FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN FIJI

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Abstract

This paper examines the relationship between financial development and growth in Fiji using time series data from 1970-2000. Firstly, an analysis of a broad set of financial indicators for Fiji based on a cross-country study by Beck, Demirguc-Kunt and Levine (1999), provide support for the evolvement of Fiji's financial sector over the three decade review period. Secondly, the paper examines empirically the causal link between financial development and economic growth in Fiji using unit root and co-integration techniques within a bi-variate vector auto-regressive (bVAR) framework. Results reveal a positive relationship between financial development and economic growth for Fiji with the direction of causation running predominantly from economic growth to financial development. This outcome is consistent with results found for countries which have less sophisticated financial systems.

1.0 Introduction

The important link between financial development and economic growth has been the subject of numerous studies, for many years. More specifically, these researches have highlighted, at the theoretical as well as empirical level, the significance of having a developed financial system to support economic growth. Additionally, recent studies have also addressed this topic from an open economy perspective, and found that financial integration with the global economy like financial deepening can bring about economic benefits.

For Fiji, studying the relationship between financial development and economic growth is a vital one, considering the continuing progress in its financial sector. This focus of study provides support for research work, which have included Fiji in its cross-country empirical evidence.[1] This paper combines an analysis of a set of financial indicators for Fiji, (which give an indication of the size and activity of the financial sector over a three decade period) and an empirical investigation into the financial development–economic growth link.

The paper is divided into 5 sections. The next section discusses a literature survey on financial development and economic growth. Section 3 covers financial developments in Fiji on the basis of a recently developed broad set of indicators, section 4 provides an empirical analysis while section 5 gives some concluding remarks.

[1] See Beck, Demirguc-Kunt, and Levine (1999); Odedokun (1996).

2.0 Literature Survey

This section reviews various studies on both theoretical and empirical relationships between financial development and economic growth.

2.1 Theoretical studies

Studies undertaken to examine the relationship between financial development and economic growth goes far back to the work of Bagehot (1873), Schumpeter (1912), and Hicks (1969).

In his study for instance, Schumpeter (1912) discusses the finance-growth relationship as a supply-leading one, in which the financial sector leads economic growth by successfully identifying and funding high-yielding projects. This is based on the view that a financial system that is functioning well, would encourage technological innovation by selecting and financing businesses that are expected to be successful.

Bagehot (1873) and Hicks (1969) on the other hand, argued that financial development was an important channel in the industrialization of England, by helping the movement of large amounts of funds for "immense" works.

Later works include that of Greenwood and Jovanovic (1990), Levine (1991), Bencivenga and Smith (1991) and Saint-Paul (1992), which involved theoretical models, wherein an efficient financial market raises the quality of investments, thus leading to economic growth. Specifically, Greenwood and Jovanovic (1990) built in their model a financial sector whose main objective it to direct funds to high-yielding investments with

the assistance of information. This then would lead to economic growth, which would in turn enable the implementation of costly financial structures. In his model, Levine (1991) explains how stock markets influence growth by improving firm efficiency. Furthermore, Bencivenga and Smith (1991) explain in their study, that a well-functioning financial system would improve the level of investment towards non-liquid objects, which will be beneficial to the economy. Saint-Paul (1992) on the other hand, explains the role of the financial sector in helping business enterprises in specialisation by allowing investors to hedge by holding a diversified portfolio. This in turn would lead to productivity growth. Supporting this, Atje and Jovanovic (1993) explain how the financial system can help investors disperse risk and provide funding, thereby guiding them to the best investments which are profitable to the economy.

More studies include that of Maurice Obstfled (1994) who argued that financial openness and access to international financial markets bring benefits to businesses as well as the economy. Bencivenga, Smith and Starr (1995) argued that industries, which require a longer period to implement new technologies benefit more relatively, from developments in the financial market. Rajan and Zingales (1996) concluded that as the market develops, firms that are less-firmly established and have difficulty with self-funding projects, would benefit better from external funding methods, and therefore expand relatively faster.

Balckburn and Hung (1996) found that in a developed financial system, the task of monitoring projects can be undertaken by financial intermediaries, lowering transaction costs and channelling greater savings towards new investments, thus boosting economic growth. Moreover, the

authors explain how a country can be trapped in a situation of low economic growth and low financial development. More recently, Levine and Zervos (1998) in their study argued that higher returns and improved risk could encourage a lower savings rate, which would lower economic growth with more liquid and internationally integrated financial markets. In line with this, Tsuru (2000) explained how the development of the financial sector is able to affect the saving rate, thus affecting the rate of economic growth.

2.2 Empirical Evidence

Empirical analysis on the relationship between financial development and economic growth goes back to early studies such as that by Goldsmith (1969) who found that financial development led to faster economic growth. Later studies, which have used less-simplified economic and financial indicators, as well as examined the issue of causality, include Gupta (1984) which examined the money effects on industrial production, although the latter was regarded as measuring only a portion of overall output.

Other studies include that by Jung (1986) which used a Vector auto-regressive (VAR) approach to test the causality between financial development and economic growth for a sample of 56 countries (both developed and developing). King and Levine (1993) examined cross-country evidence from 80 countries, and found a strong positive relationship between each of the 4 measures of financial development used, and economic growth. Murende and Eng (1994) in their study found the

causality between financial development and economic growth running in both directions, in the case of Singapore. Demetriades and Hussein (1996) found evidence of bi-directionality between financial development and growth using data from 16 developing countries. Levine and Zervos (1996, 1998) found evidence that stock market liquidity and banking development have a positive relationship with economic growth. Ragan and Zingales (1998) argued that financial sector development and economic growth can be affected by the saving rate, also supporting the hypothesis that financial development causes economic growth.

Rousseau and Wachtel (1998) found one-way causality in the relationship between financial development and economic growth in the case of 5 present OECD countries during the period of fast industrialisation (1871-1929). Kul and Khan (1999) in their study found bi-directional causality for all countries in the sample. Beck, Levine and Loayza (2000) found that banks have a strong causal effect on economic growth using panel data analysis. Using cross-country evidence, studies by the World Bank (1989) and Demirguc-Kunt and Levine (1996b), showed that the financial structure differs considerably across countries and changes as countries develop economically.

3.0 Overview of Financial Developments in Fiji[2]

While Fiji's economic performance over the past years has been

2 Data used to construct the indicators are sourced from the IMF's International Financial Statistics (IFS), Reserve Bank of Fiji, relevant institutions, and generally covers the period from 1970 to 2000.

relatively subdued, with GDP growth averaging around 3 percent from 1970-2000, the financial sector has continued to evolve. In the following sections, we examine financial developments in Fiji during a three decade review period, from 1970-2000, using indicators of financial development from a study by Beck, Demirguc-Kunt and Levine (1999).

