

## FINANCE-GROWTH NEXUS

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### ABSTRACT

*In spite of the fact that macroeconomic orthodoxy ignored the relationship between financial development and economic growth for a long time, growing interest among macroeconomists over the past decade in the role of the financial factors in promoting economic activity has produced a burgeoning literature. In addition to the correlation relationship between finance and growth, its causality direction is also searched in these studies theoretically and empirically. We in this study discuss the theoretical and empirical dimensions of the relationship between financial development and economic growth through keeping track of the literature.*

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### 1. Introduction

In the traditional literature and in the most part of the modern macroeconomic theory, the view that the financial structure does not affect the functioning of the real economy is taken as given. Therefore, the interaction between the finance and the real did not become an important subject to be discussed in the literature extensively. However, growing interest among macroeconomists over the past decade in the role of the financial sector in promoting economic activity has produced a burgeoning literature. It seems that there are two fundamental reasons for this: One of these is that applied economists and policy makers have begun to consider that financial factors play an important role in business cycles. The other reason is the development of the techniques

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useful for formalizing financial market problems that became available due to the progress in economics of information.

The recent interest in the sources of economic growth, the revival of the ‘Schumpeterian’ (1912) view of finance as a means of channeling society’s savings into innovative as well as the availability of international data sets and the development of techniques to handle them led to a large number of empirical studies that include proxies for ‘financial development’ as explanatory in cross-country regressions of growth rates of per capita income (or other proxies for economic development and growth).

In this study, we try to follow up developments and discussions in the context of relationship between financial development and economic growth. In the second section of this study, we will keep track of the modern literature on the interaction between the finance and the real. In the third section, we will discuss the structure of the financial development. In the fourth section, we will give discussions on the causality relationship between financial development and economic growth. Section 5 argues the empirical studies on these relationships. Section 6 elaborates the relationship between stock markets and growth. Section 7 concludes.

## **2. The Finance and the Real Interaction in the Modern Literature**

Along with the impact of the traditional classical approach extending to the New Classical School, the role of financial factors on the economy has not become an important subject of economics. According to this conventional approach, money or in general sense financial structure does not have an important impact on the real economy. Money has been regarded as only a veil. Although there were some early studies (e.g. Bagehot, 1873 and Schumpeter, 1912), which argue that a more developed financial system leads to a better allocation of resources, better monitoring and less information asymmetries and hence spurring growth, the interaction between the finance and the real has not been discussed sufficiently.

We elaborate the interaction between finance and the real through three different models or approaches: financial intermediation models, financial liberalization models, and financial vulnerability models. These models have been developed to discuss different aspects of the finance and real interaction in the light of recent developments in the economy.

**a. Financial Intermediation Models:** The costs of acquiring information and making transactions create incentives for the emergence of intermediaries. In the Arrow-Debreu general equilibrium model with no information or transaction costs, there is no need for a financial system that expends resources researching projects, monitoring managers or designing arrangements to ease risk management and facilitate transactions. Thus, financial factors add specific frictions to the Arrow-Debreu model. Different types and combinations of information and transaction costs motivate distinct intermediaries. Many economists have developed financial intermediation models to emphasize the distinct roles of financial intermediaries.

In the financial intermediation models, in general there are two channels that affect growth. The first focuses on opportunities that may arise from a greater pooling of risks and a lower cost of transactions in mobilizing savings. These links were posited as early as 1911 in the writings of Schumpeter, and were later refined considerably in seminal contributions by Gurley and Shaw (1955), Goldsmith (1969), McKinnon (1973) and Shaw (1973). Diamond and Dybvig (1983) tried to show in a model of liquidity that banks could both reduce savers' liquidity risk by providing liquidity whenever they withdrew their deposits and could fund illiquid, high return projects. This in turn can increase economic growth, because along with the decreased liquidity risk, banks will direct their funds into illiquid but high return investments, thus increasing growth (Bencivenga and Smith, 1991). The other channel emphasizes the role of innovative financial technologies in ameliorating the informational asymmetries that hinder the efficient allocation of funds and the monitoring of the resulting projects (Greenwood and Jovanovic, 1990; Sharpe, 1990; Bencivenga and Smith, 1991, and Japelli and Pagano 1994, King and Levine, 1993b). A higher quality of information and a lower cost of monitoring provide the efficient allocation of resources.

