The effects of monetary policy on the balance of payments in Fiji

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There are different views in the literature as to causes of balance of payments disequilibria in developing economies. This article analyses the factors affecting the balance of payments in Fiji over the last twenty years or so, using a monetary model. The monetarist approach argues that domestic credit is the main cause and the cure of a nation's balance of payments problems, as changes in the money supply are believed to be the primary determinant of changes in total nominal spending. The estimates obtained in this study are weak and that is not surprising, given that Fiji has structural problems and rigidities which do not fit well into the free-market situation of the monetarist theories. It seems plausible to believe that other 'structural factors' such as weather conditions and world market trends play an important role in affecting the balance of payments in Fiji, and it is suggested this should be an area for further research.

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Since the early 1970s many developing economies have experienced severe deficits in their balance of payments. As a consequence, they were forced to reduce their foreign exchange reserves as a proportion of imports, borrow abroad, adopt foreign exchange controls in an attempt to reduce the volume of their imports and apply adjustment or stabilisation policies aimed at reducing aggregate demand to the level consistent with a viable balance of payments position. There are different views in the literature as to the causes of balance of payments deficits in developing countries. One group of studies, the 'structuralist approach', argues that a major cause of disequilibrium is adverse developments in the international economy and other structural weaknesses beyond the control of domestic policymakers, while another group, the 'monetarist approach', put the emphasis on domestic monetary factors.

This paper analyses the effects of monetary policy on the balance of payments in Fiji over the last twenty years

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or so. Data on balance of payments show that Fiji did not experience any severe disequilibrium throughout this period. The balance of payments was relatively healthy throughout most of the 1970s and experienced some strains in the early 1980s, mainly due to natural disasters and a prolonged depression in world prices. Since the second half of the 1980s the balance of payments has been characterised by frequent minor fluctuations. Previous empirical investigations (Jayaraman 1993) seem to indicate that monetary policy has played a significant role in the determination of the balance of payments position in Fiji. However, Jayaraman's study, together with many other empirical tests of the monetary approach applied to both developed (reviewed in Magee 1976) and developing countries (for example, Grubel and Ryan 1978 on Kenya), appears to suffer from some methodological problems. These studies do not address the issue of causation, that is, whether the dominant direction of causality is between the flow of domestic credit and change in net foreign reserves, or vice versa, nor do they consider the problem of unit roots in balance of payments relationships.

In this analysis, a monetary model of the balance of payments is estimated, and the Granger test of causality is performed to investigate whether domestic credit can be considered exogenous, as the monetary approach to the balance of payments assumes.

In the monetary approach to the balance of payments, domestic credit is identified as both the cause and the cure of a nation's balance of payments problems. The reason for adopting a monetarist approach here is not because it is believed that it offers the best explanation of the functioning of an economy like Fiji, but because it is often the case that monetarist assumptions underlie policy recommendations made to developing economies by institutions such as the International Monetary Fund. It is therefore important to establish whether the monetarist model can be supported empirically and how appropriate this model is to the Fiji economy.

The monetarists versus structuralists debate

The theoretical and empirical literature on the balance of payments is vast and growing. The relevance of the structuralist versus monetarist approach to the balance of payments has been extensively explored. In recent years many developing countries have experienced high rates of inflation and chronic deficits in the balance of payments. While policymakers are advocating stabilisation policies to reduce these pressures, these measures do not always succeed in encouraging economic growth in the long run (Killick 1995; Khan and Knight 1988).

Structuralists and monetarists have different views as to the causes of the chronic deficits in balance of payments in developing countries. While the monetarists stress monetary aggregates as the key variables in macroeconomic disequilibria, on the premise that goods and asset markets tend to stable adjustment under a freely operating price-clearing mechanism, the structuralists point to the failure of market solutions due to structural and institutional factors which often cause immobility of resources in the face of price signals.

In the 1970s, the monetary approach to the balance of payments gained widespread popularity both in academic circles and among policymakers and provided the major theoretical underpinnings of the International Monetary Fund's approach to stabilisation in developing countries (International Monetary Fund 1977, 1987).

The monetary approach is basically a supply and demand analysis of the money market in an open economy where any excess stock demand or supply of money is exactly reflected in flows through the balance of payments. The main equation of the Polak (1977) model, the International Monetary Fund version of the monetarist approach, shows that balance of payments will be in surplus (positive change in net external assets) to the extent that the change in the total money stock exceeds the change in domestic credit.

$$\Delta R = \Delta M - \Delta D = f(\Delta Y, \Delta P, ...) - \Delta D \qquad (1)$$

where ΔR is the change in net external assets, ΔD is the change in domestic credit and ΔM is the change in the supply of money which is equal to the change in the demand for money, and it is taken to be related to changes in real income ΔY, changes in the domestic price level ΔP, and other unspecified variables (which would include the interest rate).