3.1 The Size and Activity of Financial Intermediaries

This section looks at measures, which compare the size and activity of the central bank, commercial banks and other financial institutions relative to each other and relative to GDP.[3] The central bank[4] is defined as any institution that carries out the role of monetary authorities. Deposit money banks[5] - consists of all financial institutions that have "liabilities in the form of deposits transferable by check or otherwise usable in making payments" (IMF 1984, 29). Other financial institutions (OFI) – comprise other bank-like institutions and non-bank financial institutions, which serve as financial intermediaries, but do not incur liabilities usable as a means of payment. Other bank-like institutions include (i) institutions that accept deposits, but do not offer transferable deposit services, (ii) institutions that self-finance through the issue of negotiable bonds, (iii) development banks, and (iv) offshore units. Non-bank financial institutions comprise insurance companies, provident and pension funds, trust and custody accounts, real investment schemes, other pooled investment schemes, and compulsory

[3] For a detailed description of the three financial sectors see IMF (1984).
[4] Referred to hereafter as "Reserve Bank".
[5] Referred to hereafter as "Commercial Banks".

savings schemes.

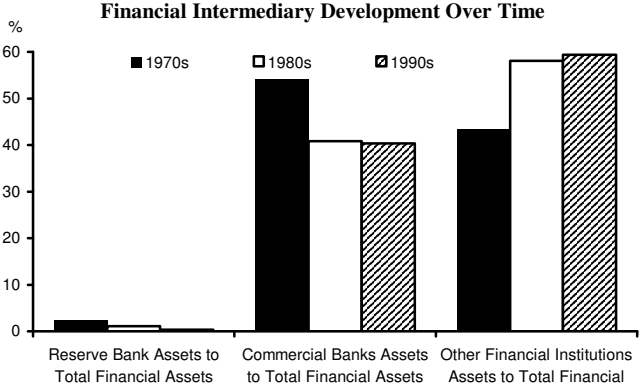
3.11 Measurers of Size[6] of Financial Intermediaries[7]

There are two sets of size indicators used in this section; firstly, the *relative size* indicators which gauge the size of the financial sector, relative to each other, and secondly, the *absolute size* indicators, which determines how important each financial sector is relative to GDP.

Indicators of relative sizes of financial intermediaries in Fiji (see Figure 1) show that the relative size of the Reserve Bank declined during the review period, that is, from the 1970s to the 1990s.

FIGURE 1

Financial Intermediary Development Over Time



Assets refer to total claims on domestic non-financial sectors, or the total domestic financial intermediation that the respective intermediary performs.

[6] Data on indicators for relative & absolute size of financial intermediaries are sourced from the IFS and Reserve Bank.

[7] See Appendix I for list of financial intermediaries.

This decline is shown by the declining average ratio of Reserve Bank assets to total financial assets during the review period, from around 2 ½ percent in the 1970s to below one percent in the latter decade. Data on 10-year averages showed that while there was growth in assets of the Reserve Bank over the 3-decade period, the increase in total financial assets was relatively higher, hence the reduction in the ratio.

During the review period, the relative size of commercial banks also declined. Over the 3-decade period, the average ratio of commercial bank assets to total financial assets fell from 54 percent in the 1970s, to 41 percent in the 1980s, and down to 40 percent in the 1990s. The decline shows that although commercial banks have represented a significant portion of total claims by the financial sector, their growth in assets has been relatively lower than that of other financial sectors over the years, hence the decline in their average ratio. On the other hand, Figure 1 depicts as maybe expected in a developing financial system, an increase in relative importance of OFI[8], whose average ratio rose from 44 percent in the 1970s to 58 percent in the 1980s and up slightly to over 59 percent in the 1990s. It is clear from the graph that in the 1980s, the relative size ratios of OFI surpassed that of commercial banks, an indication of the importance that OFI have played and will continue to play in Fiji's financial system.

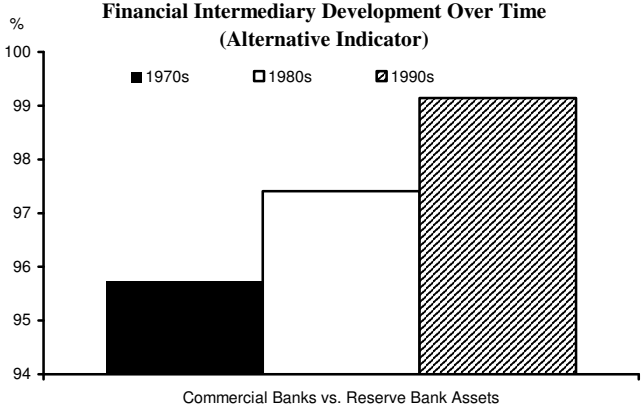
An alternative indicator for the relative size of commercial banks is the average ratio of commercial bank assets to Reserve Bank assets, which

[8] OFI are represented by the insurance sector, the Fiji National Provident Fund, the Fiji Development Bank and Unit Trust of Fiji, which together account for the majority of claims by OFI in Fiji; data limitations prevented inclusion of other OFI data.

shows that over the past three decades, the significance of commercial banks has grown, as shown in Figure 2 below.

FIGURE 2

Financial Intermediary Development Over Time
(Alternative Indicator)



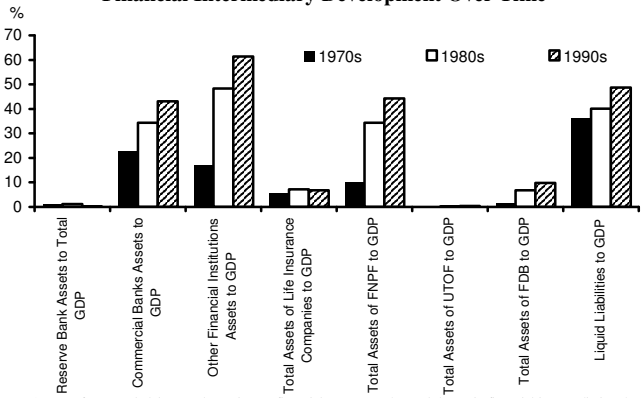
Assets refer to total claims on domestic non-financial sectors, or the total domestic financial intermediation that the respective intermediary performs.

The measures of *absolute size* provide evidence about the importance of the financial services performed by each financial intermediary relative to the size of Fiji's economy. Figure 3 shows that over the 3-decade review period, the average ratio of Reserve Bank assets to GDP, fell, from 1.2 percent in the 1970s to a marginal 0.1 percent in the 1990s, showing the reduction in the size of the Reserve Bank relative to Fiji's economy. At the same time, we see a constant rise in the average ratio of commercial bank assets to GDP, throughout the same time period. In the case of OFI, there was a sharp increase in their average asset to GDP ratio from the 1970s to the 1980s, before a further growth in the latter decade. Moreover, it was noted that during the 1980s, the OFI average ratio surpassed the average ratio of commercial banks, reflecting the

growing importance that OFI have had in Fiji's economy.

