CHAPTER 2

ANALYTICAL FRAMEWORK

This chapter develops an analytical framework of the financial development-growth nexus, based on a systematic review of the literature. It begins with the role of financial systems in the economy, followed by Section 2.2, which considers the emergence of financial intermediaries. Section 2.3 presents the evolution in thinking regarding finance and growth. In Section 2.4, empirical studies examining the relationship between financial development and growth are reviewed. The key findings in this chapter are discussed in Section 2.5.

2.1 An Economy's Financial System

An economy's financial system exists to organize the settlement of payments, to raise and allocate finance, and to manage the risks associated with financing and exchange. A developed financial system is one that has a secure and efficient payment system, security markets and financial intermediaries that arrange financing, and derivative markets and financial institutions that provide access to risk management instruments. The financial system consists of two major components, namely financial intermediates and financial markets. While the former refer to institutions organized for the creation and trade of financial assets, such as a stock exchange, the latter are those institutions that carry out the market function of matching providers of funds with users of funds, such as banks, finance and securities companies (Claus et al., 2004). In the context of the financial system in the developing world, financial intermediaries, and commercial banks in particular, are far more important, whereas the role of the financial market (e.g. the equity market and derivatives) remains limited (Todaro and Smith, 2003). Hence, this chapter places emphasis on financial intermediaries.

The financing system has a general role — to mobilize net savings from a group of economic agents, and to allocate them among deficit economic agents.

Mobilizing funds generates returns for the former, which generally enhances their wealth and economic well-being. It also allows the latter to enhance their productive and purchasing capacities, and, thus, improves an economy's production and consumption potential. This eventually promotes economic growth and development.

In addition, this reduces risks, improves the inter-temporal reallocation of consumption and finances productive investment projects. With regard to risk reduction, consider two individuals, namely *A* and *B,* who are risk averse and have similar attitudes towards risk, but differ with respect to their income streams. When State 1 occurs, *A* will have an income of 100, whereas *B* has nothing. The outcome of State 2 is just the opposite of what happens in State 1. If both states have an identical chance of happening, (i.e. a probability is 0.5 in each state), the financial system would allow both individuals to develop a kind of Pareto improvement agreement where no one is worse off, but at least someone is better off. A sample of this agreement is where *A* agrees to pay B 50 if the state of nature turns out to be 1, while *B* pays *A* 50 if it turns out to be 2. With this agreement, both *A* and *B* have the same level of expected income, but with certainty. This exercise can be applicable when two individuals have an identical stream of income, but differ with respect to their risk attitude.

Improving inter-temporal reallocation is another aspect of the benefits accrued from the presence of the financial system. This could happen either in a case where individuals have the same rate of time preference, but different patterns of income stream over time, or where they share the same pattern of income stream over time, but different rates of time preference. Suppose two individuals have the same rate of time preference, but only the former has an increasing income stream over time. Since consumption in each period is subject to diminishing marginal utility, there is a mutual benefit agreement that allows the former to shift their consumption from the future to the present, and the latter to shift in the opposite way. Both are better off. Alternatively, suppose the two individuals have the same pattern of income stream, but differ in their rate of time preference. The first individual prefers consuming in the present to the future, while the other is more willing to postpone consumption. So, mutually advantageous financial trade is possible, with the person who prefers to

consume in the present making payments to the other who prefer to consume in the future, and vice versa.

In addition, the presence of the financial system allows an agent with a developed sense of entrepreneurship to take on attractive investment opportunities whose investment costs exceed his current income, or the amount of current consumption they are willing to forgo. In reality, there are many attractive projects which yield enough income in the future, with enough certainty, and in a timely fashion. However, some have indivisibility features, so they must be taken at some minimum scale. In both cases, it is very likely that the investment costs of the projects exceed the agent's current income. The presence of the financial system makes such investment projects possible. Entrepreneurs allow resource transfer in the present within the economy. They offer projects in expectance of future proceeds being more than sufficient to compensate other individuals for paying them enough to finance such projects. If the project leaves enough remaining to make the entrepreneur better off, then all parties are profit and, thus, voluntarily undertake the transaction.

