Financial Development and Economic Growth : The Case of China during 1978-1999*

Hua Cheng

1. Introduction

In 1973, Mckinnon and Show published their important works respectively, "Money and Capital in Economic Development" and "Financial Deepening in Economic Development", in which they advocated that financial depression (such as interest rate ceilings, high reserve requirements and directed credits) in developing economies hindered financial development and thus produced a negative effect on economic growth, and on the contrary, the measures taken to deepen and liberalize financial system would promote economic growth. Since then, the relationship between financial and economic development received considerable attention from many economists. Especially during 1980s and 1990s, there appeared substantial theoretical and empirical works on the role that financial system plays in fostering economic growth and development. On the theoretical study, economists established various frameworks to show that, by facilitating the exchange of goods and services, mobilizing savings, allocating resources and helping diversify risks, financial system facili-

tates the allocation of resources over space and time. Although no general model can fully clarify the mechanism of financial system's function on promoting growth, some economists managed to model explicitly services (such as information collection and analysis, risk sharing) provided by financial intermediaries to show why financial intermediaries exist[1].

On the empirical study side, in the meantime, a large body of works tested the positive relationship between financial depth and growth based on regression analysis utilizing the following basic equation

$$Y_i = \beta_0 + \beta_1 FD_i + \beta_2 X_i + \varepsilon_i$$

where Y is the growth rate, FD is an indicator of financial depth, X is a set of control variables, and ε is the error term. These studies can be divided into two categories of study: cross-section and time-series. In the former[2], the growth equation is estimated with data averaged over a whole or partial period. These studies indicate that countries operating at a higher level of financial development show higher growth. In contrast, the use of pure time-series data[3], usually annual, shows the positive relationship between the financial depth and the level of per capita GDP. Time-series studies also may be used to investigate the causal direction from financial deepening to economic growth.

For at least two reasons, China has not been included in cross-sectional and time-series studies. First, the period of available data is too short and some data is not available. For example, despite their use of data from 80 coun-

---

1) For example, Greenwood and Jovanovic (1990) showed that financial intermediation promotes growth because it can decrease the uncertainty of individual investment and then allows a higher rate of return to be earned on capital. King and Levine (1993b) constructed an endogenous growth model in which financial system evaluates prospective entrepreneurs, mobilize savings to finance the most promising productivity-enhancing activities, diversify the risks associated with these innovative activities.

2) King and Levine (1993a) and Khan and Senhadji (2000).

3) Demetriades and Luintel (1996) and Rousseau and Poul Wachtel (1998).

tries, King and Levine (1993a)'s study of financial development and efficiency and growth left China out of the sample because relevant statistics were not fully available for the period of 1960 to 1989. Second, unlike Japan, Korea, Taiwan and some countries of sub-Saharan Africa, China lacks a rich history of financial reform, and as a result is not the subject of any case studies. Though the 1980s and 1990s have seen many reforms, such as the separation of commercial banks from the central bank, and the introduction of indirect monetary instruments, China continues to tightly control its financial system.

However, China is a developing country of unprecedented size and growth, with reforms occurring increasingly. China deserves examination. This study of the relationship between financial development and economic growth in China is intended to help fill this gap. I begin by examining financial deepening, then investigate the relationship between financial development and GDP growth per capita during 1978-1999 in China. In the next section various indicators measuring financial depth are introduced. Section 3 illustrates methods and model of empirical study, briefly providing results. Section 4 offers conclusions.

2. Measuring Financial Development

The financial system of a country is composed of two parts : financial intermediaries and financial market. The former includes bank sector and non-bank financial institution, and the latter refers to stock market mainly. In this paper, however when discussing China's financial development, I only touch on financial intermediaries, or to be more specific, the bank sector only. In this paper the stock market is not included because China did not reopen its stock market until early 1990s, and in comparison to the bank sector, the size of stock market is still small (see **Table 1**).

Table 1 Relative Importance of the Bank Sector in China

(100 million Yuan)

Year	Total deposit of financial institution	Total market value of stocks in Shanghai and Shenzhen stock exchange	Ratio
90	14,012.6	12.37	1,133 : 1
91	18,079.0	109.19	166 : 1
92	23,468.0	1,048.13	22 : 1
93	29,627.0	3,531.01	8 : 1
94	40,472.5	3,690.62	11 : 1
95	53,862.2	3,474.27	16 : 1
96	68,571.2	9,842.37	7 : 1
97	82,390.3	17,529.23	5 : 1
98	95,697.9	19,505.65	5 : 1
99	108,778.9	26,471	4 : 1

Sources : *People's Bank of China : Statistics Quarterly* 2000. 2.