Diamond (1984) develops a model of *delegated monitoring* that illustrates how intermediaries and, in particular, banks have an incentive to act as a delegated monitor and produce the information necessary for an efficient allocation of resources. Boot and Thakor (1997) also develop a model of financial system architecture that builds on this view of banks as delegated monitors.

As seen that the rationale of financial intermediaries is to mitigate informational asymmetries between savers and investors. However, this leads to informational asymmetries between saver-intermediary and intermediary-investor.

Therefore, the asymmetric information that emerges together with the financial intermediary has a potentiality distort the function of allocating resources efficiently. In order to understand theoretically allocative effects of informational problems in general in financial markets, in particular financial intermediaries, it must be started with the Akerlof's (1970) paper on the lemons problem. The paper illustrates how asymmetric information between buyers and sellers about product quality can cause a market to malfunction. The literature on financial market inefficiencies applies Akerlof's basic idea that "lemons" problems may distort economic behavior. The first example is Jaffee and Russell (1976), which explains unobserved differences in borrower quality, can induce credit rationing. Stiglitz and Weiss (1981) tried to show how the problem of asymmetric information leads to credit rationing in their formal model. Stiglitz and Weiss (1981) show that, given their assumptions, the loan supply curve may bend backwards and that credit rationing can emerge. Essentially, the lemons principle is at work.<sup>1</sup>

Many studies were done on the subject initiated by Jaffee/Russell and Stiglitz/Weiss. The results often depend greatly on the particular informational asymmetries between borrowers and lenders.<sup>2</sup> However, two basic conclusions usually emerge: first, the incentive problems distort the market equilibrium, most often toward underlending; second, they make the equilibrium quantity of lending more sensitive than otherwise to exogenous disturbances. In some models, allowing borrowers to issue a richer menu of liabilities can eliminate the incentive problems. For example, Bernanke and Gertler (1986) argue a strengthened balance sheet implies a borrower has more resources available to either use directly for project finance or as collateral in obtaining outside funds. This reduces the borrower's cost of obtaining external funds by lowering the informational risk that outside lenders face, and in turn stimulates investment. Another prediction relevant to the empirical implementation of these models is that new borrowers will face tighter financial constraints than those with long and reasonably successful track records, everything else equal.

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<sup>1</sup> Lemons problems may affect equity markets as well as debt markets. Greenwald, Stiglitz and Weiss (1984) discuss how asymmetric information about the value of a firm's existing assets can restrict its ability to issue new shares.

<sup>2</sup> For example, Mankiw (1986) analyzes a credit market encountered by lemons problems and shows how a small rise in the riskless interest rate can lead to a large reduction in lending, possibly even a collapse.

**b. Financial Liberalization Models:** In the neoclassical perspective, the main justification for financial repression<sup>3</sup> derives from an assumption of perfect substitutability of money and productive capital. In Tobin's monetary growth model (1965), if the return on capital rises relative to the return on money, it encourages a shift from money to capital in household portfolios, higher capital-to-labor ratios, and increased labor productivity. The central implication of this reasoning is that reducing the rate of return on money—through interest-rate ceilings, which serve as a tax on real money balances—can increase the rate of economic growth, thus financial repression is applied on welfare-maximizing ground.<sup>4</sup>

McKinnon (1973) and Shaw (1973), however, questioned the applicability of the neoclassical approach to developing countries, and instead argued that the distortions from financial repression crowd out high-yielding investments, create a preference for capital-intensive projects, discourage future saving, and thereby reduce both the quality and quantity of investment in an economy. In this framework, money and capital are compliments rather than substitutes: the more attractive it is to hold real money balances, the greater the incentive to invest. Productive investment, and therefore capital accumulation, occurs because a large real money stock makes greater amounts of loanable funds available to borrowers (McKinnon, 1973: 59-61; Shaw, 1973:81). Extensions of the McKinnon-Shaw framework have generally suggested, in the absence of interventions, the competitive optimal prices can lead to those conclusions: (i) positive real interest rates increase saving rates (ii) increased interest rates induce high returns of

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<sup>3</sup> The phenomenon of financial repression was *first* discussed by McKinnon in his 1973 book. The term financial repression refer to restrictive policies that inhibited the operation of the financial sector. In this view financial repression refers to a set of policies, laws, formal regulations, and informal controls, imposed by governments on the financial sector, that distort financial prices—interest rates and foreign exchange rates—and inhibit the operation of financial intermediaries at their full potential.

