AN EMPIRICAL APPROACH TO FINANCIAL SECTOR DEVELOPMENT AND GDP LEVEL IN FIJI ISLANDS

Baljeet Singh, Sanjesh Kumar, and Hong Chen
School of Economic, Faculty of Business and Economics,
University of the South Pacific, Suva, Fiji.

ABSTRACT
Fiji experience strong growth in financial sector over the last three decade. Examining the relationship between financial sector development and gross domestic product, this paper finds that financial sector development has significant positive impact on Fiji's economic output.

Key words: Financial Sector, Cointegration, Estimation, Gross Domestic Product

JEL codes: C26, C32, E44

INTRODUCTION
Researchers in numerous studies over years both theoretically and empirically have highlighted the important link that exists between financial development and economic growth and emphasize the need for having in place a well developed financial system to support economic growth. Recent expanding literature on this link provides support towards the relative importance of financial development which is critical for economic growth. Financial development and economic growth are thus clearly related, the recognition of this significant and positive relationship has occupied the minds of economists from Smith to Schumpeter. Schumpeter (1912) and Levine (1997) have stressed that a well-functioning financial sector can spur economic growth because the banking sector is seen as an accelerator of economic growth due to its role as a financier of productive investments. In contrast, Robinson (1952) declared that "where enterprise leads finance follows. According to this view, economic development creates demands for particular types of financial arrangements and the financial system responds automatically to these demands.

Most studies have concluded that a well developed financial system enhances efficiency in the allocation of resources, thus providing the basis for the continuous restructuring of the economy and stimulating the growth process because financial sector provides positive externalities in several fields (such as information and liquidity provision) which indirectly decrease the poverty level and increase the standard of living. Merton (1995) argues that a financial system provides: (1) a payments system, (2) a mechanism for pooling and mobilizing funds, (3) a way to transfer resources across time and space, (4) a way to manage uncertainty and control risk, (5) price information to allow the economy to implement a decentralized allocation of resources, and (6) a way to deal with the asymmetric information problem that arises when one party to a financial transaction has information that the other party does not. Levine (1997) argues that financial sector provides five functions (mobilize savings, allocate resources, exert corporate control, ease risk management and ease trading) that affect saving and allocation decisions and how these functions influence economic growth through two channels namely capital accumulation and technological innovation. Duisenberg (2001) quotes that the

former British Prime Minister William Gladstone expressed the importance of finance for the economy in 1858 as follows: "Finance is, as it were, the stomach of the country, from which all the other organs take their tone."

In the case of Fiji, there exists a significant link between financial development and level of output because of the continuous progress and increasing role being played by the financial sector in the development of Fiji's economy through mobilization of financial savings and channeling these into productive investments. Starting from early 1980s, Fiji's financial system began to be deregulated and by the mid-1980s, reasonable changes had taken place in the financial structure. Today, Fiji's financial system is reasonably well-developed and is consistent with trends in other developing countries.

Most empirical studies have identified a positive relation between finance and growth and since Levine (1997) has been central to most of the recent literature on the finance-growth link therefore Levine's articles become a natural starting point for my study. This paper examines the empirical relationship between financial development and level of output for Fiji. To test the empirical relationship between finance and level of output, Johansen's (1988, 1991) and Granger causality approach based on two indicators of financial sector development have been applied on standard production function in which capital and labor are principal determinants of output in the economy. These indicators measure the financial sector by size (liquid liabilities) and activity (credit provided to private sector). The financial sector development indicators represent the explanatory variable for economic growth and the level of real GDP is used as a measure of economic growth. By identifying the link between financial sector development and economic growth, my results will contribute to identifying whether financial sector development can accelerate economic growth in Fiji. This paper will make an important contribution as it examines the role of financial sector development within a standard production function. Furthermore, it uses a number of estimation procedures to examine the long run impact of financial sector on economic growth and found consistent result across all estimation.

