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Financial Sector Development and Growth in Fiji: An Analysis of Credit Boom and Its Implications

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Abstract

Fiji witnessed strong growth in domestic private sector credit for a continuous period of four years from 2001. Aside from contributing to Fiji's economic recovery, the credit expansion resulted in deteriorating annual trade balances. Examining the relationship between private sector credit, economic growth and trade balance, this paper finds the presence of a long-run relationship with linkage from domestic private sector credit to economic growth but not vice versa. Further, the results indicate evidence of a bi-directional short-run causality between the variables suggesting that private sector credit not only promoted economic growth, but also affected trade balance.

Key Words: Private credit, economic growth, bounds test, cointegration and causality
JEL Codes: E44, E51

Introduction

After suffering a major set back in 2000 due to a civilian coup, which abruptly halted Fiji's economic growth, the country recovered quickly in the next four years. The economic recovery was in part due to expansionary fiscal policies, giving rise to annual budget deficits, which were all financed through public borrowing. As the economy was marked by excess liquidity in the banking system, due to poor investment climate lasting for more than a decade since 1987, there were no upward pressures on interest rates, which continued to remain low. Since Fiji's exchange rate is fixed to a basket of major currencies including Australia and New Zealand, whose

central banks have been targeting inflation, Fiji's inflation also remained low.

The favourable factors of low interest rate and low inflation, combined with return of political stability in 2001 revived consumer confidence during next four years. Steady rise in private domestic credit[1], which began with increase in borrowings for consumer durables, spilled over into real estate market as well. These developments contributed to uninterrupted economic growth during 2001-2004 at an average of 3%, a remarkable phase in Fiji's recent economic history.

However, "too much of a good thing" has its own problems. Rise in private sector credit results in increase in money supply. According to the well tested theory of monetary approach to balance of payments under a fixed exchange rate regime, excess supply of money would translate itself into excess demand for goods and assets, spilling over into demand for foreign goods and assets and in the process giving rise to trade deficits (Johnson 1972). The linkage between private sector credit and growth has been the subject of examination by various empirical studies through both conventional and unconventional growth accounting frameworks (Barro, 1991; Levine and Renelt, 1992; Barro and Sala-I-Martin, 1995).

In Schumpeter's view, financial intermediaries, especially the commercial banks, have been the major provider of important services to market participants, namely: mobilizing savings, evaluating investment projects, managing risk, and facilitating transactions (Schumpeter, 1911). These functions have proved crucial for technological innovations and economic development in developed countries and they continue to hold good for developing countries as well. Fiji is no exception, as its financial intermediaries, dominated by the commercial banks, have been playing a major part in mobilizing savings and channeling them to productive investments.

The objective of this paper is to undertake an empirical study of the implications of the rapid private sector credit growth in Fiji by assessing the impact of private credit on economic growth in Fiji during a 31-year period (1975-2005). The paper is organized on the following lines: the second section provides a brief literature survey, focusing on theoretical relationship between private sector credit and growth and reviewing past empirical studies in this regard; the third section discusses credit trends and their impact on balance of payments and international reserves. The fourth section outlines the methodology adopted for the empirical analysis and results. The fifth and last section presents a summary, listing conclusions with policy implications.

2. Brief Literature Survey

In the investigation of cross-country differences in growth, research studies by development economist have invariably singled out one factor among several determinants as a critical variable. This is access to private credit for individuals and businesses. Credit constraints have been identified to be a major hurdle for entrepreneurs to launch new businesses and for existing businesses to grow and expand, especially small businesses, which are the main source of employment in developing countries (Demirgüc-Kunt and Maksimovic, 1998; Love, 2003; Beck *et al*., 2005).

Rise in private credit is a result of the monetization of the economy, indicating growth of intermediation that would lead to increase in credit financed economic activities. Credit growth also represents easing budget constraints of both private and state owned enterprises, resulting in possible inflation and financial instability. Two sets of findings are available, posing important policy dilemmas. First, credit boom is associated with economic growth and efficiency and second, credit expansion would increase the risk of crisis.

In an efficient financial system, individual savings are mobilized by financial intermediaries and allocated to their most productive uses (World Bank, 2001). In most developing countries, banks are the primary financial intermediary institutions; in an efficient financial system these banks would therefore mobilize savings, usually in the form of deposits, and allocate them to productive businesses through loans. The allocation of savings to productive enterprises results in increased employment and higher GDP. Empirical studies have investigated the relationship between the level of credit provided to the private sector and economic growth, and economic growth rates are usually higher in countries with relatively robust lending to the private sector (King and Levine, 1993; Levine *et al*., 2000). Further, a modest increase in the volume of credit to the private sector is usually associated with a substantial increase in GDP (Levine *et al*., 2000).

King and Levine (1993), Levine, *et al*. (2000), Rousseau and Wachtel (2002) emphasized financial deepening as one of the main catalysts of economic growth. They concluded that evolution of financial sector development and provision of financial intermediary services are crucial in promoting economic growth and the relationship is highly significant. Some lending booms have been associated with financial liberalization and increased competition, both of which in principle increase efficiency. To the extent that competition eases market imperfections such as credit rationing and enhances the efficiency of resource allocation, credit market

development will enhance economic growth and development (Bencivenga and Smith, 1993); Ma and Smith, 1996).

