Credit Boom in Fiji: Too Much of a Good Thing?
An Impact Analysis

By

T.K. Jayaraman
School of Economics
Faculty of Business and Economics
University of the South Pacific
Suva, Fiji

&

Chee-Keong Choong
Department of Economics
Faculty of Accountancy and Management
Universiti Tunku Abdul Rahman,
Malaysia

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Abstract

Since 2001, Fiji has been witnessing strong growth in domestic credit for a continuous period of four years. Besides contributing to Fiji’s economic recovery and increasing gross domestic product, the credit boom resulted in deteriorating annual trade balances. Examining the relationship between domestic credit, economic growth and trade balance, this paper finds the presence of a long-run relationship flowing from domestic credit to economic growth but not vice versa. Besides, there is strong evidence of a bi-directional short-run causality between the variables, which suggests that domestic credit not only promotes economic growth, but also affects trade balance.
I. Introduction

After suffering a major setback in 2000 due to a civilian coup, which abruptly halted Fiji’s economic growth, the country recovered quickly in the next four years. This was mainly due to the countercyclical measures undertaken by the government to restore investor confidence. In the process, fiscal deficits were incurred in each of the subsequent five years, 2001 to 2005 and all of them were financed through public borrowing (Jayaraman and Choong 2006). As the private sector was slow and sluggish in its response and since the economy was also marked by excess liquidity in the banking system, there were no upward pressures on interest rates, which continued to remain low. Since Fiji has been an open economy with its exchange rate being fixed to a basket of major currencies including Australia and New Zealand, whose central banks have been observing inflation targeting monetary policies, Fiji’s inflation was also low.

These favourable factors combined with the return of political stability contributed to revival of consumer confidence in 2003 and later. Rise in domestic credit, which began with increase in borrowings for consumer durables, spilled over into real estate market as well. These contributed to uninterrupted economic growth during the four years (2001-2004) at an average of 3%, a remarkable phase in Fiji’s recent economic history. The positive impact of rise in domestic credit on economic growth has been well established in studies elsewhere (Bencivenga and Smith 1993, Ma and Smith 1996).

However, “too much of a good thing” has its own problems. Rise in domestic 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 (Johnson 1972), which was also found valid in past studies on Fiji (Jayaraman 1993, Fontana 1998), excess supply of money would normally translate itself into excess demand for goods and assets, spilling over into demand for foreign goods and assets. Pressures on the country’s balance of payments and the foreign exchange reserves of the country led the Fiji’s monetary authority to increase its indicator interest in October 2005, as a measure towards controlling credit growth. Again in May and late June 2006, the Reserve Bank of Fiji (RBF) followed its intention to tighten the monetary stance by resorting to more drastic measures. These included further increases in interest rates as well as a rise in the statutory minimum reserve ratio for commercial banks.

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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 The expression has its origin in Shakespeare's As You Like It. Rosalind: Why then, can one desire too much of a good thing? Come, sister, you shall be the priest and marry us. Give me your hand, Orlando. What do you say, sister?
The objective of this paper is to undertake an empirical study of the implications of the rapid credit growth in Fiji. The paper is organized on the following lines: the second section reviews the credit trends and their impact on balance of payments and international reserves. The third section outlines the methodology adopted for the empirical analysis and the results. The fourth and last section presents a summary, listing conclusions of some policy implications.

II. Trends in Credit

The financial sector in Fiji, whose selected key indicators are given in Table 1, is relatively well developed among all the Pacific island countries. It 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 are all foreign-owned. They operate according to the Australian 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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Area (sq km)</td>
<td>18,270</td>
</tr>
<tr>
<td>Population (2005)</td>
<td>835,000</td>
</tr>
<tr>
<td>Total GDP at current prices (US $ million) 2002</td>
<td>1,750</td>
</tr>
<tr>
<td>Per capita GDP in current price (US$)</td>
<td>2,360</td>
</tr>
<tr>
<td>Human Development Index (Rank)</td>
<td>81</td>
</tr>
<tr>
<td>Aid per capita (US$) 2002</td>
<td>41</td>
</tr>
<tr>
<td>Aid per capita (% of GDP) 2002</td>
<td>1.8</td>
</tr>
</tbody>
</table>


Since the five foreign owned commercial banks are being supervised by the headquarters, there is 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 not keen to serve rural interests. To meet the criticisms, banks have shown in recent years greater interest in extending their operations beyond

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3 Australian and New Zealand Banking Group Limited (ANZ), Westpac Banking Corporation (Westpac), Bank of Baroda (BOB), Habib Bank and Colonial National Bank
urban areas by running mobile banks in rural areas as well. Sectors to which banks have been lending include private individuals (for housing), wholesale, retail, hotels and restaurants and building and construction.