2.2 Emergence of Financial Intermediaries

Financial intermediaries emerge as a result of the presence of transaction costs (searching costs, negotiating and enforcement costs) and imperfect information in lending-borrowing activities (Stiglitz and Weiss, 1981; Boyd and Prescott, 1986). In an economy there is market fiction between agents having net savings (lenders) and those experiencing fund shortages (borrowers). Market fiction includes searching for potential borrowers and lenders, matching maturity and requiring the comprehensive disclosure of relevant information in risk assessment process. While it is possible that such a market fiction is solved on an individual basis, it would be far more costly. To do so, lenders must search for potential borrowers and acquire intensive knowledge about their investment projects, and the projects' payoffs in particular, before making their lending decision. On the other hand, borrowers have to find agents which are willing to lend their savings surplus and consider for how long they are willing to do this (maturity). Sometimes, the sum of the willing-to-lend amount is not perfectly matched with the demand for funds from borrowers, i.e. a liquidity problem. A

liquidity problem is even more severe when investment projects are lumpy and indivisible, so that the lending amount must pass a threshold mark

With regard to negotiating and enforcement, reaching agreement on future payments between lenders and borrowers is not without cost. The agreement must ensure future payments to be made in all potential future circumstances at a reasonable return. Both sides must abide by the terms of the agreement. Commitments once made are not always binding. Consequently, there is enforcement costs involved.

In addition, information seems to be asymmetric between borrowers and lenders, so that market equilibrium is hard to obtain (Willaimson 1986; Bernanke and Gertler, 1989:1990). This makes the negotiating process harder. It was found that only borrowers have accurate knowledge about their investment projects, but they have little incentive to disclose such information. Besides, there is a chance borrowers would behave opportunistically, i.e. they would choose a lending package that maximizes their return, but with very high risk. Even though borrowers are honest, they exist in a world with inherent risks and uncertainty. Consequently, the chance of experiencing an unpleasant business outcome is not completely zero.

Through having limited and selective information on investment projects, lenders are unlikely to be able to separate honest borrowers from dishonest ones. The lender's best response would be to charge higher interest rates to ensure enough compensation in the likelihood of non-payment in bad situations. As a result, this would discourage honest borrowers. This is a classic case of a lemon market (Akerlof, 1970). Moreover, a borrower who actually takes up the lender's offer would tend to be riskier. In this situation, it is unlikely for the lender to receive the required expected return. Neither raising, nor lowering the interest rate demanded by the lender would help, since the same phenomenon would then repeat itself as in the original situation. This problem is known as "adverse selection" causing the price mechanism to break down.

Once the lender transfers capital funds, a new problem arises in the form of a situation wherein the borrower (the agent) tends to behave opportunistically. The latter will have an incentive to make decisions that benefit him at the expense of the former. As money changes hands, the borrower can choose from several projects.

The borrower who behaves opportunistically, chooses the one that maximizes his return. Such a project tends to be risky, but may yield a high return in some circumstances (i.e. low expected return), because under a loan contract losses are borne by the principal. This creates the problem of how, in the absence of pre-commitment, the principal can ensure that the agent will make resource-management decisions that are in the interests of the principal. This is known as an "agency problem", which is a type of market imperfection and moral-hazard problem in particular. It creates the need for measures to safeguard the interests of the lender (control), all of which incur costs known as "agency costs". In addition, the lender would have to be prepared to protect their rights using the legal system in the event of the borrower not honouring the terms of their loan agreement. Costs related to legal enforcement are referred to as "contract enforcement costs".

By and large, financial intermediation and market activities involve a considerable amount of cost (e.g. incurring brokerage costs, evaluation costs, agency costs, and enforcement costs). Such costs create a wedge between the gross return paid by the borrower and the net return received by the lender. Since these costs only have to be incurred when funds are acquired externally, it is usually referred to as the "external finance premium". The external finance premium is unlikely to increase in proportion to the size of the loan, so there are scale economies. Therefore, it is far less efficient when intermediation is undertaken individually.