On the other hand, credit expansion poses some potential dangers. Honohan (1997) and Eichengreen and Arteta (2000) argued that lending booms happened to be a frequent cause of banking and currency crises. A study on transition economies in Europe by Duenwald *et al*. (2005) showed that credit boom leads to overheating of the economy, which manifests itself in widening trade deficit, owing to rapid growth in imports. The IMF report (2004), noting the presence of high degrees of correlation between credit growth and trade deficits in the selected countries in their study, concluded that credit booms were also associated with banking and currency crises. Demirguc-Kunt and Detragiache (1997) demonstrated that after controlling for the existence of deposit insurance, the private credit (as a ratio of GDP) and the lagged real growth of private credit are crucial determinants of banking crises. In line with this finding, Honohan (1997) views private credit growth as one of the leading indicators for diagnosing and predicting banking crises. Indeed, Borio and Lowe (2002: 11) argue that "One of the relatively few robust findings to emerge from the literature on leading indicators of banking crisis is that rapid domestic credit growth increases the likelihood of a problem."

Fiji, among the Pacific island countries (PICs), has been the first to liberalize its financial sector in 1988 soon after the two military coups of 1987, by discontinuing various restrictions on banks including interest rate ceilings, quantitative restrictions on credit and abolition of ceilings on quantum of credit to various economic activities (Katafono 2000), which marked the Fiji's regulated system in the past. Further, from 1989 onwards, Fiji's monetary authority, the Reserve Bank of Fiji (RBF) has undertaking open market type operations in its own paper, known as RBF Notes to manage the liquidity in the system, thereby indicating the market determined interest rate (Jayaraman and Ward 2001). These measure enabled RBF to pursue an independent role in determining monetary policy.

Against this background, the first ever private sector credit expansion experienced by Fiji on a continuous basis during 2001-2005 in its two decades of financial sector liberalization assumes considerable importance and hence the impact of credit expansion on growth and other variables including trade balance merits investigation. This is because that several studies have shown that countries that are less efficient in controlling the credit booms might experience a nastier variety of financial debacle that combine a banking crises and a balance-of-payment deterioration or collapse (Goldfajn and Valdes, 1997; Goldstein, 2001). Mexico in 1994 and Thailand in 1997 were cited as leading examples. Kaminsky, *et al*.

(1997) in five out of seven case studies undertaken by them, which investigated the relationship between private credit and economic growth as well as currency crises, obtained statistically significant results. We, in this paper, attempt to confront this dilemma in Fiji, which saw uninterrupted growth in private credit during 2001-2005.

3. Trends in Credit

The financial sector of Fiji, whose selected key indicators are given in Table 1, comprises three major sectors, namely the banking system, insurance industry and non-bank financial institutions. The banking crisis of 1995 involving the state-owned National Bank of Fiji, which once accounted for one third of total bank credit, was a wake-up call to the nation. Improvements in bank supervision and regulatory reforms were quickly undertaken (Chandra *et al*. 2004). Following the restructuring program, the failed bank's operations were taken over by an Australian owned commercial bank. As of 2006, all the five commercial banks[2] are all foreign-owned. They operate according to the Australian banking practices and all of them are well capitalized. Capital adequacy ratios were maintained above the minimum requirement of 8%, at an average of 12%. Management performance is rated satisfactory in view of strong performance in the components capital adequacy, asset quality, management, earnings and liquidity known as CAMEL (Reserve Bank of Fiji 2006).

Table 1: Fiji: General Key Indicators

Surface Area (sq km)	18,270
Population (2005)	835,000
Total GDP at current prices (US $ million) 2002	1,750
Per capita GDP in current price (US$)	2,360
Human Development Index (Rank)	81
Aid per capita (US$) 2002	41
Aid per capita (% of GDP) 2002	1.8

Source: ADB (2004), UNESCAP (2006)

All the five foreign-owned commercial banks are supervised from their respective headquarters. Thus, there has been no particular concern in regard to the soundness of their operations in the host country. However, the general impression has been they have been conservative with relatively high lending rates and were not keen to serve rural interests. To meet the growing criticisms in recent years, banks have shown in recent years greater interest in extending their operations beyond urban

areas by running mobile banks in rural areas as well. Sectors to which banks have been lending include private individuals for consumer credit, housing, wholesale, retail, hotels and restaurants and building and construction.

There are three non-bank licensed credit institutions[3] (LCI), which cater to the credit needs of private sector in various areas. These include consumer credit, real estate, transport and storage, wholesale, retails and hotels and restaurants, and building and construction. Capital adequacy remained strong in recent years. In 2005, the capital adequacy ratio was 23.7%, compared to the minimum requirement of 10%. In regard to other criteria of asset quality, earnings and liquidity, LCIs have recorded satisfactory position (Reserve Bank of Fiji 2006).

Growth in Credit

The stock of total domestic credit during the early phases economic growth of Fiji since independence in 1970 was less than 25% of GDP. It rose gradually to 30% of GDP in the 1980s (Table 2). During 1980-1984, it was about 32% of GDP, with credit to private sector being around 25% of GDP. Following the general liberalization of the economy in 1988, as noted earlier, domestic credit comprising both public and private credit rose to new heights. As a proportion of GDP, credit to private sector reached historically a high figure at 47% of GDP during the next five-year (1985-1989) period. However, growth in credit in subsequent years was no longer remarkable, reflecting the general uncertainties, mainly due to political instability, which was responsible for poor private investment climate.

With the enactment of a new constitution in 1997, which were followed by fresh elections and return of an elected government in 1999, there were signs of an immediate recovery. However, the expectations were short lived, as the country witnessed a civilian coup in 2000. Another round of elections held in 2001 led to the restoration of democracy. The newly elected government in 2001 took bold steps to revitalize the economy with aggressive fiscal policies to lift the economy out of the past morass. During the next four years, the economy registered positive growth rates, with tourism bouncing back and reaching new heights in 2005

Increases in domestic credit during 2001-2005 accordingly resulted in the quick bounce of the economy. Total domestic credit as a proportion of GDP, which plunged from 44% of GDP in 2000 to 41% in 2001, rose steadily during the next four years and was about 59% of GDP in 2005. Credit to public sector registered increases, as banks and non-bank institutions stepped up investment in government bonds. Credit to private sector also went up, as it recorded increases from 33% of GDP in 2001 to 49% of GDP in 2005.