There are three non-bank licensed credit institutions\(^4\) (LCI), which cater to the credit needs of private sector in various areas. These include consumer credit, real estate, transport and storage, wholesale, retail 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 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, several reforms were undertaken in the financial sector. These included removal of credit controls, de-regulation of interest rates as well as introduction by RBF of its own paper for open market operations for liquidity management, with the market determined yield to maturity interest rate of the 91-day RBF Notes being adopted as the indicator interest rate, the financial sector responded with new vigour (Jayaraman and Ward 2001). Domestic 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 injected by political instability, which gave rise to poor climate for private investment.

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 countercyclical measures 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: it increased to 59% of GDP in 2005. Correspondingly, credit to private sector recorded increases from 33% of GDP in 2001 to 49% of GDP in 2005.

\(^4\) LCIs include Merchant Finance Investment Company Limited, Credit Corporation (Fiji) Limited and Home Finance Company Limited.
The credit boom was influenced by a mix of several factors, both from supply- and demand-sides. First, there has been 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 investor confidence due to political instability. Thirdly, economic recovery since 2001, which was aided by increases in inward remittances from the overseas Fijian residents and overseas residents and rise in tourism earnings, combined with high global liquidity resulting in low interest rates, provided a boost to expansionary activities. Greater supply of credit was matched by increased demand from both businesses and households. Demand for durables and real estate increased from previously depressed levels as confidence returned to households to service their debt. Further, 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

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

Source: International Monetary Fund (2006)
Table 3 presents details of loans and advances made out by commercial banks, which account 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%. Similarly, credit to wholesale and retail trade and hotels and restaurants were 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: from 3% in 2003 to 7% in March 2006, and 5% in 2003 to nearly 9% in Feb 2006. 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 credit institutions (Table 4). The data on credit by credit institutions, which are available only from 2002 onwards 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 Reserve Bank of Fiji (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 domestic credit in any country 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 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. Further, there were increases in wage levels of skilled labour.
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, which was mainly fueled by rise in domestic credit resulted in rise in 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).

| Table 3: Fiji: Loans and Advances by Commercial Banks (in Per cent) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Agriculture     | 16.8 | 13.8 | 10.1 | 6.3  | 4.6  | 3.5  | 3.4  | 2.4  | 2.5  | 1.8  | 1.4  | 1.3  | 1.3  | 1.2        | 1.2        |
| Manufacturing   | 13.5 | 10.5 | 11.6 | 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  | 3.1  | 4.3  | 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 Development | 4.3  | 3.2  | 3.6  | 3.1  | 2.7  | 2.8  | 4.0  | 5.2  | 4.5  | 5.2  | 7.5  | 8.4  | 8.4  | 8.6        | 8.3        |
| Public Enterprises | 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 | 25.2 | 24.7 | 31.3 | 31.9 | 30.3 | 30.3 | 31.6 | 32.1 | 30.5 | 28.6 | 27.6 | 25.5 | 25.6       | 25.6       |
| Transportation & Communication | 3.0  | 2.7  | 3.5  | 2.6  | 2.3  | 2.3  | 2.2  | 2.4  | 2.1  | 2.2  | 2.8  | 3.1  | 2.8  | 2.7        | 2.9        |
| Professional Services | 3.4  | 2.1  | 2.4  | 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 | 25.3 | 27.9 | 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  | 1.7  | 0.8  | 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     | 5.7  | 12.4 | 11.2 | 11.7 | 10.9 | 5.6  | 3.4  | 2.5  | 3.6  | 4.7  | 1.0  | 3.5  | 3.9  | 3.9        | 3.9        |
| 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      |