The balance of this paper is organized as follows: Section 2 surveys the current state of knowledge both theoretical and empirical on the relationship between financial development and economic growth. Section 3 gives an overview of financial development in Fiji. Section 4 discusses the methodology used and analyses the results. The last Section concludes with a summary of the main findings.

LITERATURE REVIEW

The literature on financial development and economic growth both theoretically and empirically over the last 15 years or so has taken a progressive trend and this have been attributed to the availability of the large body of World Banks dataset covering the second half of the twentieth century which has facilitated a large number of cross country studies. Most of these studies have been supportive that financial development stimulates the growth process.

Recent researches examining the link between banks, financial markets, and the economy originates from early works by Cameron (1967), Goldsmith (1969), McKinnon (1973), and Shaw (1973). These authors highlight the fact that financial markets affect and in turn are affected by economic growth. They argue that well-developed financial markets are necessary for the overall economic progress of less developed countries.

King and Levine (1993) and Levine and Zervos (1993) argue the greater financial development increases economic growth. They identified three

indicators of financial sector development that are best at explaining differences in economic growth between countries over long periods: bank credit to the private sector, stock market activity and features of the legal system such as the extent of shareholder and creditor protection. Hicks (1969) argued that financial system played a critical role in igniting industrialization in England by facilitating the mobilization of capital for "immense work"

In early 1990s, the prime focus of most research was on a theoretical understanding of the relationship that exist between banks and borrowers however, in 1990s and after the theoretical and empirical studies focus returned to the late 1960s and early 70s whereby more closely examining the link between the financial sector and economic growth. Empirical work on this relationship has examined a positive association between financial sector development and economy's rate of growth of real activity. Works of King and Levine (1993b) establish that financial development not only correlates with economic growth but is also a cause of long term growth. Financial development can also impact real economic performance by affecting the composition of savings (Bencivenga & Smith 1991), providing information (Greenwood & Jovanovic 1990) and affecting the scope for credit rationing (Bencivenga & Smith 1993 and Boyd & Smith 1997).

Greenwood and Jovanovic have developed a model in which financial intermediation allows agents to diversify risk across a spectrum of risky capital investment. By providing more accurate information about production technologies and exerting corporate control, better financial intermediaries can enhance resource allocation and accelerate growth. Patrick (1966) hypothesised two possible relationships between financial development and economic growth: a 'demand-following' approach where financial development arises as the economy develops and a 'supply-leading' phenomenon where the widespread expansion of financial institutions leads to economic growth.

Next major work on this area represents Townsend (1979) and Stiglitz & Weiss (1981). They developed some of the first banking related models based on utility and profit maximization rather than on assumptions of the resulting behavior. Their models focus primarily on the part asymmetric information plays in the allocation of resources. Beck etal. (2004) also provide empirical evidence showing that financial development reduces income inequality and absolute poverty levels. King and Levine (1993) have used four measures of financial development and examined cross-country evidence from 80 countries. They found a strong positive relationship between each of the measures and economic growth. Jung (1986) has utilized the VAR approach for a sample of 56 countries to test the causality between financial development and economic growth

Levine et al. (2002) has identified a significant positive influence of financial sector and this relationship has also been supported by Choe and Moose (1999) in the country specific study of South Korea. They conclude that, by using GDP to measure economic growth and the household and business sector's holdings of securities and the growth of the business sector's loans as financial variables, conclude that financial development leads to economic growth.

Some evidence of a positive correlation between financial development and the growth of real GDP per capita has also been noted by Allen and Ndikumana (2000). They have investigated the role of financial development in stimulating economic growth in the Southern Africa Development Community (SADC), including roughly half of the Sub-Saharan countries to explain disparities in economic outcomes in the region. They have identified the size of the financial sector (measured by liquid liabilities), as being the vital financial

indicator having positive influence on economic growth. Andersen (2003) used ordinary least square method (OLS) to model the relationship between financial development and economic growth for 60 countries over the period 1965 to 1999 with dependent variable as annual growth rate of GDP per capita and the independent variables being the three financial indicators, liquid liabilities, credit to private sector and credit provided by banks and in addition various other variables were included to control for other factors that might affect economic growth. The results found were strongly supportive of the positive statistical relationship as stated by Levine (1997).