The credit boom during 2001-2005 was influenced by several factors. First, there was a return of confidence in the banking system, reinforced by the legal, supervisory and accounting frameworks governing the bank and credit institutions. The frameworks were strengthened earlier by increased regulatory powers of monetary authority; stricter prudential regulations and supervision; rise in minimum capital adequacy requirements; and introduction of international accounting standards. Secondly, the credit boom also reflected a catching up from the past-depressed levels of investment climate due to political instability. Thirdly, economic recovery since 2001, which was aided by increases in inward remittances from the overseas Fijian residents and rise in tourism earnings, combined with high global liquidity resulting in low interest rates, provided a boost to expansionary activities. Fourthly, greater supply of credit was matched by increased demand from both businesses and households, as confidence returned to households to service their debt. Fifthly, banks offered new products with more flexible terms, which opened up new possibilities of financing their pent up demand for housing and other long term investment needs.

Table 2: Domestic Credit, Trade Balance and Growth Rates: 1975-2005

Year	Real Domestic Credit (% of GDP)	Real Private Sector Credit (% of GDP)	Real Trade Balance (% of GDP)	Growth in GDP (%)	Growth in real Domestic Credit (%)	Growth in Real Private Sector Credit (%)	Growth in Real Trade Balance (%)	Real Lending Rate (%)	Real Indicator Interest (%)
1975-1979	23.3	18.8	-13.6	2.2	14.2	9.9	14.7	1.5	-2.9
1980-1984	32.1	24.9	-13.9	-0.6	4.1	5.0	8.5	4.3	-0.4
1985-1989	38.3	47.2	18.2	0.4	23.7	24.2	-148.0	8.6	4.4
1990-1994	52.5	44.0	-17.7	2.9	8.3	9.4	14.1	6.8	2.1
1995-1999	47.4	41.4	-16.4	2.8	-2.5	-1.8	8.2	7.1	1.2
2000	44.2	37.3	-16.7	-1.4	4.6	-0.8	-12.3	7.3	1.4
2001	40.8	33.3	-18.0	1.5	-6.5	-9.5	9.2	4.1	3.7
2002	41.2	33.6	-22.5	3.1	4.3	4.2	29.4	7.3	1.0
2003	46.7	37.2	-26.4	1.3	14.7	12.1	18.7	3.4	-2.4
2004	48.4	40.6	-26.6	5.5	9.4	15.0	6.3	4.3	-1.1
2005	59.0	48.5	-28.8	1.5	23.7	21.4	9.7	4.4	-0.1

Source: International Monetary Fund (2006) and Authors' Calculations.

Composition of loans and advances

Table 3 presents details of loans and advances made out by commercial banks, which accounted for on an average more than 90 % of total domestic credit during last 15 years. While credit for agriculture sector has declined over the period, from 17% in 1991 to about 1% of total bank credit, credit to manufacturing sector hovered around 11 %. The decline in credit to agriculture sector has been attributed to various factors. The latter included the country's unique communal land tenure system, which prevented private ownership of land restricting its marketability and persisting uncertainty in regard to renewal of land leases resulting in non-availability of collaterals in terms of clear title to either land ownership or long periods of lease. All these factors have been discouraging bank lending for investment in land and related agricultural activities. Credit to wholesale and retail trade and hotels and restaurants were, however, steady at around 32% with marked decline in the later part of the period. On the other hand, credit to two sectors, namely, building/construction and real estate/property development recorded rapid surges. Nearly one third of the domestic credit went to private individuals, maintaining a remarkable, steady trend since 2001 most of which were for automobiles and other personal purposes, including housing and repairs and extensions.

A similar pattern was observed in regard to loans and advances by LCIs (Table 4). The data on credit by LCIs, which are available only from 2002 on wards show that while credit to agriculture as proportion of total credit decreased over the four year period, share of credit to building and construction sector went up from 3% in 2002 to 5%in 2005; and credit to real estate as percentage of total credit nearly doubled. Credit to private individuals for automobiles and housing recorded an increase from 48% in 2002 to 53% of total credit.

Thus, domestic credit rose by almost 27% at the end of 2005 reflecting higher credit in the private sector, government and statutory authorities. This rise was the highest since May 1990. The increase in credit was fuelled by increased commercial bank lending to private individuals and major sectors including wholesale and retail trade, real estate and building and construction. Most of the advances to the private individuals were channeled for housing purposes, which amounted to $566 million or 80% of total loans to the private individuals representing 27% of the total outstanding loans in the banking system. Steady rise in credit for housing sub-sector also reflected significant upward swings in house prices and subsequently the value of loans taken out by individuals for purchasing houses. The RBF (2006) estimated that the price of houses and related properties rose as much as 50% during three years (2003-2005), whereas consumer price inflation increased by about 6%.

Trade Balance

Rapid growth in private sector credit poses potential risks for its macroeconomic viability (Duenwald *et al*. 2005). An IMF report (2004) noted that there was almost a 70% probability that a credit boom coincided with either a consumption or investment boom. Accordingly, we find that rapid private sector credit growth in Fiji during 2001-2005 eased liquidity constraints on firms and households and consequently led to higher levels of consumption and investment in housing. Given the short-run supply constraints, the economy also experienced upward pressures on prices of assets including housing and rise in rents, besides rise in the nominal wage levels of skilled workers.

Since Fiji's economy is highly dependent on imports of consumer goods and capital goods including building materials, steady rise in demand during 2001-2005, fueled by rise in domestic credit, resulted in rising trade deficits. As the nominal exchange rate remained unchanged, rise in domestic price level contributed to rise in real exchange rate as well. This consequently affected the international competitiveness of limited range of exports. Such a situation contributed to further deterioration of trade balances (Table 2).