Sources: RBF (2006) and Author’s Calculations

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, Fiji’s experiences of the impact of a credit boom are no different from those in other countries: overheating manifests itself in widening trade deficits, owing to rapid growth in imports (Duenwald et al. 2005). The IMF report (2004), which saw a high degree of correlation between credit growth and trade deficits in selected countries in their study, noted that credit booms were also associated with banking and currency crises. However, as Fiji’s commercial banks are well supervised from their respective overseas headquarters, there was no repetition of a bank failure. The four-year credit boom and the resultant overheating of the economy appear have manifested only in widening trade deficits. The result has been
a 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 4: Fiji: Credit Institutions: Loans and Advances (in percentages to total)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>4.6</td>
<td>4.1</td>
<td>3.8</td>
<td>3.7</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Mining</td>
<td>3.1</td>
<td>2.6</td>
<td>2.9</td>
<td>2.6</td>
<td>2.5</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>4.5</td>
<td>4.1</td>
<td>3.9</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Building &amp; Construction</td>
<td>3.3</td>
<td>3.8</td>
<td>4.5</td>
<td>5.5</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Real Estate &amp; Property Development</td>
<td>6.0</td>
<td>5.5</td>
<td>6.1</td>
<td>9.9</td>
<td>11.1</td>
<td>11.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Public Enterprises</td>
<td>0.5</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Whole Sale Retail Trade</td>
<td>5.3</td>
<td>5.1</td>
<td>5.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Transportation &amp; Communication</td>
<td>20.3</td>
<td>16.2</td>
<td>15.1</td>
<td>13.8</td>
<td>13.9</td>
<td>14.0</td>
<td>13.9</td>
</tr>
<tr>
<td>Professional Services</td>
<td>4.0</td>
<td>3.3</td>
<td>2.7</td>
<td>2.5</td>
<td>2.2</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Private Individuals</td>
<td>48.4</td>
<td>53.9</td>
<td>55.3</td>
<td>54.5</td>
<td>53.9</td>
<td>53.0</td>
<td>53.7</td>
</tr>
<tr>
<td>Central &amp; Local Govt.</td>
<td>0.0</td>
<td>0.6</td>
<td>0.4</td>
<td>0.2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>99.4</td>
<td>99.7</td>
<td>99.5</td>
<td>99.2</td>
<td>99.0</td>
<td>98.9</td>
</tr>
</tbody>
</table>

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

III. Data, Modeling Methodology and Results

The data for the empirical analysis of implications of credit growth are drawn from the database of the Fiji Islands Bureau of Statistics and IMF (2006). The hypotheses to be tested involve determination of the link between credit and growth: (i) growth in domestic credit positively influences growth in GDP; and (ii) growth in GDP leads to domestic credit leads to growth in credit as well; and (iii) growth in domestic credit results in negative trade balance. For the analysis, we use the data in real terms: real gross domestic product (RGDP); real domestic credit (RDC); and real trade balance (RTB). In addition to these variables, we also employ the weighted average real lending rate (RLR) charged by lending institutions, representing the real cost of borrowing. The hypothesis to
be tested is that lower real cost of borrowing leads to increase in domestic credit. All variables used in the empirical investigation are expressed in logarithm form.

**Modeling Strategy**

For examining possible long-term relationships amongst $L_{RGDP}$, $L_{RDC}$, $L_{RTB}$, and $L_{RLR}$, we resort to the autoregressive distributed lag (ARDL) bounds testing approach proposed by Pesaran, *et al.* (2001). This approach has several advantages: (1) 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); (2) 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 (3) 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\(^5\).

Expressing the variables in natural logarithmic terms, 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:

\[
\Delta L_{RGDP_t} = \beta_1 L_{RGDP_{t-1}} + \beta_2 L_{RDC_{t-1}} + \beta_3 L_{RTB_{t-1}} + \beta_4 L_{RLR_{t-1}} + \sum_{i=1}^{n_1} \beta_i \Delta L_{RGDP_{t-i}} \\
+ \sum_{i=0}^{n_2} \beta_i \Delta L_{RDC_{t-i}} + \sum_{i=0}^{n_3} \beta_i \Delta L_{RTB_{t-i}} + \sum_{i=0}^{n_4} \beta_i \Delta L_{RLR_{t-i}} + \varepsilon_t
\]

(1)

where $\varepsilon_t$ 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 $\beta_j$ $(j=1,2,3,4)$ 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 the real GDP ($LRGDP$) 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 (I(0)). Thus, we have only one cointegrating equation, which is in regard to $LRGDP$.