Beck, Levine and Loayza (2000) using panel data analysis concluded that banks have a strong causal effect on economic growth. Demetriades and Hussein (1996) utilized data from 16 developing countries found bi-directional link between financial development and growth. Ragan and Zingales (1998) found out saving rates as being influential in affecting financial sector development and economic growth thus also supporting the hypothesis that financial development causes economic growth.

OVERVIEW OF FINANCIAL DEVELOPMENTS IN FIJI

Financial system in Fiji has tremendously grown over the years and has been effective in mobilising financial savings and channeling these into productive investments in the economy. Even though Fiji's economic performance has been subdued for some years with GDP growth rate averaging just over 3% from 1970- 2003 attributed to political and economic uncertainties, increasing role has being played by the financial system in the development of Fiji's economy. Progress in the financial sector over the last half decades has been clearly evident in the growth in total assets of financial institutions. Combined assets of the financial sector in 1982, were $0.8 billion compared with over $5.0 billion in 1998 while growth in total gross assets of the banking sector has been substantial from $400m in the early 1980s to $1,841m in 1998. This reflects the profitability levels of the banks and their success in dealing with the operating expenses.

Financial system in Fiji consists of the Reserve bank of Fiji (RBF); seven commercial banks and a number of non-bank financial institutions (NBFIs). This includes Fiji National Provident Fund, the Fiji Development Bank (FDB), a Merchant Bank, one Credit Corporation, two Housing Finance Companies, 39 Credit Unions, 14 Insurance Companies and Brokers, one Investment Corporation and one Unit Trust. Total lending by commercial banks in 1999 was F$1,174.4[1] million where the largest was to the private individuals, followed by wholesale and retail trade and manufacturing.

The size of financial system in Fiji, examining on the basis of their gross assets from periods 1995-2001 indicate that the share of licensed Financial Institutions (LFIs) in the total financial system in Fiji has changed from 52% in 1995 to 47%[2] in 2001. However the size of this component in terms of the gross assets has increased by 16% over the same period. The share of NBFIs has increased from 48% to 53% in total during the period depicting an increase of 44% against an increase of 29% in the gross assets of the total financial system. The main reason for this growth in the case of NBFIs is due to the substantial share of FNPF in the NBFI sector. The growth in the FNPF gross asset is around 60 % which is exceeding the growth of all other segments in the financial system however its position has weakened recently. FNPF's nonperforming assets have increased to 20 percent of total assets. In the

[1] Source: Reserve bank of Fiji (1998 & 1999)
[2] Source for figures and the subsequent are from the Reserve bank of Fiji (1995-2001).

past year, FNPF has been pressured to accept low interest rates on government debt, liquidate some international assets, and fund losses of public enterprises.

Commercial banking sector has lost its share in total by 7 % points and achieved the lowest growth of 7% only. Amongst the licensed financial institutions, credit institutions have achieved the highest growth that is 57%. However this growth in the gross asset has not made any difference in the share of these institutions. Like credit institution, insurance companies have also achieved a high rate of growth of 43% and their share in the financial system has also changed from 8% to 9% during the period 1995-2001. The level concentration in the Fijis financial sector market based on the Herfindahl-Hirschman Index (HHI) reveals that the sector is relatively concentrated and that there are only few major players. Over the 1995-2001 periods the level of concentration has almost remained stable and between the years 2000 and 2001 concentration has slightly dropped.

Nevertheless, with all the recent financial sector developments, a lot of challenge still lies ahead for the development of Fiji's financial system and for the sector to have full profound impact on the Fijis economy

METHODOLOGY AND RESULTS

Measures of Level of Output and Financial Development

Several studies have attempted to explain economic growth using a number of economic and institutional variables. The variables selected to be tested in my study is based on earlier empirical studies[3]. I have chosen two financial sector development variables in this case apart from proxy for capital and labour to be used as explanatory variables for economic growth which measure the activity and the size of the financial sector. Thus these financial indicators represent endogenous variables influencing growth. The level of real GDP is applied to measure economic growth.