Financial intermediates perform more efficiently in coordinating demand for, and supply of, loan-able funds available than individuals would do. Their main activity consists of searching for potential lenders, identifying potential borrowers (the brokerage function), gathering information about them (the evaluation function), monitoring loans, and enforcing the payment of loan contracts (the contract enforcement function). As a result, savings available from a number of lenders is pooled and effectively distributed to potential borrowers. In addition, with a large number of borrowers and lenders, financial intermediaries can effectively provide liquidity by properly matching the different maturity periods of loans as well as being able to have better portfolio management to minimize risks (Diamond and Dybvig, 1983). This also reduces the liquidity risks faced by individuals. Hence, unnecessary liquidity problems can be avoided (Bencivenga and Smith, 1991).

Secondly, it can be argued that financial intermediaries are more efficient in channelling loan-able fund than individuals. Financial intermediaries can compare between a wider range of investment projects, so they can evaluate investment opportunities available by assessing the associated risks. Consequently, funds are channelled to the most promising projects, "economies of scope". Besides, they are more closely involved with firms where they are able to exercise a monitoring role. This leads to improved quality of investments. As a result, with the ability to evaluate investment projects, financial intermediaries allow entrepreneurs to expand their business by borrowing at lower rates and with easier terms.

Finally, financial intermediaries promote financial transaction expansion through offering credit facilities and guaranteeing payments. Since the main function of financial intermediaries is to transform primary securities into indirect securities (Gurley and Shaw, 1955), they can exploit economies of scale in lending and borrowing. In the presence of financial intermediaries, small individual depositors can avoid the hassles of having to evaluate every potential borrower, while firms seeking to borrow can save significant time and effort in searching for funds. This, therefore, reduces the cost of information and, thus, promotes the expansion of financial transactions.

2.3 Finance and Growth

Debate on the causality relationship between finance and growth is not new, beginning in the first half of the nineteenth century, without yet reaching consensus. Economists still hold different perspectives on the link between financial development and economic growth. As argued in Schumpeter (1911), credit markets are crucial in economic development as they allow entrepreneurs to finance the adoption of new production techniques. On the other hand, Robinson (1952) suggests that the financial sector is a mere appendage to the real economy. Instead of leading to higher economic growth, the real sector treads, the financial sector follows. As an economy grows, it induces higher demand for financial services. In response to this increased demand, more financial institutions, financial products and services emerge, thereby leading to an expansion of the financial system.

It was in the 1970s that the debate between finance and growth became increasingly important. During the 1970s, developing countries imposed restrictive measures on financial systems, including ceilings on nominal interest rates, quantitative controls and selective credit allocation, together with forced allocation of assets or loans. All of these are referred to as "financial repression" (McKinnon, 1973). This was done partly for revenue generating purposes and also for promoting the nation's developmental goal. In fact, empirical studies point to substantial government revenue generated by controls on financial markets (Giovanni and DeMelo, 1993; Easterly and Schmidt-Hebbel, 1994; Fry (1997). For example, Giovanni and DeMelo (1993) found that the Mexican government extracted about six per cent of GDP (or about 40 per cent of total conventional tax revenue) from controls on financial markets.

Building upon the early work of Gurley and Shaw (1955), Goldsmith (1969), and Hicks (1969), McKinnon (1973) and Shaw (1973) point to the adverse effect of financial repression on economic growth and provide a new paradigm in the design of financial policies. McKinnon (1973) emphasized that a well-developed financial system would promote sufficient savings to finance investment projects, whereas Shaw (1973) highlighted the role of the financial system as debt-intermediation. Nevertheless, their policy inference highlights finance-led growth phenomena. The higher the developmental level of financial system, the higher the economic growth an economy is able to achieve. The presence of financial repression weakens the incentive to hold money and other financial assets, reduces the credit available for investors, and, therefore, retards the development of the financial system. Empirically, Demetriades and Luintel (1997), for example, found that financial repression had a direct, adverse effect on financial development in India during the period 1960-91. In this study, a composite index based on various types of interest rate controls, reserve and liquidity requirements and direct credit, is constructed while financial development is measured by the ratio of bank deposits over GDP.