**Long Run Results**

The estimated equation by OLS for real GDP as dependent variable is shown as follows:

$$LRGDP = 1.271 + 0.690LRDC - 0.245LRTB + 0.063LRLR$$

\[(1.465) \quad (7.813) \quad (-2.169) \quad (0.788)\]

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

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Computed F-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$LRGDP$</td>
<td>28.91***</td>
</tr>
<tr>
<td>$LRDC$</td>
<td>1.80</td>
</tr>
<tr>
<td>$LRTB$</td>
<td>2.72</td>
</tr>
<tr>
<td>$LRLR$</td>
<td>2.20</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower bound value</td>
<td>Upper bound value</td>
<td>Lower bound value</td>
</tr>
<tr>
<td>$LRGDP$</td>
<td>3.74</td>
<td>5.06</td>
<td>4.77</td>
</tr>
<tr>
<td>$LRDC$</td>
<td>2.88</td>
<td>4.01</td>
<td>3.35</td>
</tr>
<tr>
<td>$LRTB$</td>
<td>2.45</td>
<td>3.52</td>
<td>2.75</td>
</tr>
</tbody>
</table>

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.

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: positive impact of credit on economic growth and negative relationship between trade balance and economic growth. Although the positive sign of the coefficient of real lending rate 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, domestic 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-run 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 terms 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 domestic credit, trade balance and lending rate to economic growth. However, none of the error correction terms in the remaining equations is found significant, indicating absence of evidence of any long-run causality running from the relevant variables to domestic credit, trade balance or lending rate. Thus, we have only one long run causality link connecting credit, trade balance and lending rate to growth, 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 three variables to growth. Thus, we observe the presence of both long run and short run connection to growth from domestic credit, trade balance and lending rate.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>F-statistic</th>
<th>ECT (t-statistics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta LRGDP$</td>
<td>-</td>
<td>7.6808***</td>
</tr>
<tr>
<td>$\Delta LRDC$</td>
<td>5.9633**</td>
<td>-</td>
</tr>
<tr>
<td>$\Delta LRTB$</td>
<td>6.6158**</td>
<td>5.2235**</td>
</tr>
<tr>
<td>$\Delta LRLR$</td>
<td>0.4166</td>
<td>0.6450</td>
</tr>
</tbody>
</table>

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

Table 6: Granger Causality Tests
**Short-run causality links**

In the short run, aside from the causal relationship flowing from credit, trade balance and lending rate to growth we also find evidence of causality running from growth, trade balance and lending rate to growth, thus establishing a bi-directional relationship between growth and credit. Similarly, we find trade balance is influenced in the short run by growth, domestic credit and lending rate, again confirming bi-directional relationship between 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, credit and trade balance to lending rate. Only a one-way causal relationship running from real lending rate to economic growth, domestic credit and trade balance has been established.

The findings of a short run bi-directional causality between domestic credit and growth support the notion that domestic credit is a leading determinant of growth. Similarly, the presence of a short run bi-directional causality between 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 \( \text{LRGDP} \) 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 (\( \text{LRGDP} \)) 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 mis-specification 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 hypothesis 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

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

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 the relationship between domestic credit, economic growth and trade balance. The empirical results reveal that there is sufficient evidence to support long-run relationship flowing from domestic 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 domestic credit not only promoted growth but also affected trade balance.

Experiences elsewhere have shown that rapid expansion of domestic credit should be carefully monitored and controlled, as it has been the primary cause of the financial crisis in the absence of effective supervision over financial sector. The monetary authorities in Fiji applied timely breaks. These included raising interest rates in steps beginning from October 2005 to reach 4.25% in June 2006. Further, in May 2006, the statutory reserve deposit ratio for commercial banks was raised to 7% from 5%. These were no doubt firefighting in the context of dwindling international reserves, which provided import cover of goods for 2.9 months in early 2006, as compared to an import cover for 5.7 months in 2001. The 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
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