The first financial indicator, *liquid liabilities* is included to measure the size of the financial sector (Levine, 1997). The hypothesis is that the size of the financial sector is positively related to the provision of financial services. An increase in the size of the financial sector would provide a better framework for the channeling from financial development leading to economic growth. The variable liquid liabilities equal M2.

The variable *credit to private sector is* included to measure the activity of the financial sector which includes financial resources provided to the private sector, such as loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment. The volume of credit to the private sector serves as an indicator of the functioning of the financial intermediaries and a rise in private credit can be an indicator of financial sector development (Levine etal, 2000). Having in place a more developed financial sector, will enable the intermediaries to mobilise savings and allocate resources. Thus, an increase in private credit is expected to have a positive influence on economic growth because credit to the private sector will increase the money supply in the market. Although an increased money supply will impact the domestic inflation and money demand, it will certainly influence real output as well.

[3] Indicators of financial development from a study by King and Levine (1993) & Beck, Demirguc-Kunt and Levine (1999) and the data is sourced from World Banks Development Indicator (WDI) database.

Empirical Model

The empirical model below explores the impact of the financial sector development on the Fiji's economy. We employ a different specification that is based on standard production function in which capital and labor are principal determinants of output in the economy. The production function is augmented to include the central variable of interest in this study, financial sector development; the formulation is utilized to capture the direct effect of financial sector development on Fiji's economy:

$$GDP_t = f(K_t, L_t, FD_t) \quad (1)$$

Where GDP_t, L_t, K_t and FD_t denote output, capital, labor and financial sector development, respectively. Following two separate models employed in estimation are based on the above described formulation:

$$\ln GDP_t = \alpha_0 + \alpha_1 \ln K_t + \alpha_2 \ln L_t + \alpha_3 \ln FD_t + e_t \quad (2)$$

Here, $\ln GDP$ is the natural log of real output, $\ln K$ is the natural log of capital stock,[4] $\ln L$ is natural log of labor force and $\ln FD$ is the natural log of financial sector indicator. We extracted data from the International Monetary Fund's *International Financial Statistics* database and World Banks Development Indicator (WDI). Nominal values are converted into real 2005 values by using the consumer price index. We use annual time series data for the period 1970-2008.

4.3 Data and Unit Root Test

The summary statistics are presented in Table 1. The unit root test is carried to test whether the variables selected are stationary or not. A popular augmented Dickey Fuller (ADF) test for unit root is used to test for unit root in the levels of the variables and in their first difference. The variables are said to be *I* (1) in their levels and *I* (0) in their first difference. Unit root test in the logs of our variables viz., output (ln Y), capital stock (ln), labour (ln L), Liquid Liabilities as a ratio of GDP (ln LY) and Private Credit by Deposit Money Banks as a ratio of GDP (ln LCY) is carried out. The test indicates that all the variables tested are found to be unit root in levels and stationary in their first difference. The null hypothesis of unit root is rejected in first difference of all variables. Therefore it is now plausible to apply cointegrating techniques to estimate long run relationship between output and the other variables shown in Table 2.

Variable	Mean	Std. Dev.	Min	Max
ln(real GDP)	21.40	0.32	20.73	21.84
ln(real M2)	20.49	0.51	19.58	21.38
ln(real domestic credit to private sector)	20.09	0.69	18.64	21.21
ln(real capital stock)	22.07	0.44	21.04	22.66
ln(labor)	12.43	0.23	11.82	12.77
Polity2	5.54	4.24	-4.00	9.00

Table 1: Summary Statistics

[4] The construction of capital stock is based on the perpetual inventory method. The benchmark capital stock in 1970 is approximated by eight times of 1970's investment, and the depreciation rate is assumed to be 4%.