In the 1990s, the finance-led growth proposition was strengthened by the endogenous growth literature. In fact, this literature highlighted the two-way relationship between finance and growth, i.e. finance and growth affect each other reciprocally. Finance development can promote growth by lowering informational

friction and improving resource allocation. This improves both the quantity and quality of investment. Only the former was highlighted in the typical McKinnon-Shaw model. According to the growth literature, a well-developed financial system allows investment projects to be launched more efficiently. Besides, unlike the McKinnon-Shaw models, reciprocal interaction between finance and growth is also possible in the endogenous growth theory framework. A higher level of economic development stimulates more demand for financial services, leading to increased competition and efficiency in the financial intermediaries and financial markets. Such a reciprocal interaction results in a bi-directional relationship between finance and growth.

Whereas the above discussion highlights the benefits to be accrued by abolishing financial repression, this could have a negative effect on economic growth. The liberalization of domestic interest rates has been at the core of programs of financial reform and financial liberalization in many developed countries. Doing so encompasses two elements. The first element is to abolish explicit controls on domestic interest rates and restrictions on the allocation of credit by financial institutes. The second element is to eliminate restrictions on capital movement and access to foreign exchange through official channels. However, a number of potential dangers and marginal benefits associated with financial liberalization are suggested by empirical studies.

In theory, financial liberalization encourages more savings and leads to an easing of liquidity constraints. Empirically, however, interest rate elasticity has been found to be low in high-income countries and negligible in developing countries (Ogaki et al., 1996). Hence, financial liberalization can simply lead to a temporary expansion of consumption and a reduction, rather than an increase, in savings. Atiyas et al. (1994) reviewed financial liberalization episodes in several developing countries between the mid-1970s and the early 1980s. The key finding is that higher real interest rates had a small effect on savings rates, except in cases where the change in interest rates was from a severely negative level to a position one. However, they also noted that other aspects of financial reform (such as an increase in bank branches, or a greater menu of financial products) may indeed have a positive effect on savings rates.

Interest rate liberalization may have a negative effect on the fiscal deficit because a rise in interest rates may increase the cost of borrowing and interest payments on the domestic public debt. After interest rates are liberalized, endogenous constraints in the credit market, such as those resulting from imperfect information, can continue to be significant barriers to efficient credit allocation. As theoretically argued in Stiglitz and Weiss (1981), credit rationing can occur in the free interest rate regime.

Evidence from the recent crisis casts doubt on the finance-led growth proposition. All crisis-affected countries which accelerated financial liberalization as a part of financial development package in the pre-crisis era suffered from significant financial sector vulnerability (Isard, 2005). Financial development can result in economic growth disruption and sometimes output contraction because it can induce volatility and discourage risk-averse investor firm behaviour (Lucas, 1988; Singh, 1997). Likewise, Mauro (1995) concludes that the introduction of certain financial tools that allow individuals to hedge against risks may lead to a reduction in precautionary savings and, hence, lower long-term economic growth. In addition, as argued in Bhagwati (1998), financial liberalization and capital account opening can create an adverse effect on the overall process of economic development. All in all, this simply points to the fact that the role of financial development in the growth enhancing process might be overstated.

2.4 Empirical Issues in Financial Development-Growth Nexus Studies

Table 2.1 provides a summary of econometric-based empirical studies of the finance-growth nexus in five aspects, namely study period, time coverage, research methodology, dependent and explanatory variables and their major findings. Where the research methodology is concerned, these studies can be divided into two groups, namely multi-country and in-depth individual country studies. In the former, there are both cross sectional and panel data studies, whereas the latter includes time-series econometric analysis.

Regarding multi-country studies, a standard growth equation is used to examine the relationship between financial development and growth. A financial development index is included as one of the explanatory variables. The statistical significance of the estimated coefficient corresponding to the financial development index indicates the effect of financial development on growth. Their country sample covers widely both developing and developed countries. Some studies such as Levine and Zervous (1998) are extended to examine which channels (capital accumulation and productivity) in financial development promote growth. The key finding of the multi-country study supports the proposition that financial development promoting economic growth is positive.

