to total assets, and the ratio of total assets to firm size.

dressing all of them at once in a single piece of research is a near impossible task. Therefore, these topics are left as suggestions for future research initiatives.

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