<sup>4</sup> Some scholars of finance and development (e.g., Roubini and Sala-i- Martin 1992, King and Levine, 1993a, 1993b) have rejected the claim that financial repression is adopted on welfare-maximizing grounds. Rather, development macro economists have generally speaking, reached a strong consensus regarding the reasons for financial repression: fluctuations in government revenue. This view is called *public finance approach*. A financial sector under administratively-imposed restrictions is a potential source of “easy money” for the public budget. In the classic cases of financial repression, the proliferation of financial instruments from which governments can extract seignorage is encouraged, mainly a relatively oligopolistic banking system, since obligatory holdings of government bonds can be imposed on commercial banks. Private securities markets are suppressed through a variety of taxes and duties, since seignorage cannot be so easily extracted from these markets (Fry, 1995: 20-22).

investments and (iii) increased investments spurs economic growth. The empirical evidence in relation to financial liberalization models will be discussed in following parts of this of study.

**c. Financial Vulnerability Models:** One of the significant theoretical explanations for the interaction between the finance and the real is the financial vulnerability models. It takes its foundations from Fisher (1933). These models have taken new and advanced forms over time, especially focusing on financial crises due to the prevalence of financial crises across the world especially in the recent years. They fundamentally pointed to the susceptibility of a financial structure to shocks. Thus, they are concerned with financial vulnerability of the economy rather than the functioning of the economy in the normal times, thus the existence of financial stability.<sup>5</sup>

Kindelberger (1978) described how crises in financial markets could severely disrupt real economy. Minsky (1986) tried to explain how financial factors distorted the real activities during crises. He, similar to the Fisher's (1933) method to explain the Great Depression, argued that investors and speculators increased their borrowing levels during optimistic periods. This increases total systemic risk or financial vulnerability that a financial system can undertake. The increased total risk can distort total economic structure very fast and extensively by a spark inflamed by any bad news or reports.

There is a large and growing literature about the financial crises – defined as debt, banking and balance of payment crises- affecting several countries. Some financial vulnerability models have focused on the mismanagement of the structure of foreign debt (currency composition and length of maturity). Some have focused on the mismanagement of macroeconomic policies, especially exchange rate (Krugman, 1979 and Flood and Garber, 1984). Some models called self-fulfilling and escape models have emphasized the shift in expectations (Obsfeld, 1986). In these models, the shifts in expectations of economic agents on consequences of policies self-fulfill and lead to crises unavoidably. Other models have focused on weakness (mainly of national and international institutional

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<sup>5</sup> In opposition to the concept of financial vulnerability, which can be described as a high likelihood that an economy will suffer a successful speculative attack due to the increased systemic risk in the financial system, the concept of financial stability is used. Financial stability is defined in terms of the structure of debtors' equity. As a debtor's own equity contribution to her investment project increases, the interest between him and his creditors becomes harmonious.

character) embedded in the domestic financial and banking sectors of these economies. These models have been developed to explain especially the Asian crisis. Some versions of these models focus on moral hazard and hence overlending (Mishkin, 1999, 2000). Some have focused on bank panics that spread to the rest of the financial sector and then infect the larger economy - contagious effect, hence leading to financial crises, without any deterioration in macroeconomic aggregates (Chang and Velasco, 1998). The last versions of these models try to show the fundamental cause of financial crises is the problems in balance sheets of banking and financial sector (Krugman, 1999). Any devaluation and reversal of capital flows increase the severity of problems.

### **3. The Structure of Financial Development**

While elaborating the impact of financial development on economic growth, the level of financial development is generally taken as given. If there is any correlation or causality between the financial factors and the real economy, the development stages of financial structure have to be emphasized as least as this relationship. Therefore, it is important to include measures of the deep structural determinants of the development of the financial system in analyzing the impact of financial development on economic growth.

The financial structures of countries pass through different stages and represent a trend to evolve. This trend actualizes in general terms as follows: Firstly, banks emerge, the development of securities (bonds and equities) markets follow this and finally credit and insurance markets appear. The relative importance of these institutions and markets changes with respect to the degree of economic developments. As Gerschenkron (1962), Patrick (1966), Cameron et al. (1967), Goldsmith (1969) and others have shown, in the developed countries, modern financial systems generally evolved during the very early stages of their industrialization.<sup>6</sup>

The empirical evidence verifies that there are significant differences between countries' financial structures (Demirguc-Kunt and Levine, 1996)). As