FIGURE 3

Financial Intermediary Development Over Time



Assets refer to total claims on domestic non-financial sectors, or the total domestic financial intermediation that the respective intermediary performs; Liquid liabilities consists of currency, demand & interest-bearing liabilities of banks.

Another indicator for absolute size of financial intermediaries, separate from the commonly asset-based measures, is the average ratio of liquid liabilities to GDP, equivalent to the ratio of the sum of currency, demand and interest-bearing liabilities of commercial banks and OFI to GDP. The increase in the average ratio of this broad financial indicator throughout the review period reflects the greater financial depth and advancement by financial intermediaries in Fiji.

3.12 Measures of Activity[9] of Financial Intermediaries

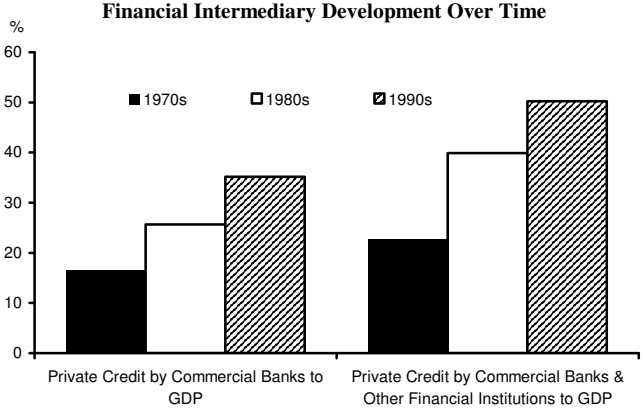
A drawback of the size measures is that they do not differentiate

[9] Data on indicators for activity of financial intermediaries are sourced from the IFS and Reserve Bank.

between financial institutions' claims on the private and public sectors. To distinguish between these claims, there are two activity measures of financial intermediaries used in this section; first, the average ratio of private sector claims by commercial banks to GDP, and secondly, the average ratio of claims by both the commercial banks and OFI to GDP (see Figure 4). Both these average ratios increased constantly from the 1970s through to the 1990s, although during the 1980s, it appears that there was much higher growth in the private credit by OFI which resulted in a significant rise in the combined ratio from 23 percent to 40 percent.

FIGURE 4

Financial Intermediary Development Over Time



Private Credit captures the financial intermediation with the private non-financial sector.

3.2 Efficiency and Market Structure of Commercial Banks[10]

This section examines developments in the efficiency and market

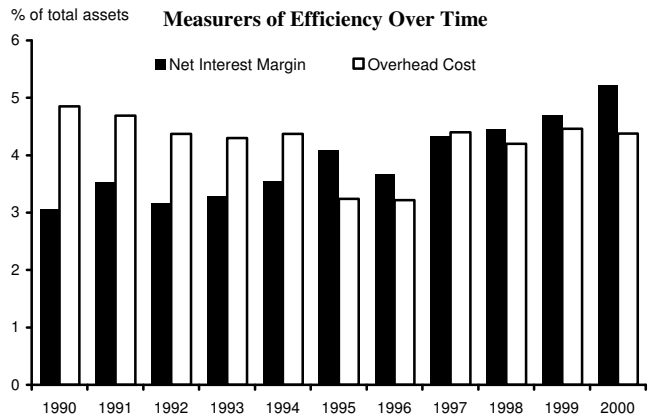
[10] Data on indicators for efficiency & market structure of commercial banks in Fiji are sourced from the Reserve Bank.

structure of commercial banks in Fiji. Due to data limitations, the time period for this analysis is from 1990-2000 only.

3.21 Measures of Efficiency

There are two indicators used in this section, to measure the efficiency with which commercial banks perform their intermediary functions. First, the *net interest margin*, which is equal to the accounting value of a bank's net interest revenue as a share of its total assets, shows a general rising trend during the 1990s (see Figure 5). This upward trend suggests an improvement in the efficiency of the banking sector. The other efficiency indicator, the *overhead cost*, which equals the accounting value of a bank's overhead costs as a share of its total assets, gradually declined from 1990-95 before steadily rising during the 2nd half of the 1990s.

FIGURE 5



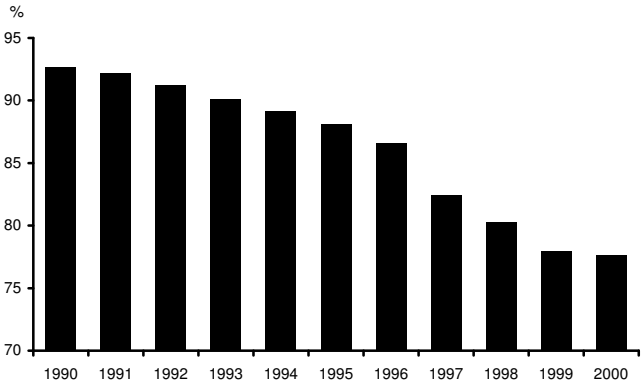
3.22 Measures of Market Structure

Measures of market structure include the *concentration* of commercial banks, *foreign bank penetration* and *public versus private ownership* of banks.

The measure of concentration is defined as the ratio of the three largest commercial banks' assets to total banking sector assets. Over the 1990-2000 decade, there was a gradual decline in the concentration of commercial banks in Fiji, a positive indication of more competition amongst banks to attract savings and channel them efficiently to investors (see Figure 6). The concentration ratio fell from 93 percent in 1990 to 78 percent in 2000.

FIGURE 6

Concentration of Commercial Banks Over Time



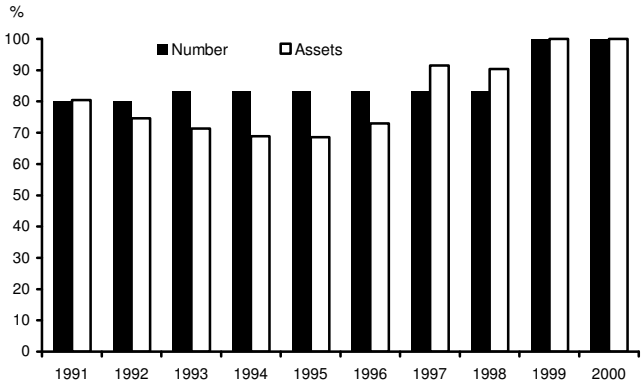
Two indicators of foreign bank penetration are (1) *foreign bank share (number)*, which equals the number of foreign banks over the total number of banks and (2) *foreign bank share (assets)*, which equals the share of foreign banks' assets in total commercial bank assets. A bank is

defined as foreign if at least 50 percent of its equity is foreign-owned. A study by Clasessens, Demirguc-Kunt and Huizinga (1997) revealed that an increase in foreign bank penetration leads to a fall in profitability and overhead costs for banks. In a separate study, Levine and Min (1998) explained that an increase in foreign bank penetration enhances economic growth by improving the efficiency of the domestic banking sector.