Changes in bank credit are more closely mirrored in the trade rather than the current account, since trade deficits tend to be hidden as they are covered in the current account by strong growth in invisibles. Prior to the beginning of credit boom phase, Fiji's trade deficit in 2001 was 17% of GDP. It rose to 23% in 2002 and steadily reached the historically highest figure at 29% of GDP in 2005. Thus, we observe that Fiji's experiences of the impact of a credit boom are no different from those felt in other countries in regard to overheating of their economies, which in turn giving rise to trade deficits (Duenwald *et al*. 2005; IMF 2004). Since credit growth and trade deficits in the past led to banking and currency crises elsewhere, the subject of banking supervision assumes importance. However, as Fiji's commercial banks, being all foreign-owned and hence well supervised from their respective overseas headquarters, there was no repetition of a bank failure of the kind witnessed in the 1990s. The four-year credit boom and the resultant overheating of the economy appear to have manifested only in widening trade deficits. The result has been a steady fall in international reserves, from F$ 943.6 million in 2002 (providing an import cover of goods for five months) to F$ 677.7 million in May 2006 (providing an import cover of goods for 2.9 months).

Table 3: Fiji: Loans and Advances by Commercial Banks (Percent of Total)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 Jan.	2006 Feb.	2006 Mar.
Agriculture	16.8	16.0	13.8	12.7	10.1	8.9	6.3	4.6	3.5	3.4	2.4	2.5	1.8	1.4	1.3	1.3	1.2	1.2
Mining	0.6	0.6	0.7	0.6	0.4	0.1	0.1	0.1	0.5	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1
Manufactur-ing	13.5	12.3	10.5	11.6	11.6	11.4	10.0	9.4	12.4	12.4	12.5	12.2	12.8	14.1	10.8	10.2	10.2	10.3
Building & Construction	4.4	4.0	3.1	3.3	4.3	3.3	2.8	4.6	3.1	3.1	2.6	2.8	3.0	3.5	4.7	7.0	7.2	7.4
Real Estate & Property Develop-ment	4.3	3.4	3.2	3.4	3.6	4.4	3.1	2.7	2.8	4.0	5.2	4.5	5.2	7.5	8.4	8.4	8.6	8.3
Non bank & Financial Institutions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.1
Public Enterprises	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.2	4.2	4.2	2.1	3.2	4.6	4.0	3.9	3.3	3.2
Whole Sale Retail Trade	24.5	26.1	25.2	24.4	24.7	29.6	31.3	31.9	30.3	30.3	31.6	32.1	30.5	28.6	27.6	25.5	25.6	25.6
Transpor-tation & Communi-cation	3.0	3.1	2.7	2.5	3.5	3.7	2.6	2.3	2.3	2.2	2.4	2.1	2.2	2.8	3.1	2.8	2.7	2.9
Elec.,Gas & Water	0.7	0.5	0.5	0.5	0.4	0.8	0.8	0.7	0.3	0.5	0.3	0.3	0.2	0.3	1.4	1.9	1.8	1.8
Profession-al Services	3.4	2.7	2.1	2.3	2.4	3.0	3.2	3.8	4.6	4.9	2.7	2.7	2.4	2.9	3.3	3.2	3.2	3.2
Private Individuals	23.1	24.9	25.3	25.5	27.9	25.6	28.3	28.2	31.2	31.4	33.2	34.7	33.5	33.0	33.1	33.3	33.5	33.7
Central, Local & Govt.	1.3	1.2	1.7	1.0	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.6	0.3
Other Sectors	4.2	5.2	11.2	12.2	10.4	8.5	10.8	9.8	4.5	2.5	1.8	2.7	4.2	0.6	1.9	1.8	1.9	1.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Reserve Bank of Fiji (2006) and Authors' Calculations

Table 4: Fiji: Credit Institutions: Loans and Advances (in percentages to total)

	2002	2003	2004	2005	Jan. 2006	Feb. 2006	Mar. 2006
Agriculture	4.6	4.1	3.8	3.7	3.5	3.5	3.5
Mining	3.1	2.6	2.9	2.6	2.5	2.4	2.4
Manufacturing	4.5	4.1	3.9	3.2	3.2	3.2	3.3
Building & Construction	3.3	3.8	4.5	5.5	5.3	5.3	5.3
Real Estate & Property Development	6.0	5.5	6.1	9.9	11.1	11.4	11.3
Public Enterprises	0.5	0.1	0.1	0.0	0.0	0.0	0.0
Whole Sale Retail Trade	5.3	5.1	5.0	4.0	4.0	4.0	4.0
Transportation & Communication	20.3	16.2	15.1	13.8	13.9	14.0	13.9
Profession-al Services	4.0	3.3	2.7	2.5	2.2	2.1	2.2
Private Individuals	48.4	53.9	55.3	54.5	53.9	53.0	53.7
Central & Local Govt.	0.0	0.6	0.4	0.2	0.3	0.3	0.3
Total	100.0	99.4	99.7	99.5	99.2	99.0	98.9

Sources: Reserve Bank of Fiji (2006) and Authors' Calculations

III. Modeling Methodology and Results

Since our objective is to test the hypothesis that private sector credit contributes to the economic growth of Fiji, our study deals only with financial variables such as real private credit, real lending rate and real trade balance. Our approach is, therefore, different from the production function approach utilizing the conventional inputs of production, such as labour and capital (see for example, King and Levine, 1993; Levine, 1997). Our study is on the lines of (Barro, 1991; Levine and Renelt, 1992; Barro and Sala-I-Martin, 1995). It covers a 31-year period (1975-2005). The data series, which are in real terms, include real gross domestic product (RGDP); real private credit (RPC); and real trade balance (RTB); and the weighted average real lending rate (RLR) charged by lending institutions, representing the real cost of borrowing and are drawn from the database of the Fiji Islands Bureau of Statistics and IMF (2006)