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<sup>6</sup> Syntheses of theories of financial stages and the Schumpeterian credit-induced growth hypothesis are given by Gerschenkron (1962) and Patrick (1966). Gerschenkron points to the latecomers' notably France's and Germany's) situation which, in order to catch up with the then far advanced Britain, had to mobilize massive amounts of capital for real investment which gave room for an active development policy through a state coordinated expansion of the national financial systems.

countries' economies grow, their financial systems develop in parallel to this economic growth. To Levine (1997), as countries get richer over time, their financial systems represent such patterns:

- (i) The ratio of the total assets or liabilities of financial intermediaries to GDP increases
- (ii) Banks grow relative the central bank in allocating credit
- (iii) Non-banks- such as insurance companies, investment banks, finance companies, and private pension funds- grow in importance.
- (iv) Stock markets become larger, as measured by market capitalization relative to GDP.

These patterns should not be taken as a certain path to be followed. They must be treated cautiously. For example, the definition of a bank and non-bank are not always consistent across countries. These patterns alone do not suggest that poor countries can accelerate their growth rates by changing the structure of their financial systems. Finally, many differences exist across countries at similar stages of economic development. While there is a general trend involving financial structure and the level of GDP per capita, there are important exceptions and differences within income groups.

We seek to better understand the historical factors influencing international differences in the ability of private agents to write contracts and make transactions confidently. This will answer the question "how and why did some countries develop well-functioning financial systems, while others did not?" There are basically four theories regarding the historical determinants of financial development. The *law and finance view* argues that a large part of the cross-country differences in financial development can be traced back to different legal traditions [La Porta et al. 1997, 1998]. The law and finance view contends that political differences – particularly differences associated with the relative power of the monarch and property holders - shaped the formation of three major legal traditions: the English common law, the French civil law, and the German civil law. These legal traditions spread throughout the world through conquest, colonization, and imitation. The English common law evolved to protect private property owners against the crown. This facilitated the ability of private property owners to transact confidently, with positive effects on financial development. In contrast, France and Germany did not have powerful Parliaments. Therefore, their financial development was delayed. Levine (1998 and 1999) and Levine, Loayza, and Beck (2000) show empirically that the legal origin explains cross-country

variations in the level of financial intermediary and stock market development. Beck et al. (2000) find that German legal origin countries tend to have higher levels of financial intermediary development, contract enforcement, and property rights protection. On average, British legal origin countries have the strongest laws in terms of protecting the rights of outside investors and they also have the strongest accounting standards. French legal origin countries tend to have the lowest levels of development of financial institutions.<sup>7</sup>

The *dynamic law and finance view* augments the law and finance view by noting that legal traditions differ in terms of their ability to adapt to changing conditions. Those legal traditions that are able to adapt can better foster financial development than more rigid legal traditions. The dynamic law and finance view accepts the law and finance view, but also incorporates the comparative law literature's emphasis that legal traditions differ in terms of their abilities to adapt to changing conditions [Merryman, 1985].

The *politics and finance view* de-emphasizes the role of legal traditions and instead emphasizes that political factors shape financial development. Thus, while the law may play a role, the politics and finance theory emphasizes that centralized/powerful/closed political systems are more likely to impede financial development than diffuse/competitive/open political systems. Rajan and Zingales (2000) accurately stress that a time-invariant factor, such as legal origin, will not explain important changes in financial development. Rajan and Zingales (2000) argue that political factors are more important in determining the financial structure of a country than the origin of the legal system.

The *endowment view* emphasizes the role of initial conditions in shaping financial institutions. Acemoglu et al (2000) note that Europeans found a variety of conditions in the lands that they colonized. In some places, Europeans found it difficult to settle and therefore focused on extracting resources. In other places, Europeans found hospitable conditions. They settled and established institutions to promote long-run prosperity. Thus, the initial endowments of land, climate, and the disease environment profoundly influenced colonization strategies and the

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<sup>7</sup> Allen and Gale (2000) predicts that as financial systems become more market-oriented, risk management through the use of derivatives and other similar techniques will become more important. The theory is thus consistent with the fact that these particular forms of risk management are much more important in the US and UK than they are in less market-oriented economies such as Japan, France and Germany.

types of institutions that colonialists constructed. These initial institutions endure and help explain cross-country differences in institutions today.