The *foreign bank share (number)* in Fiji was high (at around 80 percent) throughout the first half of the 1990s, before reaching 100 percent in 1999 (see Figure 7). This implies a total foreign bank penetration in Fiji. In line with this, the *foreign bank share (assets)* in Fiji has also grown, increasing as well to 100 percent in 1999, after falling during the first half of the period.

FIGURE 7

Foreign Bank Penetration Over Time



The third indicator of market structure, the *public versus private ownership* of banks, or the public share of banks, is defined as the share of publicly owned commercial bank assets in total commercial bank assets.

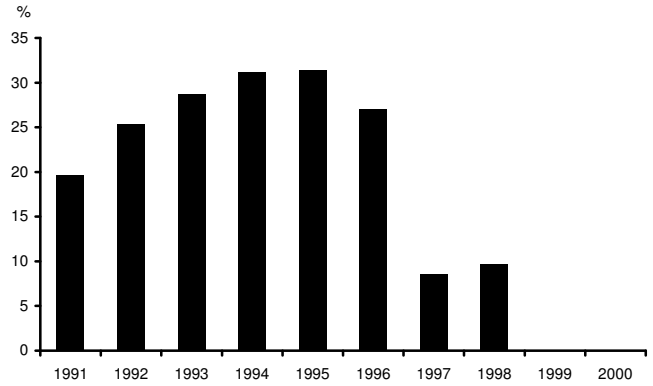
By definition, a bank is public if a minimum 50 percent of its equity is owned by the government or public institutions.

Public ownership of commercial banks in Fiji existed through ownership of shares by the government, in the previously named National Bank of Fiji (NBF). The size of these publicly-owned shares through the NBF can be seen in the increase in the ratio of NBF assets to total commercial bank assets from 1991 to 1995 (see Figure 8).

However, the bank suffered financial difficulties during the latter half of the 1990s, which ultimately saw the privatisation of the bank in 1999, and the shift in majority ownership of assets to foreigners. This development is reflected in the decline in the ratio during the latter period. By the definition provided, since 1999, there has been no public bank in Fiji, hence the zero ratio. Currently, the foreign shareholder-controlled Colonial National Bank, has only a 49 percent shareholding by the Fiji Government.

FIGURE 8

Public Ownership of Commercial Banks Over Time



3.3 Other Financial Institutions[11]

This section analyses indicators of size and activity of OFI. OFI are all financial intermediaries excluding the Reserve Bank and commercial banks, which include Bank-like institutions, insurance companies, private pension and provident funds, pooled investment schemes and development banks. Each one of these 5 groups is defined as follows.

(1) Bank-like institutions consist of two groups of institutions; (i) intermediaries, which take deposits without providing transferable deposits facilities, and (ii) intermediaries, which raise funds on the financial market primarily through negotiable bonds. Examples of (i) include savings banks, cooperative banks, mortgage banks and building societies, and examples of (ii) are finance companies. No analysis was done on these institutions due to inconsistency in data and its availability.

(2) Insurance companies are distinguished between life insurance companies and other insurance companies. Data on the insurance sector is included in the OFI analysis.

(3) Private pension and provident funds include those that pool risks and accumulate wealth. While these usually do not include pension funds that are part of a government social security system, because it is the only pension-fund in Fiji and a large one in respect of the whole financial system, data on the Fiji National Provident Fund (FNPF) has been included in the OFI analysis.

[11] See Appendix I for list of OFI in Fiji.

(4) Pooled investment schemes include financial institutions, which invest on behalf of their shareholders in a certain type of asset, as real estate investment schemes or mutual funds. Available data on the Unit Trust of Fiji (UTOF) was included in the OFI analysis.

(5) Development banks include those institutions, which obtain funds largely from the government, OFI and supranational organisations. The assets of these institutions are usually focussed on specific groups of borrowers. Moreover, many of these institutions were set up after the second-world war or following independence in an attempt to promote economic development. Available data on the Fiji Development Bank (FDB) is included in the OFI analysis.

3.31 Measures of the Size and Activity of Other Financial Institutions

This subsection examines size and activity indicators of OFI including additional measures of insurance development.

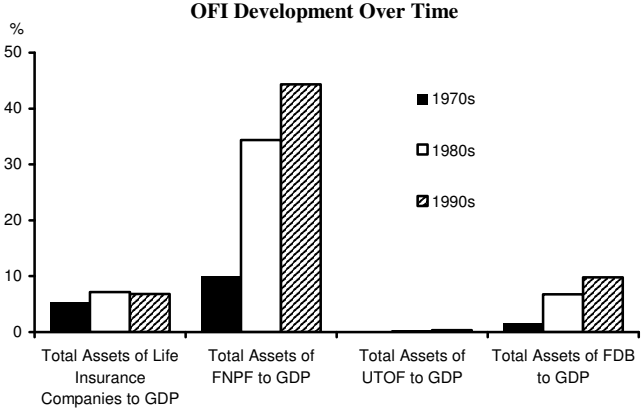
For each of the five sub-categories of OFI above, measures of their size relative to GDP are determined by calculating the average ratio of their total assets to GDP, and measures of activity are examined by taking the average ratio of their private sector claims to GDP.

Measures for size of OFI relative to GDP show that generally, there have been increases in the sizes of selected OFI in Fiji, over the 3-decade review period (see Figure 9). The average assets to GDP ratios for the FNPF and the FDB clearly rose during the review period, which is a positive indication of the expansion that these institutions have undergone.

Since the 1970s, the average assets to GDP ratio for the FNPF, has increased more than four-fold, from 10 percent in the 1970s to 44 percent in the 1990s. Similarly, the average assets to GDP ratio for the FDB also rose notably during the review period, increasing from under 2 percent in the 1970s to almost 10 percent in the 1990.

FIGURE 9

OFI Development Over Time



Assets refer to total claims on domestic non-financial sectors, or the total domestic financial intermediation that the respective intermediary performs.

On the other hand, data on the insurance sector and the UTOF showed minimal changes. The average ratio of total assets of life insurance companies to GDP remained in the range of 5-7 percent over the 3-decade period. This probably reflects the difficulties that the sector faced during past periods, which had negative implications on its assets. Assets or claims by the UTOF represent a minimal proportion of Fiji's GDP; nevertheless, its average ratio had increased marginally during the review period.