Obviously, it is not easy to measure the level of financial development. In the literature mentioned above, a broad array of indicators were constructed. Conventional measures (ex. Mckinnon 1973) include the level of real interest rates and the ratio of broad money to GDP. More recently, King and Levine (1993a) utilized some other indicators to measure the services provided by financial intermediaries. These indicators are the following : 1) the importance of deposit banks relative to the central bank in allocating domestic credits, (calculated as the ratio of domestic assets of deposit banks to the domestic assets of deposit and central banks), 2) the ratio of claims of the non-financial private sector to total domestic credit, 3) the ratio of claims on the non-financial private sector to GDP.

These indicators used data which are available in almost all countries and were designed to reflect different aspects of financial development. There are

other proxies of financial depth adopted, such as ratio of M_3/GDP, M_1/GDP, Cash/Total Credit and so on. However, even though a broader array measures were utilized at the same time, there are still some factors missing, such as competitiveness of the banking sector, and the existence of a legal environment that protects the rights of creditors and enforces contracts, which are very important in valuing a financial system. So in the latest literature, the index of financial development and some dummy variables were constructed. For example, Gelbard and Leite (1999) created an index to measure financial development and a set of six indices representing key characteristics of financial systems in 38 sub-Saharan African countries. However, in cross-section studies that include many countries, it is difficult to construct a proper index and a large amount of information is necessary, so this method is almost impossible.

Even having undergone twenty years' financial liberalization, China still has a financially repressed economy[4] and its financial system is only in the initial stage of financial development. During the 1978-1999 period there appeared some changes typical of developing economies in transition : the rapid expansion of monetary aggregate and bank credit accompanied by rigid regulation. So we can assess the process of financial development in China by comparing its progress down a path to which many other nations have walked down.

First, the ratio of M_2 to GDP. A traditional indicator of financial depth is the overall size of the formal financial intermediary system, i.e., the ratio of liquid liabilities to GDP. The liquid liabilities of all financial intermediaries

---

4)　Pill and Pradhan (1995) identify three stages of financial development : a financially depressed economy (FRE) ; a domestically liberalized economy (DLE) and an internationally liberalized economy (ILE). During the transition from an FRE to a DLE, domestic controls on interest rates are removed, allowing market-clearing rates to be established. Capital account restrictions are abolished only in the final stages of the liberalization program.

refer to M_3, but because of unavailability of M_3, we use M_2 , which is typically done. We call this indicator as "M_2". As denoted in **Figure 1**, M_2 increased steadily from about 0.3 in 1978 to near 1.4 in 1999, which reflected a rapid growth of financial intermediaries. Using measure M_2, we hypothesize that the size of financial intermediaries is positively related to the provision of financial services, however, the size of the financial system may not be closely related to some financial services, such as risk management and information processing.

Consequently, we select a second financial development indicator to measure the relative importance of specific financial institutions, the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets. We call this indicator "BANK". This measure was initially constructed by King and Levine (1993a) because commercial banks are more likely to provide the type of risk sharing and information services than the central bank. In China, commercial banks were separated from the central bank, People's Bank of China, in 1984. Since then, commercial banks experienced substantial changes, such as increased emphasis on the
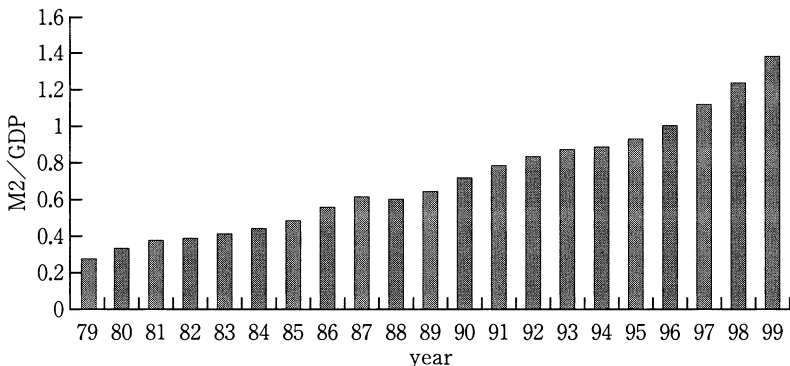