#### **4. The Causality Discussions between Financial Development and Economic Growth**

Although the empirical studies show that there exists a correlation between growth and financial development in recent years has been observed, the causality direction of this relationship has not been searched sufficiently. Thus, whether the causality is from financial development to economic growth or from economic growth to financial development has not been elaborated enough. In fact, causality is hard to pin down empirically, although in the last decade the availability of more appropriate data increased the number of empirical papers in this field. Goldsmith (1969) reports a significant association between the level of financial development, defined as financial intermediary assets divided by GDP, and economic growth. He recognized, however, that in his framework there was “no possibility of establishing with confidence the direction of the causal mechanisms (p. 48).”

However, the direction of causality has been discussed more in the literature in recent years. There are two approaches to the causality relationship between financial development and growth: supply-following and demand-leading. Patrick (1966), inferring from the Japanese industrialization, introduced now common terms ‘supply-leading’ and ‘demand-following’ finance. He claims that demand-following finance is the rule and that supply-leading finance is exception. This situation, according to Patrick- not only in Japan, but universally, coincides with the period of most rapid development of industrializing economies

To the first approach (supply-leading), the development of financial system is realized before the demand for financial services. This approach can be discussed in the context of financial intermediation models. The funds that financial intermediaries collect from small investors are channeled to large investors who demand these funds for their projects. This in turn spurs economic growth. The presence of efficient financial markets increases the supply of financial services in advance of the demand for them in the real sector of the economy. This hypothesis has been advanced by McKinnon (1973) and Shaw (1973). Recent empirical work by Ghani (1992), King and Levine (1993 a, b), DeGregorio and Giudotti (1995), and Levine and Zervos (1996) have all given support to the supply-leading hypothesis in the case of many developing and

developed countries. The statistical basis of this apparent support is that, almost without exceptions, the empirical results reveal positive and statistically significant coefficients on the proxies of financial deepening in the real economic growth equations.

To a view that can be considered within the hypothesis supply leading, financial development may- at least occasionally and in the short run- turn out to be an impediment to economic growth. This view can be argued much more in the context of financial vulnerability models. The line of causation runs from financial development to real development, but the focus lies on potentially destabilizing effects of financial overtrading and crises rather than on the smooth functioning of the financial system. This view conceives the financial system as inherently unstable. While some theoreticians are ready to include commercial banks among the sources of financial distress, most proponents direct their attention towards stock markets or intentional capital flows. This view is held by a wide range of economists ranging from Keynes (1936), Diamond and Dybvig (1983) to Singh (1997).

To the second approach (called demand-following), economic growth increases financial development. To this approach, financial development stems from the increased demand for financial services induced by economic growth. As an economy grows, the demand for financial services increases and so the increased demand is met by financial system. Robinson (1952) argues that financial deepening is merely a by-product or an outcome of growth in the real side of the economy. Robinson, on the other hand, maintained that economic growth creates a demand for various types of financial services to which the financial system responds, so that "where enterprise leads finance follows" (1952: 86). Any evolution in financial markets is simply a passive response to a growing economy. As the real sector expands and grows (for example, due to technological advancement or improvement in labor productivity), the growing real sector will generate increased and new demands for financial services. This in turn will exert and intensify pressures to establish larger and more sophisticated financial institutions to satisfy the new demand for their services.

It seems that, moving from these two approaches, it is difficult to mention the direction of causality between financial development and economic growth. Also, quantitative measures of both the financial and economic development of an economy are bound to be imperfect since these developments, like most economic data, are highly qualitative. Measurement of financial development, in particular,

seems more controversial because countries differ in their institutional environment and have drastically different financial structures according to their development stage (Boyd and Smith, 1996).

Besides the above two distinct causal hypotheses, another proposition can be inferred, which is a combination of the supply-leading and demand-following hypotheses. That is, both hypotheses are jointly valid, making financial deepening and real economic growth mutually causal (bi-directional causality). This type of causality pattern seems likely especially over the long-run. Greenwood and Smith (1997) have also advanced a similar view in their recent survey.

However, some prominent economists (e.g., Lucas (1988) and Stern (1989)) have long rejected any causal role for financial deepening in the growth process. In a study describing the dynamics of economic development, Lucas (1988) argued that economists have generally exaggerated the importance of financial markets in economic development and that these markets at best play only a very minor role in the economic growth process. If valid, this Stern-Lucas proposition denies any reliable causal relationship between financial deepening and real economic growth. Thus, a third pattern emerges implying that the two variables are causally independent.