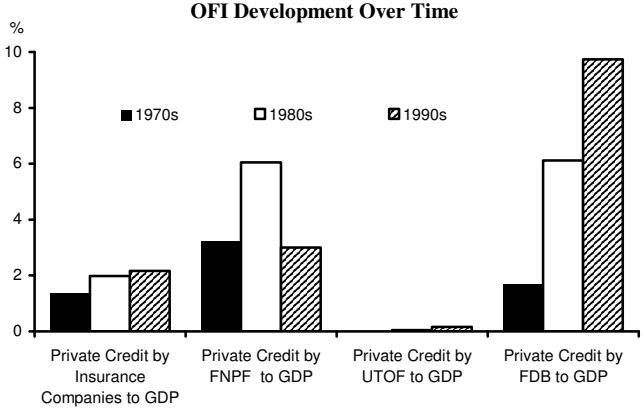
Indicators of activity for OFI similarly showed that private sector claims by OFI generally increased during the review period (see Figure 10).

In particular, the average ratio of private credit to GDP for the insurance sector rose only slightly from around 1 ½ percent in the 1970s up to slightly over 2 percent in the 1990s. On the other hand, the FNPF, while recording an increase in its private credit to GDP average ratio from the 1970s to 1980s, recorded an unexpected decline in the ratio in the 1990s.

For the UTOF, there was a marginal increase in its private credit to GDP average ratio during 1980s to 1990s. Data for the earlier decade was not available. The FDB recorded a consistent growth in its private credit to GDP average ratio throughout the 3-decade time period, a reflection of the importance of FDB as a source of lending to the private sector. From the 1970s to the 1980s, the average ratio for the FDB increased more than 3-fold before rising further in the 1990s.

FIGURE 10

OFI Development Over Time



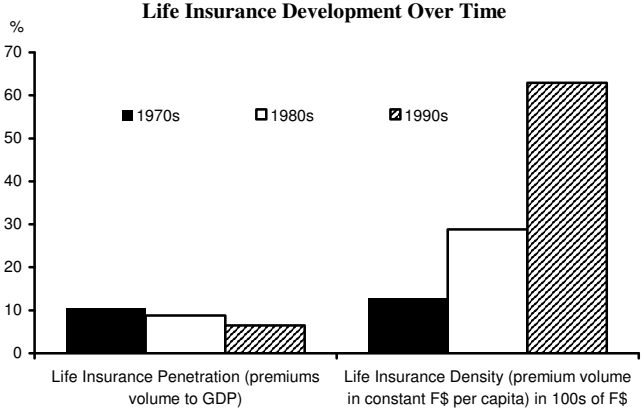
Private credit captures the financial intermediation with the private non-financial sectors; n.a: not available

The additional size measures for the insurance sector showed slight declines in life insurance penetration equal to the average ratio of life

insurance premiums to GDP (see Figure 11). This ratio fell constantly from the 1970s to the 1990s. On the other hand, the life insurance density, measured by the average ratio of life insurance premiums to total population, grew consistently during the review period.

FIGURE 11

Life Insurance Development Over Time



The two measures revealed that while the expenditure per capita on life insurance provision grew over the past three decades, the importance of the life insurance sector relative to the economy however, has fallen. These are reflected in growth in insurance premiums which outgrew population growth but fell below the rate of economic growth.

3.4 Stock and Bond Market Development

This section discusses measures of the size, activity and efficiency of primary stock and bond markets. Due to data limitations, analysis of stock market indicators are limited to the period from 1997-2001 while the

analysis of the bond market covers the public sector only.

3.41 Indicators of Stock Market Size, Activity and Efficiency[12]

As a measure of the size of the stock market, the ratio of *stock market capitalisation to GDP*, which is equal to the total value of listed shares divided by GDP, grew constantly during the review period, increasing from around 6 percent in 1997 up to around 10 percent in 2001 (see Figure 12). This increase reflects the increasing size of the stock market in Fiji.

Measuring the activity or liquidity of the stock market, the *stock market total value traded to GDP* ratio, which is equal to the total stock market shares traded divided by GDP, shows minimal or very little activity in Fiji's stock market in respect of the economy. Graph 12 also showed that during the 1997-2001 period, the ratio of stock market total value traded to GDP, averaged 0.3 percent of GDP.

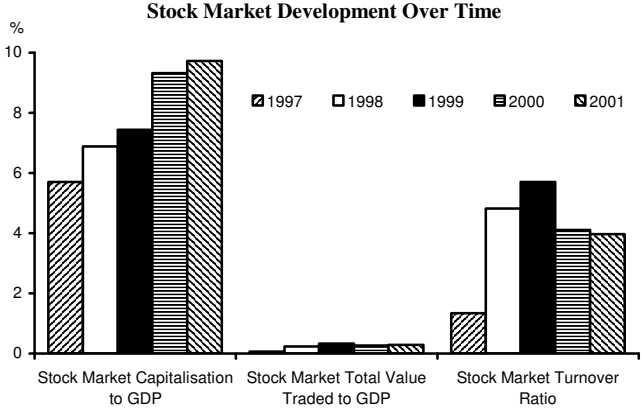
As a measure of the efficiency of the stock market, the *stock market turnover* ratio, which is equal to the ratio of the value of total shares traded to market capitalisation, showed mixed trends. From 1997 to 1999, the stock market ratio rose substantially from just over 1 percent to almost 6 percent respectively. However, since 1999, this ratio has fallen and was around 4 percent in 2001. The increases in the ratio during the earlier part of the period show higher growth in stock market activity relative to the

[12] Data on stock market size, activity & efficiency are sourced from the Reserve Bank of Fiji and the Capital Market Development Authority.

increases in market capitalisation. On the other hand, the subsequent decreases in the ratio during the latter part of the review period, indicates a faster growth in stock market capitalisation relative to the value of total shares traded on Fiji's stock market. In other words, the stock market was less active relative to its size during the latter part of the review period.