Nevertheless, they are subject to three shortcomings. Firstly, these multi-country studies ignored national and regional specific characteristics. In fact assuming countries' features are similar (infrastructure, population, technologies etc.) across countries makes the statistical inferences questionable. Secondly, these studies tend to support the hypothesis that the causality runs from financial development to economic growth. They entirely ignore the reverse causality. Thirdly, many cross-sectional studies failed to consider the possibility of causality from economic growth to financial development. Due to the fact that most of studies are inter-country cross-sectional analyses where key variables are averaged over long time horizon, this may hinder the variables' evolution and the way they influence one another. Indeed, a financial liberalization process evolves gradually. Thus, the outcome from the multi-country studies is rather suggestive and further investigation of the robustness of these findings is required, especially undertaking an individual country study (Arestis and Demetriades, 1997).

Where an individual country study is concerned, the causality relationship between financial development and economic growth is explicitly examined. The major finding of these studies is that the relationship between growth and finance is mixed. In particular, it is possible that only reverse causality (growth leads to financial development) is found. Engle-Granger causality tests as well as Vector Autoregressive (VAR) analysis are conducted. For example, Jung (1986) undertook VAR analysis during the period 1950-1992. Demetriades and Hussein (1996) studied 16 developing countries during the period 1960-95. Recently, the new econometric

technique, Vector Error Correction Model (VECM) has been employed where short-run and long-run relationships are jointly determined. The key finding is that, in the context of developing countries (e.g. Lieng and Teng, 2005; Abu-Bader and Abu-Qarn,2006; Ang and McKibbin, 2007), it is likely that in the reverse causality that economic growth fosters, the development of the financial sector is found. In contrast, Rousseau and Wachte (2001) applied the VAR approach to five industrialized countries over the 1870-1929 periods and found uni-directional links from finance to growth.

Furthermore, how to measure the extent to which financial sector has been developed seems to be another important issue in examining the relationship between financial development and economic growth. So far, consensus of the most appropriate measure of the degree of financial development has not been reached. In general, the degree of financial development can be measured at least in three broad ways. Firstly, financial development is measured by the relative importance of liquid liabilities in the economy, the ratio of currency plus demand, and the interest-bearing liabilities of banks and non-bank financial intermediaries to GDP (King and Levine, 1993a, 1993b). Its rationale is that the size of the financial intermediary sector is positively correlated with the provision and quality of financial services. Consequently, many researchers used this ratio as a measure of financial deepening (King and Levine, 1993a ; Ang and Mckibbin, 2007). The greater the financial intermediation, the higher the stage of financial development. Nonetheless, this measure may not gauge accurately the effectiveness of the financial sector in ameliorating informational asymmetries and easing transaction costs. Besides, it could be subject to a 'double-counting problem' where deposits by one financial intermediary in another are included.

The second measure emphasizes the relative importance of commercial banks to the banking system where the central bank is included. It is measured by the ratio of commercial bank assets divided by the total assets of the banking system (the sum of commercial bank, plus central bank assets). It represents the degree to which commercial banks versus the central bank allocate society's savings. The intuition underlying this measure is that banks are more likely to identify profitable investments, monitor managers, facilitate risk management, and mobilize savings than

central banks. The greater the importance of commercial banks, the higher the developmental stage the financial system reached. Again, this measure does not directly assess the effectiveness of banks in researching firms, exerting corporate control, mobilizing savings, easing transactions, and providing risk management facilities to clients. Thus, the quality and quantity of financial services provided by financial intermediaries cannot be reflected by this measure. Finally, the amount of private credit available is an indicator of the degree of financial development. It is usually measured relative to GDP. Public credit is excluded because the private sector is able to utilize funds in a more efficient and productive manner compared to the public sector.

Most of the in-depth country studies use these separately as indexes of financial development so that they reflect only certain aspects of financial development. Due to the fact that each has its own advantages and disadvantages and there is no superior index among them, recent studies (e.g. Levine, 2002; Kelly and Marvotas, 2003; Ang and McKibbin, 2007) construct a composite index, in which all measures are combined together. This minimizes any selection bias between one measure and another.