Table 2: Unit Root Tests

VARIABLES	ADF		ADF
ln GDP	-0.95 (-3.57)	Δln GDP	-3.66 (-2.97)
ln L	-1.130 (-2.97)	Δln L	-5.895 (-2.97)
ln K	-3.14 (-3.57)	Δln K	-3.66 (-2.97)
ln FP	-1.008 (-3.57)	Δln FP	-3.166 (-2.97)

Notes:

1. The ADF is the usual argumented Dickey-Fuller test.
2. The first column is for the levels of the variables and the adjacent column is for the first difference.
3. Figures in brackets are the 5% level critical values.
4. The sample periods are (1970-2008) for the levels and (1971-2008) for the first difference.
5. Tests for the levels of the variables intercept and trend are included, but excluded in the tests for their first differences. The null hypothesis in ADF is that the variable contains a unit root.

Cointegration Test

We use Johansen's (1988, 1991) approach, which uses the maximum likelihood procedure to determine the presence of cointegrating vectors. This procedure is based on the following vector autoregressive (VAR) model:

$$\Delta Y_t = C + \sum_{i=1}^{k} \Gamma_i \Delta Y_{t-i} + \Pi Y_{t-1} + \varepsilon_t \quad (3)$$

Here, Y_t is a vector of I(1), non-stationary in level form, variables and C is a constant. The information on the coefficient matrix between the levels of the stock price series is decomposed as $\Pi = \gamma\delta'$, where the relevant elements of the matrix are the adjustment coefficients and the δ matrix contains the cointegrating vectors. Johansen and Juselius (1992) recommend the trace test and the maximum eigenvalue test statistics to determine the number of cointegrating vectors. Before undertaking the Johansen test for cointegration, we must first perform the lag specification tests. In other words, the first step in our cointegration analysis is to determine the number of lags, k, of our VAR model. Using the Schwarz Baysian Criterion and we find that 1 lag is the optimal for this exercise.

We report the results for cointegration based on the trace statistic in Table 3. We find that according to the trace statistic, when testing the null hypothesis of no cointegration ($r = 0$), it turns out to be 126.38, which exceeds the 5 per cent critical value of 47.21. The trace statistic when $r = 1$ is also greater than the 5 per cent critical value. However, the trace statistic when $r = 2$ is less than the 5 per cent critical value. Thus, we can conclude that there are two cointegrating relationships among the variables. And Engle-Granger tests are further conducted and find out that the linkage between real GDP and real money supply also run from the other way around apart from the one described in Equation (2). And on top of this, the Durbin-Wu-Hausman test confirms that real money supply M2 is also endogenous in this system (see Table 4).

Table 3: Cointegration with restricted intercepts and unrestricted trends in the VAR

Panel A: Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

Null	Alternative	Statistic	95 per cent Critical Value
r = 0	r = 1	126.38	47.21
r<= 1	r = 2	36.47	29.68
r<= 2	r = 3	13.35	15.41

Estimation

Given the cointegrating relationship between real GDP and other major controlling factors is evidenced in section 4.4, we proceed to find out whether or not real money supply M2 has any impact on Fiji's economy. In this empiric's part, another two controlling factors are considered in the system, namely, Polity2, which is subtracted from the Polity IV project to measure Fiji's political regime, and a dummy variable to present political and social instability in Fiji. See Table 4.

The analysis starts with the ordinary least squares (OLS) estimator (see column (1)). And the diagnostic tests show that the OLS regression suffers from the residual autocorrelation problem. To avoid spurious regression output, the Cochrane-Orcutt autocorrelation of order 1 is therefore employed to control for the autocorrelation problem. The Durbin-Watson statistic of 2.112 shows that this estimation procedure successfully removes the autocorrelation problem (see column (2)), and the *t*-statistics for corresponding variables decline reasonably.