FIGURE 12

Stock Market Development Over Time



3.42 Indicators of Bond Market Size[13]

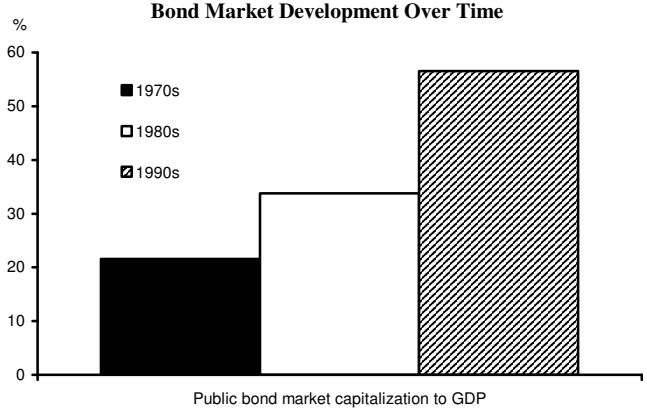
This sub-section examines a size indicator of the domestic bond market, the *public bond capitalisation to GDP* ratio, which is equal to the ratio of the total amount of outstanding domestic debt securities issued by public domestic entities[14] to GDP. This measure shows that the size of the domestic public bond market has grown over the past three decades, with

[13] Data on bond market size is sourced from the Reserve Bank.
[14] Public domestic entities include the Government and Statutory Bodies.

the public debt ratio increasing from around 22 percent in the 1970s to around 34 percent in the 1980s and further to 57 percent in the 1990s (see Figure 13).

FIGURE 13

Bond Market Development Over Time



4.0 Empirical Investigation

This section looks at the causal relationship between financial development and economic growth in Fiji, using data from 1970-2000. At the outset, the trend analysis done in section 3.0 above, as depicted by the charts, suggest the growing importance of the financial sector to Fiji's economy over the years.

4.1 Measurement and Data Sources

Studies on financial development and economic growth have utilised various measures of financial development and economic growth. In this paper, all the indicators used have been used in prior studies.

Financial development is measured using financial institution indicators including (1) the ratio of financial assets to GDP (FAY), (2) ratio of liquid liabilities to GDP (LLY) and (3) the ratio of private sector credit to GDP (PCY).

The economic growth measures used are (1) level of real GDP (RY) and (2) the level of real GDP per capita (CRY) and (3) the ratio of investment to GDP (IRY).

All the data used were sourced from the *IFS*, the Reserve Bank of Fiji and the Bureau of Statistics.

4.2 Econometric Methodology and Issues

This paper uses a Vector Auto Regression (VAR) to identify the relationship between financial development and growth. First, the Augmented Dickey Fuller (ADF) tests and Phillips-Perron (PP) tests are used to check whether each data series is integrated and has a unit root. The results of the integration tests are then pursued by co-integration tests based on a *bi-variate VAR* (*bVAR)* approach, to check whether a stable long run relationship between financial development and growth exists. Based on the results, Granger causality tests are conducted to determine whether the current and lagged values of one variable affect another.

4.3 Empirical Results

Unit Root tests

The ADF tests and PP tests were undertaken under the assumption of the existence of a unit root (H_0) and a stationary variable in the

alternative hypothesis (H_a). If the calculated statistics is greater than McKinnon's critical value, then the H_0 or that the variable is not stationary, is not rejected. Results of the ADF and PP tests in Table (1) below show that all the series cannot reject the H_0 of I(1), that is, that all the variables are non-stationary. However, first differences of the variables turn out to be stationary. Based on the integration test results, co-integration tests are undertaken to verify whether there exists a long-run relationship between financial development variables and economic growth variables.

Table 1: The order of integration of variables (1970-2000)

Variables	Test with a constant		Test with a constant and a trend	
	(ADF)	(PP)	(ADF)	(PP)
RY	-0.0922	-0.3852	-1.9327	-2.9355
CRY	-0.9324	-1.3056	-1.9145	-2.6026
IRY	-1.4935	-1.6097	-2.2486	-1.8646
FAY	-0.9576	-1.2013	-1.5796	-1.6782
LLY	-1.2630	-1.1992	-3.1388	-2.2777
CRY	-1.2857	-1.6228	-1.6810	-1.4762
Critical Value at 5%	-2.9665	-2.9627	-3.5731	-3.5670

The variables used here are as they are defined in the text of the paper. The null hypothesis (H_0) tested is that the variable is non-stationary (contains a unit root) against the alternative hypothesis (H_a) that the variable is stationary (does not contain a unit root).

Co-integration tests

The tests for co-integration are based on a *VAR* framework, as initiated by Johansen (1988). In this paper, we use a *bVAR* (two-variable *VAR* case), where the co-integration test is for the null hypothesis H_0 that

there is no co-integration between the variables, against the alternative hypothesis H_a that there is only one co-integrating vector. Results of the co-integration tests using the Johansen approach are summarised in Table (2) below. Results show that the H_0 of no-co-integration cannot be rejected, implying no long-run relationship between the different measures of financial development and economic growth.

Table 2: Johansen co-integration tests (1970-2000)

Variables	Trace Statistic $J_r = -T\Sigma ln(1-\lambda)$		
	Hypothesis (H_0)	Trace	Critical Value at 5%
RY and FAY	*r = 0*	4.337910	15.41
	r <= 1	0.359777	3.76
RY and LLY	*r = 0*	14.31973	15.41
	r <= 1	0.147579	3.76
RY and PCY	*r = 0*	4.596998	14.51
	r <= 1	0.774007	3.76
CRY and FAY	*r = 0*	4.897648	15.41
	r <= 1	0.924287	3.76
CRY and LLY	*r = 0*	12.26673	15.41
	r <= 1	0.038819	3.76
CRY and PCY	*r = 0*	4.983819	15.41
	r <= 1	1.379840	3.76
IRY and FAY	*r = 0*	8.967655	15.41
	r <= 1	1.688599	3.76
IRY and LLY	*r = 0*	9.678004	15.41
	r <= 1	1.012798	3.76
IRY and PCY	*r = 0*	13.70970	15.41
	r <= 1	2.784416	3.76

Granger Causality tests[15]

Since there are no co-integrating relations found, we carry out causality tests using the Granger approach with first-differenced *VARs* for each of the two pairs of the variables. The Granger causality approach measures the precedence and information provided by a variable (X) in explaining the current value of another variable (Y). Furthermore, it says that *Y is said to be granger-caused by X if X helps in predicting the value of Y.* In other words, the lagged values of X are statistically significant. The null hypothesis H_0 tested is that *X does not granger-cause Y and Y does not granger-cause X.* Outcomes of the granger-causality tests are summarised in Table 3 below.

[15] See Appendix 2 for a summary of the Granger causality approach.

Table 3: Granger causality tests within a bVAR framework[(a)] (1970-2000)

Variables	Null Hypothesis [(b)]			
	FD $\not\Rightarrow$ Growth		Growth $\not\Rightarrow$ FD	
	F-statistic (ρ -value)		F-statistic (ρ -value)	
FAY and RY	1.47389	(0.24987)	3.09302	(0.06462)*
FAY and CRY	0.90978	(0.41662)	1.33055	(0.28392)
FAY and IRY	2.45188	(0.10833)	4.54822	(0.02166)**
LLY and RY	0.36372	(0.69901)	4.65111	(0.02012)**
LLY and CRY	0.07401	(0.92888)	2.55750	(0.09933)*
LLY and IRY	2.40117	(0.11296)	1.35969	(0.27661)
PCY and RY	0.62124	(0.54605)	7.43979	(0.00322)**
PCY and CRY	0.46910	(0.63142)	4.48865	(0.02260)**
PCY and IRY	2.56619	(0.09863)*	2.28026	(0.12490)

(a) The order of the lag is determined using the Schwartz criterion on the unrestricted *bVAR*

(b) All estimates are achieved using first differences of integrated variables. An **(*) denotes significance at the 5(10) percent level.