Figure 1   Ratio of M_2/GDP

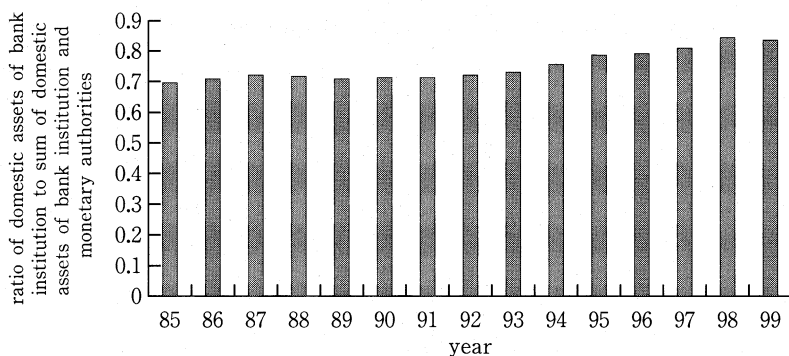Sources : *International Financial Statistics Year Book.*

Figure 2   Importance of Bank Institutions to Monetary Authority
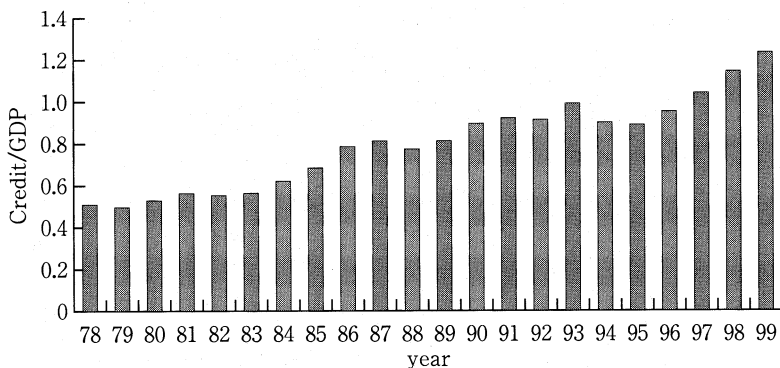Sources : *International Financial Statistics Year Book.*

Figure 3   Ratio of Credit to Other Sectors Exclusive of Central Government to GDP
Sources : *International Financial Statistics Year Book.*

market and the emergence of private banks. Because of this, commercial banks, are playing a significant role enough to measure financial deepening through the amount of money deposited in them. **Figure 2** shows a gradual increase of commercial banks' size relative to that of the central bank.

Third, the ratio of credits to other sectors exclusive of central government to GDP. We call this indicator as "CREDIT". Total domestic credit is often taken as the proxy measuring the size of services provided by banking institu-

tions, but in general, a financial system that simply funnels credit to the government or state owned enterprises may not evaluate managers, select investment projects, pool risk and provide financial services to the same degree as a financial system that allocates credit to private sector, so the ratio of credit of private sector to GDP is considered as a typical indicator of financial deepening. In China during the period from 1978 to 1999 state-owned enterprises occupied dominant the position in almost all economic sectors and it was very difficult for private enterprises to obtain credit from a bank. So instead, we employ the ratio of credit to other sectors exclusive of the central government as one of the financial deepening indicators. As **Figure 3** shows, although there were some fluctuations in 1979, 1982, 1988, 1992, 1994 and 1995, CREDIT manifests a tendency to improve on the whole.

Fourth, the real interest rate and the spread between of deposit and lending interest. We call these two indicators as "INTEREST" and "INTEREST SPREAD". According to Mckinnon (1973) and Show (1973), in most developing countries, government regulates the interest rate by stipulating ceiling to interest rate or deciding the level of interest rate directly, and usually these regulations made interest rates lower than market-clearing rate and led to inefficient investment. In the early stage of financial development, the interest rate will rise with the relaxation of financial regulation and the higher interest rate will improve both saving and lending levels, so it is favorable to economic growth. It also argued that the difference between deposit and lending interests represents the efficiency of bank institutions, so with the financial reform deepening, financial intermediaries will provide more efficient services and then the spread between deposit and lending interests will gradually decrease. Accordingly, the real interest rate and the spread between deposit and lending interests can serve as indicators of financial deepening to some
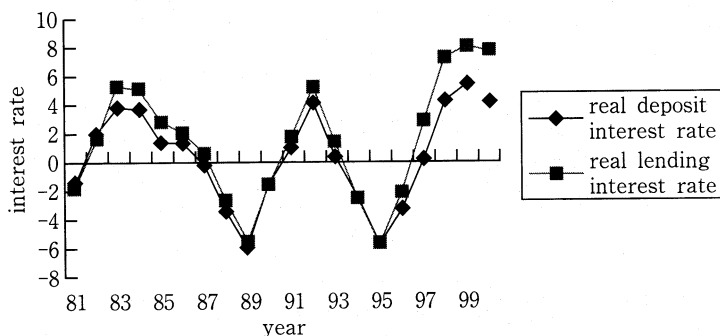
Figure 4　Real Interest Rate