Modeling Strategy

In our analysis, all variables are transformed into natural logarithmic form. For examining possible long-term relationships amongst *LRGDP, LRPC, LRTB* and *LRLR*, we resort to the autoregressive distributed lag (ARDL) bounds testing approach proposed by Pesaran et al. (2001). This approach has several advantages: (i) it allows testing for the existence of a cointegrating relationship between variables in levels irrespective of whether the underlying regressors are I(0) or I(1); (ii) it is considered more appropriate than the Johansen-Juselius multivariate approach for testing the long run relationship amongst variables when the data are of a small sample size (Pesaran *et al*., 2001); and (iii) ARDL covers both the long-run and short-run relationships of the variables tested. For these reasons, the ARDL procedure has become increasingly popular in recent years and we begin the empirical analysis with this procedure[4]

The test for cointegration is based on the following unrestricted error correction model (UECM) of the ARDL model pertaining to the four variables of interest:

$$\Delta LRGDP_t = \beta_1 LRGDP_{t-1} + \beta_2 LRPC_{t-1} + \beta_3 LRTB_{t-1} + \beta_4 LRLR_{t-1} + \sum_{i=1}^{n1} \beta_5 \Delta LRGDP_{t-i}$$
$$+ \sum_{i=0}^{n2} \beta_6 \Delta LRPC_{t-i} + \sum_{i=0}^{n3} \beta_7 \Delta LRTB_{t-i} + \sum_{i=0}^{n4} \beta_8 \Delta LRLR_{t-i} + \varepsilon_t \quad (1)$$

where ε_t is the disturbance term. The null hypothesis of testing the long-run relationship of this model is $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$, and the alternative hypothesis is

at least one β_j (j =1,2,3,4) does not equal to zero. If the computed *F*-statistic of ARDL bound testing is higher than the upper bound value, then we reject the null and conclude that there is a long-run equilibrium relationship among variables. In contrast, if the F-statistic is lower than the lower bound value, we cannot reject the null of no long-run equilibrium relationship among variables. However, if the *F*-statistic lies within the upper bound value and lower bound value, then the results are inconclusive.

Table 5 indicates the estimated results of the ARDL-UECM model. According to Table 5, the *F*-statistic for *LRGDP* is 28.91, which is far above the critical values provided by Pesaran et al. (2001) and Narayan (2005) at 1 per cent significance level. This implies that there is a long-run equilibrium relationship between real GDP and the selected macroeconomic variables. On the other hand, the *F*-statistics for other equations are far below the lower bound value. Thus, we have only one cointegrating equation, which is in regard to *LRGDP*.

Long Run Results

The estimated equation by OLS for *LRGDP* as dependent variable is shown as follows:

$$\underset{}{LPGDP} = \underset{(1.465)}{1.271} + \underset{(7.813)}{0.690}LRPC^{***} \underset{(-2.169)}{-0.245}LRTB^{**} + \underset{(0.788)}{0.063}LRLR \tag{2}$$

Note: ** and *** indicate significance at 5 and 1 per cent levels. Figures in parentheses representing calculated "t" values.

The equation shows that there is a significant positive association between domestic credit and Fiji's economic growth and negative relationship between trade balance and economic growth. These two results are in accordance with theoretical expectations: rapid credit growth leads to a high rate of economic growth; and economic growth and trade balance are negatively related. The results are also consistent with other empirical findings: positive impact of credit on economic growth (King and Levine, 1993; Levine, et al., 2000; Rousseau and Wachtel, 2002); and negative relationship between trade balance and economic growth (Duenwald et al., 2005; IMF, 2004).

Table 5: Bound Test for Cointegration Analysis Based on (1)

Dependent Variable	Computed F-statistic			
LRGDP	28.91***			
LRPC	1.80			
LRTB	2.72			
LRLR	2.20			
	Pesaran et al. (2001)[a]		Narayan (2005)[b]	
Critical Value	Lower bound value	Upper bound value	Lower bound value	Upper bound value
1 per cent	3.74	5.06	4.77	6.67
5 per cent	2.88	4.01	3.35	4.77
10 per cent	2.45	3.52	2.75	3.99

[a] Critical values are obtained from Pesaran *et al*. (2001), Table CI(iii) Case III: Unrestricted intercept and no trend, p. 300.
[b] Critical values are obtained from Narayan (2005), Table case III: unrestricted intercept and no trend, p. 10.
*** indicate significance at 1% level.

Although the positive sign of the coefficient of real lending rate in our study is against theoretical expectations, it is not statistically significant indicating the absence of any influence of real cost of borrowing on growth during the study period.

Long-run causality link

The existence of a cointegrating relationship among economic growth, private sector credit, trade balance and lending rate suggests that there must be Granger causality at least in one direction, though it does not indicate the direction of temporal causality between the variables. Table 6 examines short-and long-run Granger causality within the error correction mechanism (ECM). For the equation with *LRGDP* as dependent variable, the coefficient on the error correction term is negative and significant at 10% level. As Granger et al. (2000) suggest, a significant error correction term (ECT) is indicative of long-run causality, in this case running from private sector credit, trade balance and lending rate to GDP.

However, none of the error correction terms in the remaining equations is found significant, indicating absence of evidence of any long-run causality running respectively from the relevant variables to domestic credit, trade balance or lending rate. Therefore, we have only one long run causality link connecting private sector credit, trade balance and lending rate to GDP, which also confirms the result of

only one cointegration equation obtained from the bound testing approach. Further, we find on the basis of significant F-values, there is a short run causal relationship as well, running from all the aforesaid three variables to GDP. Thus, we observe the presence of both long run and short run connection to GDP from private sector credit, trade balance and lending rate.