However, the endogeneity problem, as evidenced in section 4.4, will also impose severe problem since the estimates will be biased and inconsistent if this problem is not taken care of. The instrumental variables estimators are therefore applied to control for the endogeneity problem of the money supply variable (see columns (3) and (4)). Price and the lagged real GDP are used as the instrumental variables (IVs) to explain the problematic real M2 variable. The validity of the two IVs is tested by the first-stage OLS estimation (see the lower panel of Table 4) as well as by the Sargan test, which is a test of overidentifying restrictions for the instrumental variables models. With the *p*-values of the Sargan test are greater than the 5% significance level, we do not reject the joint null hypothesis that the two IVs are valid instruments and that the excluded instruments are correctly excluded from the estimated equation. The Durbin-Watson statistic shows that the two-stage least squares (2SLS) estimation is not free from the autocorrelation problem (see column (3)). This gives rise to the application of the extended GMM estimator, which estimates linear regression models using robust autocorrelation-consistent estimates. And *t*-statistics for corresponding variables decline reasonably (see column (4)).

In modeling domestic credit to private sector's impact on the Fijian economy, investment is used to replace capital stock to explain real GDP in Fiji. The empirical analysis of this subsection is the same to that described above, and only the final extended GMM estimation results are reported in column (5) in Table 4. To control for the endogeneity problem of the financial sector variable $\ln(DCTP)_t$, three IVs, namely, saving ratio, price and the lagged real GDP, are used to instrument the problematic variable. The first-stage OLS results, which are only indicative in explaining the problematic variables, are reported in the lower panel of Table 4.

Empirical Findings

Comparing the four estimators we adopted in the current analysis, consistent results are found through columns (1) – (4) in Table 4. We take this as the evidence of robustness of our analysis. Our interpretation of the empirical findings is based on the extended GMM estimation results in column (4) which simultaneously controlled for the identified residual autocorrelation and endogeneity problems. In the long run, real money supply M2 has a quantitatively significant impact on the Fijiian economy by promoting real GDP by 0.18 per cent upon a one per cent increase in real M2, keeping other factors constant. Yet this impact is only statistically significant at the 10% level. Both physical capital and labor force have important impact on Fiji's GDP with output elasticities of 0.18 and 0.76 respectively. Both factor inputs are

statistically significant at the 1% level. The democracy index Polity2 also plays an important role, which is highly statistically but less quantitatively significant, in explaining the variation of Fiji's real GDP. It is found out that a one per cent increase in the Polity2 index would enhance real GDP by around 0.04 per cent, given other factors are unchanged. And the dummy variable which is employed to capture social and political instability turns out unimportant and is therefore dropped from the sequent regressions.

Turning to the impact of domestic credit to private sector on Fiji's real GDP, the analysis shows that a one per cent increase in $\ln(DCTP)_t$ increases real GDP by 0.25 per cent, given the other factors remain constant; a one per cent increase in real investment promotes real GDP by 0.15 per cent given the other factors are unchanged; and the output elasticity of labor is found to be 0.54. All the above three controlling variables are statistically significant at the 5%, 1% and 10% level, respectively. In this regression analysis, the democracy index Polity2 turns unimportant. See column (5) in Table 4. The elasticity of both the financial indicator show that financial sector development had a significant positive impact on the Fijian economy.