Note : The real interest rate is calculated as following briefly : Real interest
rate=nominal interest rate-average of last, this and next year inflation rate.

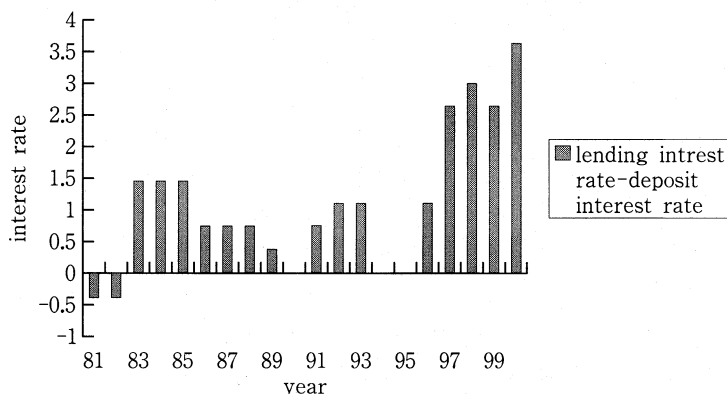Sources : *International Financial Statistics Year Book* and *Almanac of China's
Economy 2000.*

Figure 5　Spread of Lending and Deposit interest rate

Sources : *International Financial Statistics Year Book* and *Almanac of China's
Economy 2000.*

extent.　These two indicators are shown in **Figure 4** and **Figure 5**.

Obviously, Figure 4 and 5 give no signals on financial development as expected, INTEREST and INTEREST SPREAD only showed great fluctuations and no increasing or decreasing tendency appeared.　Furthermore, in some years, they were even negative.

When considering the actual situation in China, we can understand this seemingly unreasonable interest level. First, the banking sector is characte-rized by restrictive financial regulations, including interest regulations, and credit allocation controls. To maintain state-run enterprises, employment, and other social purposes, deposit and lending interest rates are often controlled below the market-clearing level by the central authority. The evidence can be found in the black financial market where a much higher interest rate is offered. Second, China's macro-economy is proceeding in a very unstable way. During the period of 1978-1999, economic growth varied between 15.3% (1984) and 4.2% (1989) and inflation rates fluctuated between -3% (1999) and 21% (1994), authority had to adjust nominal interest rate frequently and with a large range. Third, even if the government managed to keep interest rates in line with market situation, without the proper development or no develop-ment at all of stock markets, bond markets and inter-bank markets, it would be difficult for the authority to determine an appropriate interest level. Therefore, in China, interest rates could not be taken as a proper signal of the capital allocating market and the spread between deposit and lending interest rates did not reflect efficiency of financial intermediation. The unusual varia-tion reflected rigid control by the government and financial underdevelop-ment.

In summary, on one hand, indicators M_2, CREDIT and BANK show that the financial intermediaries expanded rapidly and provided more and more services to the real sector during the past twenty years. To the extent that the size of the intermediary sector reflects the volume of their services and the increase in efficiency of their delivery, M_2 and CREDIT should be related to output performance. In section 3 we will examine this relationship. On the other hand, indicators INTEREST and INTEREST SPREAD fluctuated

in an unusual way, but it is this unusualness that affirmed a tightly controlled financial system and a banking system lack of proper or sufficient price signals and complete financial market. Such inefficiency and incompleteness often lead to inefficiency on providing services such as evaluating investment project, pooling risk, etc. So based on this we may infer the development of financial intermediaries did not promote economic growth to the degree by which their size indicated. In the next section, we will discuss this conclusion from an empirical perspective.