Generally, results show that:

- Each of the 3 measures of economic growth has a short-run linkage with at least one of the 3 measures of financial development.
- Causality runs in a single direction only.
- The direction of causality is mainly demand-following, that is, from economic growth to financial development.

More specifically, results show that:

- Causality in both directions is rejected for Financial assets

(FAY) & real GDP per capita (CRY), and for Liquid Liabilities (LLY) & Investment (IRY).

- The only instance where financial development leads economic growth is where Credit to the Private Sector (PCY) leads Investment (IRY). This direction of causality is statistically significant at the 10 percent level.
- In the cases where economic growth leads financial development, results show that (1) Real GDP (RY) and Investment (IRY) both have a leading relationship with Financial assets (FAY), with the latter displaying a comparatively stronger linkage, (2) Real GDP (RY) and Real GDP per capita (CRY) both have a leading relationship with Liquid Liabilities (LLY), with the former showing a relatively stronger relationship, and (3) Real GDP (RY) and Real GDP per capita (CRY) also have a leading relationship with Credit to the Private Sector (PCY), with the direction of causality statistically significant at the 5 percent level.

5.0 Concluding Remarks

Various theoretical and empirical studies attest to the important linkage between financial system progress and economic development.

This paper provides a useful analysis on the evolvement of financial institutions and markets in Fiji in terms of their relative sizes, activity and efficiency, and their importance to the economy. Trends in the indicators reveal that while commercial banks have continued to develop

and grow in importance to Fiji's economy, other financial institutions have also gathered pace in terms of increases in their relative size and activity. Overall, Fiji's financial sector has grown in size and activity over the past three decades and become more important to the economy.

The paper also examined the causal link between financial development and economic growth, using selected financial variables that have been analysed earlier in the paper and available economic growth indicators. Empirical results reveal a short-run relationship, predominantly running from economic growth to financial development. However, evidence of opposite causality was found in only one case where private sector credit (financial development indicator) caused investment (economic growth indicator).

Findings in the paper support the view that countries, which have a less sophisticated financial system tend to experience more of a demand-following relationship where economic growth induces financial development. Although Fiji's financial system has become more liberalised since the early 1980s, there exists a lack of depth and sophistication in the market. Thus, advancement of the financial system should see a diversification of financial instruments and in turn more funds available to finance economic development in Fiji.

While the paper has provided some useful insights into developments in Fiji's financial sector and more how these relate to growth in the economy, it should be noted that the results have been obtained using a specific set of financial development and economic growth variables. Other variables could possibly yield different results.

For the future, the availability of data could allow the extension of

the empirical investigation to include stock and bond market indicators. Moreover, it will also be useful to conduct the same during two time-periods; a pre-reform and post-reform period.

Appendix 1 Classification of Financial Intermediaries

Financial Intermediary Category	Name of Institution
Central Bank	Reserve Bank of Fiji
Deposit Money Banks	Commercial Banks
Other Financial Institutions	Fiji Development Bank Insurance Companies Fiji National Provident Fund Unit Trust of Fiji

Appendix 2 Granger Causality Tests[16]

In the case of two variables *X* and *Y*, the Granger causality approach is different from the common use of the term since it measures precedence and information provided by *X* in explaining current values of *Y*. According to this view, *Y is said to be granger caused by X if X helps in the prediction of Y* or equivalently lagged values of *X* are statistically significant.

The time series representation of a bivariate *VAR* for two variables *X* and *Y* has the following form:

$$\begin{bmatrix} Y_t \\ X_t \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \end{bmatrix} + \begin{bmatrix} a^1_{11} & a^1_{12} \\ a^1_{21} & a^1_{22} \end{bmatrix} \begin{bmatrix} Y_{t-1} \\ X_{t-1} \end{bmatrix} + \ldots\ldots + \begin{bmatrix} a^k_{11} & a^k_{12} \\ a^k_{21} & a^k_{22} \end{bmatrix} \begin{bmatrix} Y_{t-k} \\ X_{t-k} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix}$$

[16] Refer to Boulila G and TRABELSI M (2002)

Where t is time subscript, a_{ij} are the coffefficients of the matrices associated to the VAR, the superscripts denote the order of that matrice, $\sum t = (\varepsilon_{1t}, \varepsilon_{2t})'$ is a vector of uncorrelated disturbances and finally c_1 and c_2 are constants.

With a system of two equations, equation (2) becomes:

$$Y_t = c_1 + \sum_{i=1}^{k} \alpha 1_{11} Y_{t-i} + \sum_{j=1}^{k} \alpha_{12} X_{t-i} + \varepsilon_{1t}$$

$$Xt = C_2 + \sum_{i=1}^{k} \alpha_{21} Y_{t-i} + \sum_{i=1}^{k} \alpha_{22} X_{t-i} + \varepsilon_{2t}$$

Testing for Granger causality between X and Y consists to check the significance of a_{12} and a22 coefficients. In other words, X does not Granger-cause Y if the vector $(X_{t-1}, X_{t-2}\ldots, X_{t-k})$ has no power in forecasting X. Each equation represented by (4) is estimated separately in testing for Granger causality [20] and the null hypothesis tested is X does not Granger-cause Y and Y does not Granger-cause X.

References

Aretis, P., and Demetriades, P. (1997). Financial Development and Economic Growth: Assessing the Evidence, *The Economic Journal*, 107 (May), 783-799.

Atje, R and B. Jovanovic (1993). Stock Markets and Development, *European Economic Review*, 37, 632-640.

Bagehot, Walter (1873), *Lombard Street*. Homewood, IL: Richard D. Irwin, 1962 edition.

Beck, T., A. Demirguc-Kunt, and Ross Levine (1999). A New Database on the Structure and Development of the Financial Sector, *World Bank Economic Review*, September, 14(3), 597-605.

Beck, T., Levine, R., and Loyza, N. (2000). Finance and Sources of Growth, *Journal of Financial Economics,* October-November, 58(1-2), 261-300.

Becsi, Z., and Wang, P. (1997). Financial Development and Growth, Federal Reserve Bank of Atlanta, *Economic Review Fourth Quarter 1997.*

Becsi, Z., Wang, P., and Wynne, M.A. (1998). Endogenous Market Structure and Financial Development, Federal Reserve Bank of Atlanta, *Working Paper* 98-15.