2.5 Key Findings

Financial systems play a pivotal role in an economy, i.e. mobilizing savings, facilitating productive investment, reducing risk, improving inter-temporal resource allocation and financing investment. This promotes economic growth and enhances social welfare. In the presence of transaction costs and imperfect information in lending-borrowing activities, financial intermediaries emerge. It can be argued that all of these activities can be undertaken by individuals. However, it is far more efficient if they are done by financial intermediaries. While the debate on finance and growth has continued since the first half of 19th century, consensus has not been reached. Whereas a number of studies, pioneered by McKinnon (1973) and Shaw (1973) and echoed in the endogenous growth context, highlight the positive effect of the presence of financial intermediaries on growth, it is of concern that the role of financial development in the growth enhancing process might be overstated by a

number of empirical studies. Indeed, the rapid expansion of a financial sector could retard long-term economic growth.

There are two considerations to be borne in mind when reviewing empirical studies of the financial development-growth nexus. Firstly, the empirical studies have been lopsided by inter-country, cross-sectional econometric analysis. In addition, the relationship that financial development promotes growth is usually found in these studies. However, their results must be interpreted with caution as they ignore the possibly reverse causality relationship and country-specific factors. When these elements are taken into consideration, as revealed in country-specific studies, the results were, convincingly, mixed. Secondly, so far the relative importance, a measure of financial development, has been reflected by their liquid liabilities, assets, and credit. Until recently most empirical studies separated them as indexes of financial development. This can only partially reflect the developmental role of financial intermediaries as each of them at best reflects only certain aspects of the complete picture.

Table 2.1

Overview of Empirical Studies

Authors	Year	Sample coverage: region	Sample coverage: period	Research method	Financial agencies included	Economic growth variables	Financial development variables	Control variables and other variables	Major findings
King, and Levine	1993	Up to 77 countries (up to 19 EU+; up to 3 ACC)	1960-1989	Cross country regression analysis	Bank sector	Growth of GDP; capital stock; and productivity	Liquid liabilities / GDP; assets of commercial and central banks / GDP; private credit / GDP; credits issued to private enterprises / GDP; credits issued to private and public enterprises and local governments / GDP	Initial GDP; school enrolment; trade exposure; government spending / GDP; inflation	Finance ➙ Growth
Atje and Jovanovic	1993	94 countries in 2 groups (15 EU+; 0 ACC)	1970-1988 and 1980-1988	OLS regression analysis	Bank sector and stock market	Growth of real income per capita	Private credit / GDP; stock market turnover times investment ratio	Lagged investment rate; population growth	Finance ➙ Growth (only stock market)

(Continued)

Table 2.1

Overview of Empirical Studies (Continued)

Authors	Year	Sample coverage: region	Sample coverage : period	Research method	Financial agencies included	Economic growth variables	Financial development variables	Control variables and other variables	Major findings
De Gregorio and Giudotti	1995	95 countries (19 EU+; 3 ACC)	1960-1985	Growth regression analysis	Bank sector	Growth of real income per capita	Bank credit to non-financial sector	Investment rate; school enrolment; size of public sector; political stability	Finance → Growth
Levine and Zervos	1998	47 countries (17 EU+; 1 ACC)	1976-1993	Cross country regression analysis	Bank sector and stock market	Growth of real GDP; capital stock and productivity; savings	Bank credit / GDP; capitalisation of domestic listed companies / GDP; value traded (the value of export plus import)/ GDP; volatility of share returns	Initial output; number of revolutions and other social and political variables	Finance → Growth

(Continued)

Table 2.1

Overview of Empirical Studies (Continued)