## **5. The Empirical Studies on the Causality Relationship between Finance and Growth**

There are two possible sources of error that prevent researchers from using evidence that finance *predicts* growth to conclude that it *causes* growth. The first source of error involves the role of expectations; the second, the possibility of important omitted factors. Expectations of future economic development may induce current financial development. If entrepreneurs anticipate future economic growth, which will mean higher demand for financial services, they may invest in the creation of additional financial intermediaries today in anticipation of future profits. Finance is completely determined by growth but precedes it. The other source of error lies in the possibility of missing factors. Differences in political systems, legal traditions, or institutions may be driving both financial development and economic growth rates.

Although causality is hard to pin down empirically as mentioned before, both the number of cross-country and time series regressions have increased to examine the nature of relationship between financial development and long-run

growth in the last decade. In this section, we will discuss the empirical studies on this subject.

The earliest empirical examination of the relationship between finance and growth across countries was a 1969 study by Goldsmith. He used the value of financial intermediary assets, relative to GNP, as a measure of financial development. Examining data on 35 countries over 103 years (1860 – 1963) he found that, in general, financial and economic development appeared to occur simultaneously. Goldsmith's measure of financial development would be correlated with the extent of financial services; it's less likely that it would be closely related to the quality of those services. Unfortunately, the insufficiency of data on the quality of financial services makes its measurement problematic for any study of financial development. A further difficulty in Goldsmith's study is that he did not control for the many other factors that, at least in part, determine the rate of economic growth. Economic theory indicates that a nation's propensity to save, supply of human capital, fiscal and monetary policy, political and economic stability, the rule of law, the rate of population growth, and the initial level of GDP are all possible determinants of an economy's rate of growth.

Jung (1986) searched the causality relationship for the data of 56 countries for the period 1950-80. The result from the regression-Granger causality test is that the causality direction is ambiguous: The number of countries having the causality relationship from currency and monetization ratios to income ( $C \rightarrow Y$ ,  $M \rightarrow Y$ ) is no more than the number of countries having the causality relationship from income to currency and monetization ratios ( $Y \rightarrow C$ ,  $Y \rightarrow M$ ). In the same study, when countries are categorized according to their development levels (less developed and developed countries), the result is that the supply-leading view is more explanatory for the less developed countries. Thus, the causality direction is from financial development to economic growth. Therefore, the financial factors in economic growth are emphasized for the less developed countries. However, Jung finds that as the economies grow through time, the direction changes, thus, though ambiguous, it tends to be from economic growth to financial development. Especially, this is clearer when the  $M \rightarrow Y$  relationship instead of  $C \rightarrow Y$  is used. But if the causality relationship is changed from income levels to growth rates, the result is that the supply-preceding view is more explanatory for the fast-growing countries but the direction is ambiguous for the countries having low growth rates.

Perhaps the most thorough study of finance and growth in the tradition of Goldsmith (1969) is the 1993 work of King and Levine (1993a). King and Levine

(1993a) studied 80 countries over the period 1960-1989, systematically control for other factors affecting long-run growth. They examined the capital accumulation and productivity growth channels, constructed measures of the level of financial development,<sup>8</sup> and tried to analyze whether the level of financial development predicts long-run economic growth, capital accumulation, and productivity growth. King and Levine then assesses the strength of the empirical relationship between each of these four indicators of the level of financial development averaged over the 1960-1989 period and three growth indicators also averaged over the 1960-1989 period. They find that there is a strong positive relationship between each of the four financial development indicators and three growth indicators -long-run real per capita growth rates, capital accumulation, and productivity growth. Not only are all the financial development coefficients statistically significant, the sizes of the coefficients also imply an economically important relationship.

King and Levine (1993b), in another article, examined whether finance simply follows growth. They study whether the value of financial depth in 1960 predicts the rate of economic growth, capital accumulation, and productivity improvements over the next 30 years. The dependent variable is real per capita GDP growth, real per capita stock growth, and productivity growth averaged over the period 1960-1989. They find that there is a statistically significant and economically large empirical relationship between the initial level of financial development and future rates of long-run growth, capital accumulation, and productivity improvements. From these results the authors conclude that the relationship between growth and financial development is not just a contemporaneous correlation and that finance seems importantly to lead economic growth.