3. Analysis of financial development and economic growth

In this section, we utilize the Cobb-Douglas Production Function to estimate the relationship between financial development and economic growth. Population growth was found to have less effect on economic growth and other factors, such as investment, human capital, institution evaluation, import and export, but played an important role in much of the literature which discussed China, so we include fixed capital formation and sum of import and export as control variables into growth equation except for financial depth.

$$LY = AK^{\alpha}e^{\beta p + \theta M} \tag{1}$$

LY, K, P and M denotes GDP per capital, fixed capital formation, import and export as share of GDP and financial depth, respectively.

The above equation implies the productive elasticity of capital α is fixed across the studying period. Sufficiently developed financial intermediaries will not only funnel more loan-worthy funds from surplus units to deficit units —thereby increase the level of investment—but also by providing more other services including information collection, risk diversification, project evaluation and so on, they might promote the efficiency of investment. As a result, with an increase in financial depth M, the productive efficiency of capital is

likely to increase. Equation （1） can be modified to model this :

$$LY = AK^{w+\tau M} e^{\beta p + \theta M} \qquad\qquad (2)$$

Ordinary Least Square Estimation (OLS) may be applied to equations （1） and （2）, and the result may be used to evaluate a possible relationship between financial deepening and economic growth and investment efficiency.

$$Ln(LY) = A + \alpha Ln(K) + \beta P + \theta M + \varepsilon$$

$$Ln(LY) = A + wLn(K) + \beta P + \theta M + \gamma M \cdot Ln(K) + \varepsilon$$

LY is GDP per capita calculated in 1995 price, K is fixed capital formation (in 1995 price too). P is ratio of the sum of import and export to GDP (each calculated by the official exchange rate in YUAN). M is the proxy of financial development. Two kinds of indicators are employed, namely M_2/GDP and CREDIT (the ratio of credit to other sectors exclusive of the central government to GDP). ε is the error term.

Table 2 summarizes the estimated results of derived equations. Several trends are evident as follows :

(1) The factor of fixed capital information shows a positive and significant relationship with GDP per capita and the factor of import and export is related to GDP per capita significantly when the term of $M*Ln(K)$ enters the equation and insignificantly when it doesn't enter, but each of the estimated coefficients is positive. This is consistent with our expectations and shows that investment and import-export may contribute to economic growth.

(2) There exists a positive and significant relationship between financial depth indicators and GDP per capita. The indicators of financial deepening are calculated from monetary aggregate M_2 and credit, both of which reflect the scale of the financial intermediary sector, so we may infer that development of the financial intermediary sector was robustly correlated

Table 2　Estimation of Relationship Between Financial and Economic Development

Dependent variable : Ln (GDP per capita)				
Variables	Coefficient			
Ln (Capital Formation)	0.432*** (5.16)	0.596*** (7.30)	0.514*** (8.69)	0.642*** (4.644)
(Import＋Export)/GDP	0.958*** (3.15)	0.326 (0.63)	0.648** (2.24)	0.360 (0.90)
M_2/GDP	0.426*** (2.95)	2.627*** (3.99)		
M_2/GDP× Ln(Capital Formation)		−0.272*** (−3.40)		
Credit/GDP			0.522*** (3.11)	1.394* (1.61)
Credit/GDP× Ln (Capital Formation)				−0.122 (−1.03)
Samples	21	21	21	21
R^2	0.996	0.998	0.996	0.996

Note : 1)　＊ is significant at 10 percent, ＊＊ at 5 percent and ＊＊＊ at 1 percent.

　　　2)　t-values are in parentheses.

　　　3)　all values of GDP per capita and capital formation are calculated on the 1995 price.

Sources : *Chinese Economic Statistics Yearbook 2000.*

　　　　　International Financial Statistics Yearbook 2000.

with economic growth. However, this estimation does not show causal direction from financial development to economic growth, for a positive relationship between economic and financial growth might just indicate that they varied simultaneously or financial development followed economic growth[5].

(3)　When the term $M*Ln (K)$ is included, the coefficient of financial deepening M rises greatly compared to equation (1), however coefficient of variable $M*Ln(K)$ is negative and it is significant when M_2/GDP as indicator of financial depth and insignificant when another indicator, ratio

---

5)　In fact, some economists, for example, Robinson (1952), contends that finance is essentially the handmaiden to economic development, responding passively to other factors.

of credit to GDP. This result seems to show that while financial development contributed to economic growth, it did not improve and even had a negative effect on investment efficiency. The special history and current situation of China, as a former centralized planning economy and transforming economy, might account for this.