Equation 1 presents the core of the International Monetary Fund approach as seeing excess domestic credit creation (and often underlying this, excessive government deficit financing) as the main source of balance of payments difficulties. Therefore, for any given period, to keep the external account in balance and the change in international reserves to zero, it is only necessary to ensure that domestic credit creation is equal to the change in the demand for money (International Monetary Fund 1987). In most countries domestic credit can be, to a certain extent, regulated by the authorities. The future demand for money, on the other hand, has to be estimated, and this is generally done on the basis of the anticipated change in nominal national income, and on the assumption that the demand for money is a stable function, in the sense that the income velocity of circulation is relatively constant, at least in the short run (International Monetary Fund 1977). In other words, estimates of the future demand for money are derived from the anticipated changes in real GNP and in the average price level, together with the value of the income velocity of circulation derived from past experience. Given these estimates, all that the authorities need to do in order to obtain a target balance of payments is to place an appropriate target for domestic credit creation. The balance of payments is viewed as the monetary expression of the difference between total spending and total income, and there is one, and only one, way to restore lasting balance in external payments: demand deflation through a reduction in domestic credit.

This approach to stabilisation policy was already severely questioned by the Latin American 'structural' economists in the 1950s and 1960s (for a summary of the debate see Seers 1983). The Latin American structuralists argued that the desire for rapid economic growth and structural change (industrialisation) in developing countries ran into inelastic supply conditions, institutional rigidities, and market imperfections, narrow tax bases and declining international terms of trade, which inevitably resulted in inflation and balance of payments problems. Strict monetary policies under these circumstances could probably reduce inflation but would do so only at the cost of lower rates of growth.

The monetary approach models have also been criticised for their inadequate analysis of the impact of credit controls which are argued to reduce aggregate demand. Other authors however point out that in developing countries there is relatively little consumer credit, while much of the credit may be used to satisfy the working capital needs of productive firms, with the implication that a fall in credit availability may reduce current output more than it reduces aggregate demand so that the supply–demand gap

widens. And given that another part of credit may be used to finance investments, reduced credit availability may negatively affect future growth of output (Taylor 1983).

Most of these criticisms are built around the notion that there are important institutional and technical rigidities in the economy, as this is built up from economic agents that do not just operate as income-maximising individuals but whose behaviour depends on the particular context of the institution, production organisation or social class in which they operate. The structuralist approach seeks to explain the causes of imbalances in developing countries in terms of certain special characteristics of their production structure and foreign trade (for example Taylor 1988; Killick 1984). More specifically, three main structural factors are identified as the main determinants of balance of payments disequilibria: the slow growth in the production of food and other wage goods in relation to national income; production bottlenecks; and the downward trend in the terms of trade (Eshag 1984). These factors tend to exercise a persistent pressure in generating inflation and balance of payments deficits.

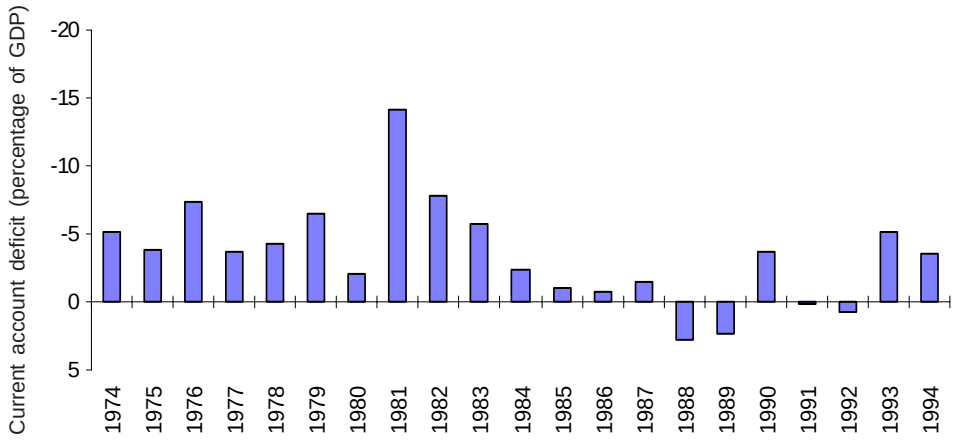
Selective measures aimed at promoting and diversifying exports and direct controls (mainly import restrictions) are the main policy measures suggested by structuralists to deal with imbalances. Restrictive fiscal (increasing tax rates and reducing government expenditure) and monetary (limiting commercial banks' advances to the private sector and raising rates of interest) measures are also occasionally proposed as short-term instruments to correct balance of payments disequilibria. It is feared, however, that these deflationary measures, although effective in reducing the external deficit, may have negative side effects by causing a slowdown in economic activity and a fall in domestic savings and investment. It is also argued that the above measures would not eliminate the underlying long-term problem. Structuralists believe that the lack of effort for export diversification is, above all, responsible for persistent balance of payments problems and reject the monetarist proposition that balance of payments problems can be solved simply by ensuring that domestic credit creation is equal to the change in money demand (Eshag 1984; Taylor 1988).