Table 6: Granger Causality Tests

Dependent Variable	F-statistic				ECT (t-statistics)
	Δ*LRGDP*	Δ*LRPC*	Δ*LRTB*	Δ*LRLR*	
ΔLRGDP	-	7.6808***	5.8116***	2.7048*	-0.2335* (-1.8383)
ΔLRPC	5.9633**	-	3.8762**	11.5851***	-0.1956 (-0.9279)
ΔLRTB	6.6158**	5.2235**	-	14.8601***	-0.6147 (-1.0136)
ΔLRLR	0.4166	0.6450	1.2271	-	-0.8781 (-0.3856)

Note: *, ** and *** indicate significance at 10%, 5% and 1% levels, respectively. Figures in parentheses representing t-statistics.

Short-run causality links

In the short run, aside from the causal relationship flowing from private sector credit, trade balance and lending rate to GDP, we also find evidence of causality running from GDP, trade balance and lending rate to private sector credit, thus establishing a bi-directional relationship between GDP and private sector credit. Similarly, we find trade balance is influenced in the short run by GDP, private sector credit and lending rate, again confirming bi-directional relationship between private sector credit and trade balance. Only in the case of the equation with lending rate as dependent variable, we observe there is no causality running from growth, private sector credit and trade balance to lending rate. Only a one-way causal relationship running from real lending rate to GDP, private sector credit and trade balance has been established.

The findings of a short run bi-directional causality between private sector credit and growth support the notion that private sector credit is a leading determinant of growth. Similarly, the presence of a short run bi-directional causality between private sector credit and trade balance shows the monetary approach to balance of payments is relevant to Fiji under a fixed exchange rate regime.

We conducted the stability tests proposed by Pesaran and Pesaran (1997) and Hansen (1992) for parameter instability, that is, whether the estimated elasticities are

stable over time. The Pesaran and Pesaran (1997) test aims at estimating the error correction models through taking each differenced variable as a dependent variable together with the lagged error correction term. This test, however, is only possible for *LRGDP* equation, since this is the only cointegration equation we obtained.

Pesaran and Pesaran (1997) suggest using the cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) tests proposed by Brown, *et al*. (1975) to assess the parameter constancy. Accordingly, the model was estimated by OLS and the residuals were subjected to CUSUMSQ test. Figures 1 and 2 plot the CUSUM and CUSUMSQ statistics when real GDP (*LRGDP*) is the dependent variable. The results indicate absence of instability in the coefficients as the plot of the CUSUM and CUSUMSQ statistics are confined within the 5% critical bounds of parameter stability. This indicates that the structure of the parameters have not diverged abnormally over the period of the analysis. Besides, various diagnostic tests – tests of normality, autocorrelation, heteroskedasticity in the error term and misspecification error – have been conducted to examine the validity and reliability of the short-run regression models. The results of the tests are summarized in Table 7. We do not reject the null hypotheses of no autocorrelation, the error terms being normally distributed and homoskedasticity. The RESET test indicates that the model is correctly specified.

Table 7: Diagnostic Tests for Real GDP (LRGDP) Short-run Equation

Diagnostic Test	Null Hypothesis	Statistics	Decision
Jarque-Bera test	H_0: Normality of error term	$\chi^2 = 0.0961$ [0.9530]	Do not reject H_0
Breusch-Godfrey Serial Correlation LM Test	H_0: No autocorrelation	F(1) = 0.4264 [0.5260]	Do not reject H_0
ARCH Test	H_0: Homoskedasticity	F(1) = 0.0566 [0.8140]	Do not reject H_0
Ramsey RESET Test	H_0: The model is correctly specified	F(1) = 0.1026 [0.7541]	Do not reject H_0

Note: Figures in brackets representing probability values of the test statistics. Figures in parentheses representing the lag length used for the appropriate diagnostic tests.

IV. Conclusion

This paper examined the nature of relationship between private sector credit, GDP and trade balance. The empirical results reveal that there is sufficient evidence to support long-run relationship flowing from private sector credit to economic growth as well as connection to trade balance, but not vice versa. In addition, there is strong evidence of a short run bi-directional causality between the variables, which suggests

that private sector credit not only promoted growth but also affected trade balance.

The findings also suggest that rapid expansion of private sector credit should be carefully monitored and controlled in the Fijian economy, since it points to a potential risk of likely primary cause of a financial crisis in the absence of effective supervision over financial sector. In fact, IMF (2004) warns that if private credit boomed too rapidly above a historical trend, the expansion would get usually deflated under its own weight, just as stock market bubbles eventually burst.