Authors	Year	Sample coverage: region	Sample coverage : period	Research method	Financial agencies included	Economic growth variables	Financial development variables	Control variables, other variables	Major findings
Beck, Levine and Loyaza	2000	77 countries (19 EU+; 2 ACC)	1960-1995	Cross-country and dynamic panel regression analysis	Bank sector	Growth of real GDP per capita	Private credit / GDP; liquid liabilities / GDP; credit by deposit money banks / GDP and stock market capitalisation / GDP	Various legal indicators; trade exposure; government size; education; initial GDP per capita; black market premium	Finance → Growth
Rousseau and Sylla	2001	17 countries (13 EU+; 0 ACC)	1850-1997	Cross country regression analysis	Bank sector	Growth of real GDP per capita	Broad money relative to GDP	Initial real GDP; initial trade exposure; initial government expenditure	Finance → Growth
Rousseau and Wachtel	2001	84 countries	1960-1995	Cross-country regression analysis	Bank sector	Growth of real GDP per capita	M3 / GDP; (M3 - M1) / GDP; total credit / GDP	Initial real GDP; school enrolment	Finance → Growth

Table 2.1

Overview of Empirical Studies (Continued)

Authors	Year	Sample coverage: region	Sample coverage : period	Research method	Financial agencies included	Economic growth variables	Financial development variables	Control variables, other variables	Major findings
Jung	1986	56 countries	Various periods between 1950 and 1992	Granger causality tests (VAR framework)	Bank sector	Growth of real GDP per capita	Cash/M2; M2/GDP		Finance � Growth (developing countries) Growth ➔ Finance (developed countries for cash/M2)
Demetriades and Hussein	1996	16 countries (3 EU+; 1 ACC)	1960-1995	Granger causality tests	Bank sector	Real GDP per capita	Bank deposit liabilities /GDP; bank claims on private sector /GDP		Finance ⬌ Growth
Demetriades and Hussein	1996	16 countries (3 EU+; 1 ACC)	1960-1995	Granger causality tests	Bank sector	Real GDP per capita	Bank deposit liabilities /GDP; bank claims on private sector /GDP		Finance ⬌ Growth

(Continued)

Table 2.1

Overview of Empirical Studies (Continued)

Authors	Year	Sample coverage: region	Sample coverage : period	Research method	Financial agencies included	Economic growth variables	Financial dvelopment variables	Control variables, other variables	Major findings
Rousseau and Wachtel	1998	USA; Canada; UK; Sweden; Norway	1870-1929	Granger causality tests (VAR framework)	Bank sector	Growth of real GDP per capita	Money base; various proxies for intermediation based on bank deposit and credit		Finance ➔ Growth (in early phase of economic development)
Shan and Morris, Sun	2001	10 countries (6 EU+; 0 ACC; China)	1960-1998 (maximum time span); 1982-1998 (minimum time span)	Granger causality tests (VAR framework) with conditioning set	Bank sector	Growth of real GDP per capita	Bank credit / GDP		Finance ⬌ Growth (5 countries) Growth ➔ Finance (3 countries) Finance ⬌̸ Growth (no causality for 2 countries)
Liang and Teng	2005	China	1952-2001	Granger causality tests (VAR framework)	Bank sector	Growth of real GDP per capita	Bank credit ratio; deposit liabilities ratio	Real interest rate; physical capital stock; trade ratio	Growth ➔ Finance

(Continued)

Table 2.1

Overview of Empirical Studies (Continued)

Authors	Year	Sample coverage: region	Sample coverage : period	Research method	Financial agencies included	Economic growth variables	Financial dvelopment variables	Control variables, other variables	Major findings
Abu-Bader and Abu-Qarn	2006	Middle Eastern and North African	Various periods between 1960 and 2004	Granger causality tests (VECM framework)	Bank sector	Growth of real GDP per capita	M2/GDP; M2 minus currency / GDP; Bank credit to private credit; credit issued to non-financial private/total domestic credit	Investment/GDP	Growth ➡ Finance
Ang and McKibbin	2007	Malaysia	1960-2001	Granger causality tests (VECM framework)	Bank sector	Growth of real GDP per capita	Composite indicator includes(M3/GDP; private credit/GDP; assets of commercial and central banks / GDP)	Real interest rate; trade ratio; savings/GDP; investment/GDP	Growth ➡ Finance

Note :   EU+ refers to the sample coverage of EU plus 5 OECD countries, ACC refers to the sample coverage of EU accession countries.