Trends in balance of payments and monetary policy in Fiji

Fiji did not experience any severe balance of payments difficulties during the 1974–94 period. The balance of payments was relatively healthy as measured by the current account as a percentage of GDP throughout most of the 1970s but experienced some strains in the early 1980s. Since 1987 the balance of payments has showed frequent fluctuations but without any severe deficit.

In the late 1970s and early 1980s the annual current account deficit as a percentage of GDP ranged from around 4 per cent in 1975 to 14 per cent in 1981, compared with much higher averages recorded by other Pacific countries and most African countries in the same period (World Bank 1994). The substantial deterioration in 1981 was mainly due to a cyclone which greatly affected sugar production. The first half of the 1980s was marked by high growth in domestic demand, mainly due to expansion in public expenditure. The reduction in the trade deficit and growth in tourism receipts led to a decline in the current account deficit to around 2 per cent of GDP in 1984. During the second half of the 1980s there was a notable improvement in the current account. Despite the adverse effects of political developments which brought about, among others, a decline in tourism receipts and net capital inflows, the overall

Figure 1 **Fiji: current account deficit, 1974–94** (percentage of GDP)

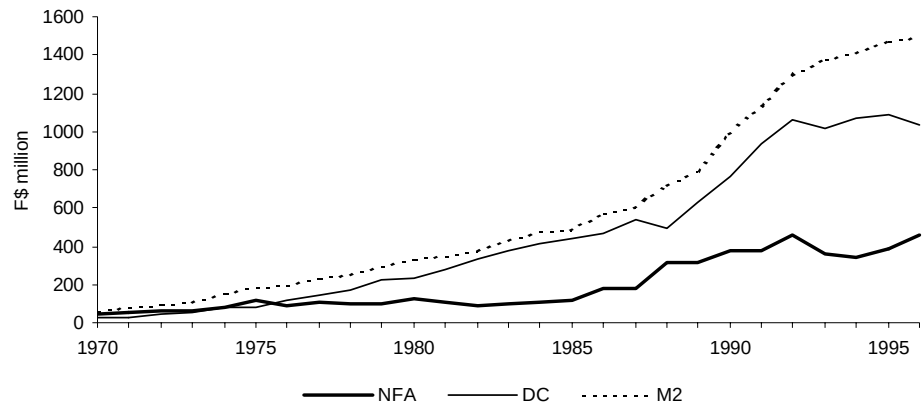


Source: World Bank,1994. *STARS*, Washington, DC (data on CD ROM).

balance of payments and the current account were in surplus between 1986 and 1994, with only few exceptions.

Improvements in the reserves were attributed mainly to the two devaluations in 1987 and to the implementation of tighter foreign exchange controls. Net foreign assets showed strong growth from 1985 onwards, after moderately fluctuating in the late 1970s and early 1980s. The sharp rise in net foreign assets from F$182 million in 1987 to F$317 million in 1988

Figure 2 **Monetary developments in Fiji, 1970–96** (F$ million)



Source: International Monetary Fund, 1996. *International Financial Statistics*, Washington, DC (data on CD ROM).

was partially due to the devaluation of the domestic currency in 1987.

'Structural' factors

A major structural weakness of the Fiji economy is the concentration of economic activity in tourism and sugar sectors. The production base is narrow with heavy reliance on a few primary commodities, particularly sugar, gold and, more recently, garments. The fragility of the economy became apparent in the early 1980s when growth in the sugar industry vacillated due to a series of natural disasters and a prolonged depression in world prices. Due to the openness of the economy (total merchandise exports and imports generally account for around 80 per cent of GDP), Fiji is highly vulnerable to external shocks. This was reflected in the balance of payments, which performed relatively well throughout most of the 1970s but experienced some strains, particularly in the early 1980s, mainly as a result of lower world economic growth and bad weather conditions.