There are some other studies done with less limited number of countries. Thornton (1995) analyzes 22 developing economies with mixed results although for some countries there was evidence that financial deepening promoted growth, while Ahmed and Ansari (1998) report similar results for three major South-Asian

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<sup>8</sup> They used four measures of the level of financial development. The first measure, DEPTH, measures the size of financial intermediaries and equals liquid liabilities of the financial system divided by GDP. The second measure of financial development, BANK, equals the ratio of bank credit divided by bank credit plus central bank domestic assets. The third measure, PRIVATE, equals the ratio of credit allocated to private enterprises to total domestic credit (excluding credit to banks). The fourth measure, PRIVY, equals credit to private enterprise divided by GDP.

economies. Neusser and Kugler (1998) also report that financial sector GDP Granger-caused manufacturing sector GDP in a sample of thirteen OECD countries.

Recent empirical evidence at the micro level also shows that the development of a country's financial system affects firm growth and financing. For example, using firm-level data from 30 countries, Demirguc-Kunt and Maksimovic (1996) argue that firms with access to more developed stock markets grow at faster rates than they could have grown without this access. In addition to Demirguc-Kunt and Maksimovic's (1998) firm-level results, Rajan and Zingales (1998) show that industries that are dependent on external finance grow faster in countries with better developed financial systems. Rajan and Zingales (1998) examine whether financial development facilitates economic growth by reducing the costs of external finance to firms. They find that industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more-developed financial markets. Wurgler (2000) argues that the rate at which resources are allocated to productive industries depends on development of the financial system.

There is a large literature, starting with LaPorta et al. (1997, 1998) that argues that a country's legal and financial systems is a significant, perhaps the main determinant of the financing of firms. Demirguc-Kunt and Maksimovic (1998, 1999) have showed the importance of the financial system and the rule of law for relaxing firms' external financing constraints and facilitating their growth. Their conclusions are that since large firms are more likely to depend on long-term financing and on larger loans than small firms, financial development will reduce the effect of constraints on the largest firms. Levine and Zervos (1998) and Beck et al (2000) also show that financial development promotes growth and that differences in legal origins explain differences in financial development

A great deal of skepticism in relation to cross-country regressions is shared by many investigators. In relation to King and Levine (1993a, b), Arestis and Demetriades (1997) argue that their causal interpretation is based on a fragile statistical basis. Using their data, Arestis and Demetriades (1997) show that the contemporaneous correlation between the main financial indicator and economic growth is much stronger than the correlation between lagged financial development and growth. In fact, conditioning on contemporaneous financial development destroys the association between lagged financial development and economic growth completely. Thus, while they do not disagree with King and

Levine that financial development and growth are robustly correlated, they do not think that the question of causality can satisfactorily be addressed in a cross-section framework.

To Arestis and Demetriades (1997), the cross-country regressions approach has one further limitation. It can only refer to the “average effect” of a variable across countries. In the context of causality testing this limitation is particularly severe as the possibility of differences in causality patterns across countries is likely. Such differences are, in fact, detected by time-series studies. For example, Arestis and Demetriades (1997), which utilizes data for 12 countries, provides evidence which suggests that the causal link between finance and growth is crucially determined by the nature and operation of the financial institutions and policies pursued in each country. They conclude that “not only is possible that the long-run causality may vary across countries but it is also possible, indeed likely, that the long-run relationships themselves exhibit substantial variation”, hence “...a time-series analysis may yield deeper insights into the relationship between financial development and real output than cross-country regressions” (p.790). The related study by Demetriades and Hussein (1996), where causality tests are carried out for 16 developing countries suggests that causality between financial development and growth varies across countries. In about half the countries examined, Demetriades and Hussein (1996) detect a feedback relationship but in several countries the relationship runs from growth to finance, suggesting that it is by no means universal that financial development can contribute to economic growth. Using time series techniques, Rousseau and Wachtel (1998) examined income growth and financial development in several countries during the period 1870-1929. They found that the direction of causality ran from the financial sector to the real sector in the US and the UK.

## **6. Stock Markets and Economic Development**

Much of the evidence on the relationship between finance and growth utilizes bank-based measures of financial development such as the ratio of bank deposits to nominal GDP. More recently the emphasis has increasingly shifted to stock market indicators. This is because world stock market capitalization grew dramatically. The role of stock markets has become substantial. Also, the explosive growth of organized equity exchanges in emerging and developed markets over the past decade, especially in light of recent events in the East Asian economies, has prompted policymakers to raise important questions about their macroeconomic impact. This relative global expansion, however, poses

implementation difficulties for dynamic studies of the effects of growth in equity markets within individual countries. At the same time, advances in the analysis of panel data have made it possible to explore dynamic links between stock markets and growth in a cross-country framework.