On the one hand, before 1978, the government had almost no fiscal deficits and state-bonds; Enterprises attained capital directly from government and individual income was controlled at a low level; Financial institutions operated within a very limited range and except for deposit banks there were few other financial intermediaries. Therefore, during the period 1978-1999, in the the initial transition stage of the economic system, Chinese financial intermediaries had a broad room to develop, and actually they grew rapidly as Figure 1 and 3 showed. Certainly, such a financial development should be advantageous to economic growth.

On the other hand, as we analyzed above, the financial system of China is still far from developed and is under rigid regulation. In the bank sector, on the deposit side, due to shortage of investment instruments (such as stock, insurance, enterprise bond and so on), individuals and enterprises have to save in commercial banks; on the lending side, loans are obtained by state-owned enterprises at subsidized rates by governmental intervention, many of which are inefficient in comparison to private firms. Therefore, on the whole, the commercial banks are lack of competition and profit incentive, not only can they not supply services of information collection and investment evaluation projects actively and efficiently, but also often led to misallocation of resources.

To sum up, empirical results showed a robust positive relationship between financial deepening and economic growth, which may reflect that the development of financial intermediary promoted economic growth. However, finan-

cial development was not found to contribute to the improvement of invest-
ment efficiency, which may be explained by China's mode of financial regula-
tion.

4. Conclusions

Recent literature on finance and growth focus on testing the relationship
between economic growth and financial intermediary and stock market, trying
to provide empirical evidence for the theory of financial development. This
paper examined China's case in 1978-1999. At first, the paper analyzed finan-
cial development in China using five measures : M_2/GDP, credit to other sec-
tors exclusive of government, importance of commercial bank to central bank,
real interest rate and spread of interest rate between deposit and lending.
The former three indicators showed a movement of financial deepening and
the latter two did not, this contradiction points to the inconsistency in the
quantity and quality of financial intermediary development. Then, employing
M_2/GDP and Credit/GDP as proxies of financial development, we examined
the relationship between financial development, economic growth and invest-
ment efficiency. Results showed the financial development positively and
robustly related to economic growth and had no or even a negative effect on
the improvement of investment efficiency.

【References】

Sarr, A., (2000) "Financial Liberalization, Bank Market Structure and Financial
Deepening : an Interest Margin Analysis," *IMF working paper*, 38.

Gelbard, E. A., and S. P. Leite, (1999) "Measuring Financial Development in Sub-
Saharan Africa," *IMF working paper*, 105.

Greenwood, J and B. Jovanovic, (1990) "Financial Development, Growth, and the
Distribution of Income," *Journal of Political Economy*, Vol. 98, pp. 1076-1107.

Mckinnon, R., (1973) *Money and Capital in Economic Development*, Washington, D. C. : Brookings Institution.

Khan, M. S. and A. S. Senhadji, (2000) "Financial Development and Economic Growth : an Overview," *IMF working paper*, 209.

Demetriades, P. O., and K. B. Luintel, (1996) "Financial Development, Economic Growth and Banking Sector Controls : Evidence from India," *The Economical Journal*, March, pp. 359-374.

Rousseau, P., and P. Wachtel, (1998) "Financial Intermetiation and Economic Performance : Historical Evidence from Five Industrialized Countries," *Journal of Money, Credit, and Banking*, Vol. 30, pp. 657-678.

Areatis, P., Demetriades, P. O. and K. Luintel, (2001) "Financial Development and Economic Growth : the Role of Stock Markets," *Journal of Money, Credit, and Banking*, Vol. 33, pp. 16-41.

King, R. G., and R. Levine, (1993a) "Finance and Growth : Schumpeter Might be Right," *Quarterly Journal of Economies*, August, pp. 717-737.

King, R. G., and R. Levine, (1993b) "Finance, Entrepreneurship, and Growth," *Journal of Monetary Economics*, 32, pp. 513-542.

Robinson, J., (1952) *The Generalization of the General Theory*, Macmillan, London.

Levine, R., Loayza, N., and T. Beck, (2000) "Financial Intermediation and Growth : Causality and Causes," *Journal of Monetary Economies*, 46, pp. 31-37.

Shaw, E. S., (1973) *Financial Deepening in Economic Development*, NEW YORK : Oxford University Press.