Table 4. Regressions on ln(real GDP)$_t$

ESTIMATION METHOD	(1) OLS	(2) Cochrane-Orcutt AR(1)	(3) 2SLS	(4) Extended GMM	(5) Extended GMM
VARIABLE	COEF. [*t*-stat]	COEF. [*t*-stat]	COEF. [*z*-stat]	COEF. [*z*-stat]	COEF. [*z*-stat]
Constant	5.36[10.38] ***	5.29[4.34] ***	5.05[5.62] ***	4.26[4.36] ***	6.89[3.66] ***
ln(real M2)$_t$	0.19[3.35] ***	0.21[2.02] **	0.25[1.99] **	0.18[1.67] *	
ln(DCTP)$_t$					0.25[2.29] **
ln(real capital stock)$_t$	0.20[3.18] ***	0.36[2.73] ***	0.17[2.58] ***	0.18[3.46] ***	
ln(real investment)$_t$					0.15[2.75] ***
ln(labor)$_t$	0.60[4.18] ***	0.29[1.48]	0.59[2.36] ***	0.76[3.17] ***	0.54[1.66] *
Polity2$_t$	0.045[2.16] **	0.005[2.71] ***	0.005[3.22] **	0.008[5.95] ***	
Sample size	39	38	39	38	38
R-squared	0.9844	0.9175	0.9828	0.9838	0.9779
Root mean squared error	0.0422	0.0359	0.0417	0.0376	0.0440
Diagnostic tests					
Durbin-Watson statistic	1.018	2.112	1.009	-	-
Breusch-Godfrey LM test: chi^2 (*p*-value)	8.13 (0.004)	-	-	-	-
Breusch-Pagan/Cook-Weisberg test: chi^2 (*p*-	0.78 (0.377)	-	-	-	-
Ramsey RESET test: F-stat (*p*-value)	0.59 (0.447)	-	-	-	-
Jarque-Bera normality test: chi^2 (*p*-value)	0.64 (0.728)	-	-	-	-
The Sargan test: chi^2 (*p*-value)			5.14 (0.077)	3.23 (0.199)	0.86 (0.648)

Exogeneity test [Durbin-Wu-Hausman *chi-sq* statistic (*p*-value)]	
ln(real M2)$_t$	10.74 (0.001)
ln(DCPT)$_t$	11.34 (0.000)

First-stage of TSLS			
	ln(real M2)$_t$	**ln(DCTP)$_t$**	
Constant	1.22 [0.19]	-4.74 [-0.51]	
ln(real GDP)$_{t-1}$	0.83 [2.56]**	1.09 [2.25]**	
ln(CPI)$_t$	0.35 [2.20]**	0.45 [1.88]*	
Saving$_t$		-1.31 [-1.69]*	
Sample size	38	38	
R-squared	0.9376	0.9447	

Notes:

1. In the diagnostic tests, Durbin-Watson test is used to test for the first-order autocorrelation, and Breusch-Godfrey LM test (H_0: no autocorrelation in the error) is also to test for autocorrelation. Breusch-Pagan/Cook-Weisberg test (H_0: errors are homoskedastic) is to test for heteroskedasticity. Ramsey RESET test (H_0: the specification has a correct functional form) is to identify the specified

(to be continued ...)

(Continued)

model does not omit relevant variables nor include irrelevant variables. Jarque-Bera normality test (H_0: the error has a normal distribution) is to check whether regression error follows a normal distribution. Endogeneity of explanatory variables is checked by the Durbin-Wu-Hausman test (H_0: regressor is exogenous). The null hypothesis will be rejected upon the *p*-value less than, say, the 5% significance level. The Sargan test is a test of overidentifying restrictions for the instrumental variables models (see columns (3) and (4)). The joint null hypothesis is that the instruments are valid instruments, and that the excluded instruments are correctly excluded from the estimated equation.

2. The Diagnostic tests indicate the presence of autocorrelation in the OLS regression in column (1). The autocorrelation problem is solved by the Cochrane-Orcutt autocorrelation of order 1 procedure. See column (2). Based on the Durbin-Wu-Hausman exogeneity test, $\ln(\text{real M2})_t$ in found to be endogenous in the system. The instrumental variables estimators are therefore employed (see columns (3) and (4)). The 2SLS estimator however does not control for the residual autocorrelation problem. This gives rise to the application of the extended GMM estimator, which estimates linear regression models using robust autocorrelation-consistent estimates.
3. The first-stage OLS regression output for the endogenous $\ln(\text{real M2})_t$ is reported in the lower panel of the table, where the validity of instrumental variables is evidenced.
4. *t*-statistics and *z*-statistics are in square parentheses. *p*-values are in round parentheses.

5.*, **, *** Significant at 10%, 5% and 1% levels respectively.