Figure 1: Plot of CUSUM Test for Real GDP (LRGDP) Short-run Equation

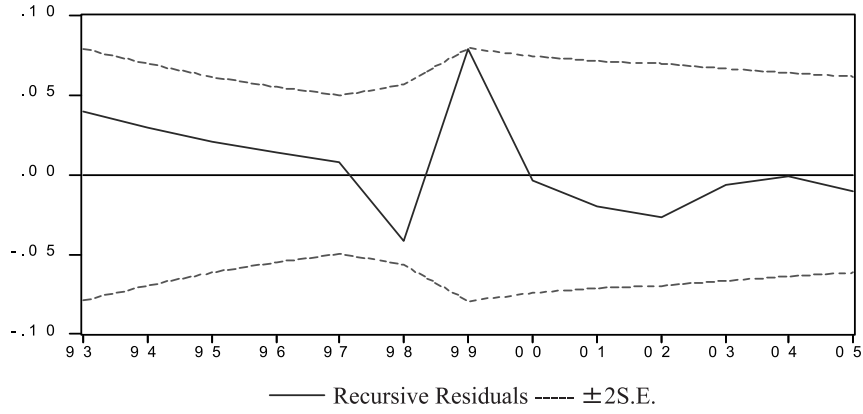
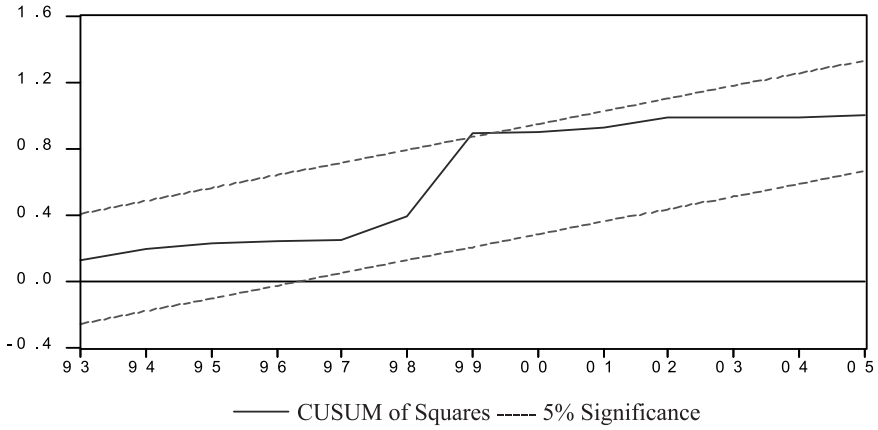


Figure 2: Plot of CUSUM of Squares Test for Real GDP (LRGDP) Short-run Equation



Notes

1. An International Monetary Fund (2004) report on *World Economic Outlook: Advancing Structural Reforms* made a distinction between rapid credit growth and credit boom. Rapid credit growth is identified to occur as part of financial deepening and normal cyclical upturns, while the credit boom represents an excessive and unsustainable cyclical movement. However, Duenwald *et al*. (2005) took the stand that the aforesaid distinction made sense for advanced economies and was less meaningful for were recent economies with short time series and or with structural breaks in time series. Accordingly, they used the terms rapid credit growth and credit boom interchangeably.
2. Australian and New Zealand Banking Group Limited (ANZ), Westpac Banking Corporation (Westpac), Bank of Baroda (BOB), Habib Bank and Colonial National Bank.
3. LCIs include Merchant Finance Investment Company Limited, Credit Corporation (Fiji) Limited and Home Finance Company Limited.
4. The empirical procedure is on the lines adopted by various recent studies. These include (i) Ghatak and Siddiki (2001) on India's exchange rate; (ii) Atkins and Coe (2002) on Fisher effect in the US and Canada; (iii) Bahmani-Oskooee and Ng (2002) on Hong Kong' s money demand; (iv)Vita and Abbott (2002) on savings and investment in the US; (v) Bahmani-Oskooee and Goswami (2003) on J-curve in Taiwan; (vi) Pattichi and Kanaan (2004) on Balassa-Samuelson Hypothesis; (vii) Tang (2004) on Japan's money demand,; (viii) Liu and Shu (2004) on stock market and consumption in selected Asian economies; (ix) Nieh and Wang (2005) on Taiwan's exchange rate determination; (x) Narayan and Smyth (2005) on Brunei's import demand function; and (x) Choong, *et al*. (2005) on foreign direct investment, financial development and economic growth in Malaysia.

References

Barro, R. (1991). "Economic Growth in a Cross Section of Countries", *Quarterly Journal of Economics*, 407-433.

Barro, R. and Sala-I-Martin, X. (1995). *Economic growth*. New York: McGraw-Hill.

King, R.G. and Levine, R. (1993). "Finance and Growth: Schumpeter Might be Right". *Quarterly Journal of Economics*, 108, 717-737.

Levine, R. (1997). Financial Development and Economic Growth: views and agenda. *Journal of Economic Literature*, 35, 688-726.

Levine, R. and Renelt, D. (1992). "A Sensitive Analysis of Cross-country Growth Regressions. *The American Economic Review*, 82, 942-963.

Asian Development Bank (ADB) (2004). *Key Indicators of Asian and Pacific Developing Countries 2004*, ADB Manila: ADB.

Atkins, F.J. and Coe, P.J. (2002). "An ARDL Bounds Test of the Long-Run Fisher Effect in the United States and Canada", *Journal of Macroeconomics*, 24, 255-266.

Bahmani-Oskooee, M. and Goswami, G.G., (2003). "A Disaggregated Approach to Test the J-Curve Phenomenon: Taiwan Versus Her Major Trading Partners", *Journal of Economics and Finance*, 27, 102-113.

Bahmani-Oskooee, M. and Ng, R. (2002). "Long-Run Demand for Money in Hong Kong: An Application of the ARDL Model", *International Journal of Business and Economics*, 1, 147-155.

Beck, T.; Demirgüc-Kunt, A.; Laeven, L. and Levine, R. (2005). *Finance, Firm Size and Growth*. Policy Research Working Paper 3485. Washington, DC: World Bank.

Bencivenga, V.R. and Smith, B. (1993). "Some Consequences of Credit Rationing in an Endogenous Growth Model", *Journal of Economic Dynamics and Control*, 17, 97-122.

Borio, C. and Lowe, P. (2002). *Asset Prices, Financial and Monetary Stability: Exploring the Nexus*. BIS Working Papers Number 114, July.

Brown, R.L., Durbin, J. and Evans, J.M. (1975). "Techniques for Testing the Constancy of Regression Relationships Over Time", *Journal of the Royal Statistical Society*, 37, 149-192.

Chandra, A., Jayaraman, T.K. and Waqabaca, F. (2004). "Reforms in Banking Supervision in Fiji: A Review of Progress", *Pacific Economic Bulletin*, 19(3): 102-114.