Although there is an expanding theoretical literature on the links between stock markets and long-run growth (e.g., Cho, 1986, King and Levine, 1993b, Bencivenga *et al.*, 1995, and Dow and Gorton (1997), there is very little empirical evidence. Starting with Atje and Jovanovic (1993), there have been several efforts to examine empirically the specific role of equity markets in real sector activity. Atje and Jovanovic (1993) construct a cross-country panel for the 1980s and show that trading volume has a strong influence on growth after controlling for lagged investment while bank credit does not. Levine and Zervos (1996, 1998) introduce equity market measures to the standard growth–finance cross-section specifications. Levine and Zervos (1996), using cross-country regressions of data on 49 countries from 1976 through 1993, find that stock market liquidity -- as measured both by the value of stock trading relative to the size of the market and by the value of trading relative to the size of the economy -- is positively and significantly correlated with current and future rates of economic growth, capital accumulation, and productivity growth. These results are consistent with the view that stock market liquidity and banks facilitate long-run growth (Levine 1991; Bencivenga *et al.* 1995). Levine and Zervos (1998), in another article, empirically assess the relationship between growth and stock markets and banks. Their econometric model does not account formally for potential simultaneity bias, nor does it control explicitly for country fixed effects or the routine use of lagged dependent variables in growth regressions. They find that stock market development and banking sector development are robust predictors of growth, their results do not imply a causal link between the financial sector and economic growth. Rousseau and Wachtel (2000) and Arestis *et al.* (2000) also find that stock markets are important for economic growth by using more sophisticated statistical methods.

However, the role that stock markets play in stimulating economic growth is not undisputed. Stein (1989) and Bhide (1993) for instance, argues that stock markets stimulate investments in short-term projects since stock markets continuously evaluate the managers. it may also be the case that more liquid stock markets, with a substantial amount of small shareholders and hence diffuse ownership, decrease incentives to monitor the investors carefully. Moreover, liquid equity markets may facilitate hostile takeovers, which decrease the

efficiency of resource allocation. Harris (1997) also contradicts the positive findings in the Atje-Jovanovic (1993) results. Harris (1997) finds no hard evidence that the level of stock market activity helps to explain growth in per capita output. Estimating their model using current investment rather than lagged investment rather than lagged investment suggests that stock market effect may be weaker than they found. There are also authors who argue that stock markets do not have an important role since only a small part of corporate investments is financed by means of equity. Singh (1997) is a well-known opponent of the view that stock markets are crucial for a process of long-run economic growth. Singh (1997) argues that stock markets, even in developed economies, do not perform the monitoring, screening and disciplinary role very well. In emerging markets, including the transition economies, it is even worse since the regulatory infrastructure is badly developed. Moreover, in most transition economies the stock markets are very thin. This may lead to excessively volatile share prices. According to Singh (1997), stock price volatility may seriously hamper economic development. Recent developments in the Asian financial markets seem to confirm this. He also points out, in contrast to the analysis of Cho (1986), that stock markets have much more problems with asymmetric information than banks. The reason is that stock markets very often provide investors with short-term finance, whereas banks, especially group-banks, have long-run relationships with firms. In other words, stock markets may suffer from short-term myopia

## **7. Conclusion**

The quantitative measures of both the financial and economic development of an economy are bound to be imperfect since these developments are highly qualitative. Measurement of financial development, in particular, seems more controversial because countries differ in their institutional environment and have drastically different financial structures according to their development stage. There is no sufficiently theoretical explanation concerning why the financial structures differentiate. Due to their endogeneity of both financial development and economic growth, it is also difficult to construct a causality relationship. However, the new empirical evidence shows that although there is no clear relationship between financial development and economic growth, the stable financial development goes together with economic growth.

It seems that while some economists exaggerate the importance of financial factors in economic growth, some other economists ignore their effects on growth. Since Gurley and Shaw, the relationship between the finance and

economic growth have become an important subject to be concerned with. At an increasing rate, theoretical and empirical studies have been added to the literature. Especially the increased frequency of financial crises and their negative effect on the real economy crises induces economists and policy makers to understand better the finance/real interaction. Therefore, the empirical studies have begun to cover an extensive spectrum, from cross-country data to intra-country firm level. This is beneficial because it improves the understanding not only the analysis of macroeconomics but also microeconomics of the finance/real interaction.

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