CONCLUSION

The goal of this paper was to estimate the impact of financial sector development on level of output in Fiji. We achieved this goal by undertaking a error correction mechanism analysis for cointegration to examine the relationship between financial sector, labor, capital and economic growth for Fiji for the period 1970-2008. We find, strong evidence of cointegration among these variables. We then employ the 2SLS and GMM technique to explore the long-run relationship among the above mention variables. We find in the long run capital, labor and liquid liabilities as ratio of GDP and private credit by deposit money bank as ratio of GDP all have statistically significant positive effect on the level of output.

Our finding reflects that Fiji has a well developed financial system where financial development induces level of output. In accordance with theory, well developed financial sector encourages mobilization of savings, ameliorates asymmetric information, and provides greater opportunity for risk spreading and risk pooling. This translates into higher saving and more efficient allocation of resources, which leads to positive economic growth effect.

REFERENCE

Allen, D.S and Ndikumana, L (2000), "Financial Intermediation and Economic Growth in Southern Africa", *Journal of African Economies,* vol.9, no 2, pp. 132-160.

Andersen, S. (2003), *The Influence and Effects of Financial Development on Economic Growth. An Empirical Approach*, Chr. Michelsen Institute **(**CMI Report R 2003: 14), Norway, Retrieved from http://www.cmi.no/public/public.htm on 7th April 2007.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2000), "A New Database on Financial Development and Structure," World Bank Economic Review, 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.

Bencivenga, V. R., and Smith, B.D. (1991), "Financial Intermediation and Endogenous Growth," *Review of Economic Studies,* pp 195–209.

Bencivenga, V. R., and Smith, B.D. (1993), "Some Consequences of Credit Rationing in an Endogenous Growth Model," *Journal of Economic Dynamics and Control.* pp 97–122.

Boyd, J. H., and Smith, B.D. (1997), "Capital Market Imperfections, International Credit Markets, and Nonconvergence," *Journal of Economic Theory,* pp 335– 364.

Cameron, R. (1967), *Banking in the Early Stages of Industrialization,* New York, Oxford University Press.

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

Duisenberg, W.F. (2001), "The Single Financial Market: Two Years into EMU", *The Role of Financial Markets for Economic Growth*, Speech delivered at the Economics Conference organised by the Oesterreichische Nationalbank in Vienna on 31 May.

Engel, R.F. and Granger, C. W. J., (1987) Cointegration and Error Correction Representation, Estimation and Testing. *Econometrica*, **55**, 251-276.

Fiji Islands Bureau of Statistics (1970-2005), *Current Economic Statistics*, Fiji.

FitzGerald, V. (2006), "Financial Development and Economic Growth: A Critical View", Paper for *World Economic and Social Survey,* Oxford University, U.K.

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

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

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

Johansen, S., (1988) Statistical Analysis of Cointegrating Vectors, *Journal of Economic Dynamics and Control*, **12**, 231-254.

Johansen, S and Juselius, K. (1990) Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for

Money, *Oxford Bulletin of Economics and Statistics*, **52**, 169-210.

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

King, Robert G., and Ross Levine (1993a), "Finance, Entrepreneurship, and Growth: Theory and Evidence," *Journal of Monetary Economics,* pp 513– 542.

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

Levine, R. and Zervos, S.J. (1993), "What we have learned about policy and growth from cross-country regressions?" *American Economic Review*, pp 426 - 430.

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

Merton, R. (1995), "A Functional Perspective of Financial Intermediation", *Financial Management*, pp 23 - 41.

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

Rao, B.B, Singh, R. and Gounder, N. (2007), "Investment Ratio in Growth Equations", *Applied Economics Letters*, forthcoming.

Robinson, J. (1952), "The Generalisation of the General Theory", *The Rate of Interest and Other Essays*, London, Macmillan, pp 67- 142.

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

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

Stiglitz, J. E. and Weiss, A. (1981), "Credit Rationing in Markets with Imperfect Information," *American Economic Review,* pp 393–410.

Townsend, R. M. (1979), "Optimal Contracts and Competitive Markets with Costly State Verification," *Journal of Economic Theory,* pp 265–93.