Choong, Ck., Yusop, Z., and Soo, S.C. (2005). "Foreign Direct Investment and Economic Growth in Malaysia: The Role of Domestic Financial Sector", *The Singapore Economic Review*, 50, 245-268.

Demirg 點 -Kunt, A. and Detragiache, E. (1997). The Determinants of Banking Crises: Evidence from Developing and Developed Countries, IMF Working Paper WP 97/106, Washington: International Monetary Fund.

Demirgüc-Kunt, A. and Maksimovic, V. (1998). "Law, Finance and Firm Growth", *Journal of Finance*, 53, 2107-2137.

Duenwald, C., Gueorguiev, N. and Schaechter, A. (2005). *Too Much of A Good Thing? Credit Booms in Transition Economies: The Cases of Bulgaria, Romania and Ukraine*, IMF Working Paper: WP/05/128, Washington: International Monetary Fund.

Eichengreen, B. and Arteta, C. (2000). Banking Crisis in Emerging Markets: Risks and Red Herrings. In: Blejer, M., Skreb, M. (Eds.), *Financial Policies in Emerging Markets*. Cambridge: MIT Press, 47-94.

Fontana, M. (1998). 'The Effects of Monetary Policy on Balance of Payments in Fiji', *Pacific Economic Bulletin*, 13 (1): 57-71..

Ghatak, S. and Siddiki, J. (2001). "The Use of the ARDL Approach in Estimating Virtual Exchange Rates in India", *Journal of Applied Statistics*, 28, 573-583.

Goldfajn, I. and Valde´s, R. (1997). *Capital Flows and the Twin Crises: The Role of Liquidity*. IMF Working Paper: WP97/87, Washington: International Monetary Fund.

Goldstein, I. (2001). *Interdependent Banking and Currency Crises in a Model of Self-Fulfilling Beliefs*. Mimeographed, Princeton University.

Granger, C.W.J., Huang, B.H. and Yang, C.W. (2000). "A Bivariate Causality between Stock

Prices and Exchange Rates: Evidence from Recent Asian Flu", *The Quarterly Review of Economics and Finance*, 40, 337-354.

Hansen, B. (1992). "Tests for Parameter Instability in Regressions with I(1) Processes", *Journal of Business and Economics Statistics*, 10, 321-335.

Honohan, P. (1997). *Banking System Failures in Developing and Transition Countries: Diagnosis and Prediction*. BIS Working Paper 39.

International Monetary Fund (IMF) (2004). *World Economic Outlook: Advancing Structural Reforms* Washington D.C.: International Monetary Fund.

International Monetary Fund (IMF) (2006). International Financial Statistics, CD ROM March 2006, Washington: IMF.

Johnson, H.J. (1972). "Monetary Approach to Balance of Payments Theory", *Journal of Financial and Quantitative Analysis*, 7(2): 1555-1572.

Kaminsky, G., Lizondo, S. and Reinhart, C. (1997). *Leading Indicators of Banking and Balance of Payments Problems*. IMF Working Paper: WP97/79, Washington: International Monetary Fund.

Katafono, R. (2000). "The Relationship between Monetary Aggregates, Inflation and Output in Fiji" *Economics Department Working Paper: 2000-02*, Suva: reserve Bank of Fiji.

King, R.G. and Levine, R. (1993). "Finance and Growth: Schumpeter might be Right", *Quarterly Journal of Economics*, 108, 717-737.

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

Liu, X.H. and Shu, C. (2004). "Consumption and Stock Markets in Asian Economies", *International Review of Applied Economics*, 18, 483-496.

Love, I. (2003). "Financial Development and Financing Constraint: International Evidence from the Structural Investment Model", *Review of Financial Studies*, 16, 765-791.

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

Narayan, P.K. (2005). "The Saving and Investment Nexus for China: Evidence from Cointegration tests", *Applied Economics*, 37, 1979-90.

Narayan, P.K. and Smyth, R. (2005). "The Determinants of Aggregate Import Demand in Brunei Darussalam: An Empirical Assessment Using a Cointegration and Error Correction Approach", *The Singapore Economic Review*, 50, 197-210.

Nieh, C.C. and Wang, Y.S. (2005). ARDL Approach to the Exchange Rate Overshooting in Taiwan", *Review of Quantitative Finance and Accounting*, 25, 55-71.

Pattichis, C. and Kanaan, M. (2004). "The Balassa-Samuelson Hypothesis and Oil Price Shocks in a Small Open Economy: Evidence from Cyprus", *Open Economies Review*, 15, 45-56.

Pesaran, M.H. and Pesaran, B. (1997). *Working with Microfit 4.0: Interactive Econometric Analysis*. Oxford: Oxford University Press.

Pesaran, M.H., Shin, Y., and Smith R., (2001). "Bounds Testing Approaches to the Analysis of Level Relationships", *Journal of Applied Econometrics*, 16(3): 289-326.

Reserve Bank of Fiji (RBF) (2006). *Monetary Policy Statement: May 2006*, Suva, Fiji Islands: Reserve Bank of Fiji.

Rousseau, P. and Wachtel, P. (2002). "Inflation Threshold and the Finance-growth Nexus", *Journal of International Money and Finance*, 21, 777-793.

Schumpeter, J.A. (1911). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

Tang, T.C. (2004). "Demand for Broad Money and Expenditure Components in Japan: An Empirical Study", *Japan and the World Economy*, 16, 487-502.

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2006). *Economic and Social Survey 2006*. Bangkok: UNESCAP.

Vita, G. D. and Abbott, A. (2002), "Are Saving and Investment Cointegrated? An ARDL Bounds Testing Approach", *Economics Letters*, 77, 293-299.

World Bank (2001) *Finance for Growth: Policy Choices in a Volatile World*. A World Bank Policy Research Report. New York: Oxford University Press for the World Bank.