Ben M'Rad, F. W. (2000). Financial Development and Economic Growth:

Time-Series Evidence from South Mediterranean Countries, Universite Paris IX Dauphine, *Working Paper May,* pp. 1-11.

Bencivenga, V. and B. Smith (1991). Financial Intermediation and Endogenous Growth, *Review of Economic Studies,* 58: 195-209.

Bencivenga, V. R., B. D. Smith, and R. M. Starr (1995). Transactions Costs, Technological Choice, and Endogenous Growth, *Journal of Economic Theory*, 67, 153-77.

Binswanger, M. (1999). Co-Evolution Between the Real and Financial Sectors: The Optimistic "New Growth Theory View" versus the Pessimistic "Keynesian View", Reihe A: *Discussion Paper* 99-01.

Blackburn, K. and Hung, T. Y. (1996). A theory of Growth, Financial Development and Trade, *Economica* (February).

Claessens, S, Demirguc-Kunt and Huizinga, H (1997). The Internationalisation of Financial Services: Issues and Lessons for Developing Countries, Boston MA: Kluwer Academic Press. September 2000.

De Gregorio, J. (1998). Financial Integration, Financial Development and Economic Growth, *Center for Applied Economics Department of Industrial Engineering, University de Chile WP.*

Demetriades, P. O. and Luintel, K. B. (1996). Financial Development, Economic Growth and Banking Sector Controls: Evidence from India,

The Economic Journal, 106 (March), 359-374.

Demetriades, P. O., and Hussein, K. A. (1996). Does Financial Development cause Economic Growth?, *Journal of Development Economics* Vol. 51, 387-411.

Demirguc-Kunt and Levine (1996b). "The Financial System and Public Enterprise Reform: Concepts and Cases, "Financial Development and Economic Growth: Theory and Experiences from Developing Countries Routledge, edited by N. Hermes and R. Lensink, Chapter 11, 247-272.

Diaz-Alejandro C. (1985). Good-Bye Financial Repression, Hello Financial Crash, *Journal of Development Economics,* 19:1-24.

Gertler, M. (1988). Financial Structure and Aggregate Economic Activity: An Overview, National Bureau of Economic Research, *Working Paper No. 2559.*

Goldsmith, R. (1969). Financial Structure and Development New Haven: Yale University Press.

Gupta, K. L. (1984). Finance and Economic Growth in Developing Countries, Croom Helm, London.

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

Gregorio, J. D. (1996). Borrowing Constraints, Human Capital Accumulation, and Growth, *Journal of Monetary Economics*37, 49-71.

Gross, D. M. (2001). Financial Intermediation: A contributing Factor to Economic Growth and Employment, International Labour Office, *Working Paper December 2*, pp. 1-29.

Hicks, J. (1969). A Theory of Economic History. Oxford: Clarendon Press.

Jappelli, T. and M. Pagano. (1994). Savings, Growth and Liquidity Constraints, *Quarterly Journal of Economics* 109, 83-109.

Jung, Woo S. (1986). Financial Development and Economic Growth: International Evidence, *Economic Development and Cultural Change*. 34/2 : 333-346.

Kar, M., and Pentecost E. J. (2000). Financial Development and Growth in Turkey: Further Evidence on the Causality Issue, Loughborough University, *Economic Research Papper No. 00/*27, pp. 1-8.

Khan, A. (2000). The Finance and Growth Nexus, *Business Review January/February*.

King, R. G. and Levine, R. (1993). Finance, Entrepreneurship and Growth: Theory and Evidence, *Journal of Monetary Economics,* 32, 513-542.

King, R. G. and Levine, R. (1993). Finance and Growth: Schumpeter

Might Be Right, *The Quarterly Journal of Economics, August.*

Kul B. Luintel and Moshahid Khan (1999). A Quantitative Reassessment of the Finance-Growth Nexus: Evidence from a Multivariate VAR, *Journal of Development Economics*.

Lensink, R. (2000). Uncertainty, Financial Development and Economic Growth: An empirical Analysis, University of Groningen, *Research Paper*

Levine, R. (1991). Stock Markets, Growth, and Tax Policy, *The Journal of Finance*, 46, 1445-65.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, Vol. XXXV (June), pp. 688-726.

Levine, R. (1997). Law, Finance, and Economic Growth, University of Virginia, *Research Paper July 1997.*

Levine, R., Loayza, N., and Beck, T. (2000). Financial Intermediation and Growth: Causality and Causes, *Journal of Monetary Economics* 46, 31-77.

Levine, R and Min, H (1998). Opening to Foreign Banks: Issues of Stability, Efficiency, and Growth, in Proceedings of the Bank of Korea Conference on the Implications of Globalisation of World Financial Markets.

Levine, R and Zervos, S (1996). Stock Market Development and Long-run Growth. *World Bank Economic Review*, 10(2), May, 323-339.

Ma, C. H. and Smith, B. D. (1996). Credit Market Imperfections and Economic Development: Theory and Evidence, *Journal of Development Economics,* Vol. 48, 351-387.

Murinde, V. et F. Eng (1994). Financial Development and Economic Growth in Singapore: Demand Following or Supply-Leading?, *Applied Financial Economics,* 4, 391-404.

Obstfeld, M. (1994). Risk, Diversification, and Growth, *The American Economic Review,* Vol. 84 No. 5, (December), 1310-1329.

Odedokun, M. O. (1996). Alternative Econometric Approaches for Analysing the Role of the Financial Sector in Economic Growth: Time-Series Evidence from LDCs, *Journal of Development Economics*, Vol. 50, 119-146.

Rajan, R. G. and Zingales, L. (1998). Financial Dependence and Growth, *The American Economic Review,* Vol. 88 No. 3 (June).

Rousseau, P. and Wachtel, P. (1998). Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialised Countries, *Journal of Money, Credit, and Banking,* Vol. 30, No. 4 (November).

Saint-Paul, G. (1992). Technological Choice, Financial Markets and Economic Development, *European Economic Review*, 36, 763-81.

Schumpeter, Joseph A. (1912). The Theory of Economic Development. Leipzig: Ducker and Humblot. Translated by Redvers Opie. Cambridge, MA: Harvard University Press, 1934.

Shaw, E. (1973), Financial Deepening in Economic Development, New York: Oxford University Press.

Tsuru, K (2000). Finance and Growth: Some Theoretical Considerations, and A Review of the Empirical Literature, *Economics Department Working Papers*, OECD, January, No. 228.

World Bank (1989). *World Development Report* (1989), New York: Oxford University Press for the World Bank.