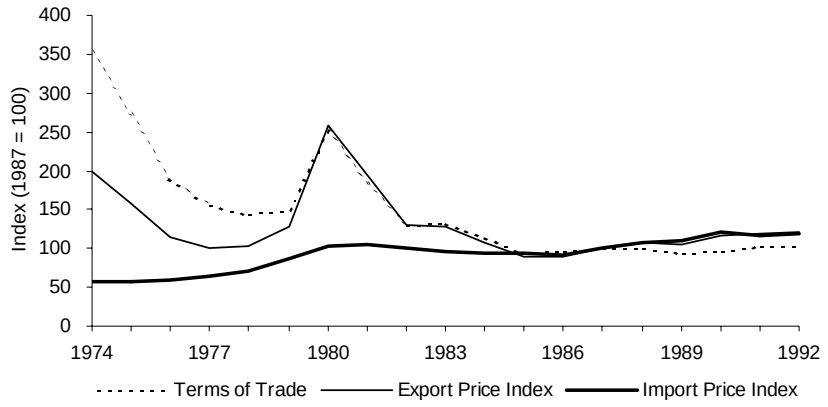
The two major episodes of substantial deterioration of the current account recorded in 1981 and 1993 were mainly due to the occurrence of cyclones which greatly affected the production of sugar and, at the same time, increased the need for imports.

As for the terms of trade, a deterioration has occurred since the mid-1970s, mainly due to a declining export price index. This decline appears to have been affected mainly by a downward trend in the price of sugar.

Monetary trends

Monetary policy over the 1974–94 period appears to have been characterised by prudential management aimed at keeping inflation low and ensuring financial stability in the system. In the early 1980s the main objective of monetary policy was containing inflation and restraining the drain on foreign reserves through control of credit as well as a rise in real interest rates. As conditions changed, the focus of monetary policy shifted from ensuring an adequate level of foreign reserves to addressing the growing liquidity problem with the introduction of Reserve Bank

Figure 3 **Terms of trade in Fiji, 1974–92**



Source: World Bank, 1994. *STARS*, Washington, DC (data on CD ROM).

notes in 1989 (for an extensive discussion of monetary policy in Fiji see Luckett 1987; Sturton and McGregor 1991).

Empirical analysis

There have been a growing number of attempts to empirically test the monetary approach to the balance of payments both in developed (case studies of Australia, Sweden, Japan reviewed in Magee 1976) and in developing countries (Grubel and Ryan 1978 on Kenya; Looney 1991 on the Caribbean). The equation most frequently used for the estimation is specified in the following form

$$\Delta R/(D + R) = a_0 + a_1 \Delta \log P + a_2 \Delta \log Y + a_3 \Delta \log i + a_4 \Delta \log m + a_5 \Delta D/(D+R) \quad (2)$$

which is derived through the money supply identity into which a behavioural relationship (a money demand function) has been substituted.

A stable demand for money is assumed as

$$Md = L(P, y, i) \quad (3)$$

where P is the price level, y is real income and i is the rate of interest,

The money supply relationship (Ms) is a multiplier (m) times the base money consisting of domestic component (D) and international reserves (R), that is,

$$Ms = m (R + D) \quad (4)$$

In equilibrium (Md = Ms), which yields

$$L (p, y, i) = m (R+D) \quad (5)$$

Differentiating logarithmically and suitably rearranging, we obtain Equation (2), where a_0 is a constant, a_1, a_2 and a_3 are the price, income, and interest elasticities, respectively, of the demand for money. The following signs are expected

$$a_0 = 0; a_1, a_2 > 0; a_3 < 0$$

International reserves will increase as real income and the domestic price level increase and will decrease when the interest rate rises. In the view of the monetarists, each of these effects is the result of the impact of the indicated variable on the demand or supply of money. Increases in real income induce an increase in the demand for money, while an increase in the interest rate reduces that demand, this in turn results in a change in net foreign assets as this demand–supply disequilibrium is satisfied through the external payments process. Similarly, an increase in the price level reduces the real money supply and induces an inflow of reserves.

The coefficients for the money multiplier and the domestic credit are expected to be equal to -1,

$$a_4 = a_5 = -1$$

Much criticism has surrounded this simple form of the monetary approach. It has been observed that this equation is basically an accounting identity, and any consistent set of data satisfies it (Magee 1976:165). This means that the estimate a_5 in the equation is not an estimate of the true reduced-form effect of domestic credit over net foreign assets, but of -1. In any model with a correctly specified demand for money equation and fitting the data exactly, the estimate a_5 should be equal to 1. Conversely, an a_5 estimate significantly different from 1 may simply imply specification error rather than a refutation of the monetary approach. a_5 could be also expected to be greater than 1 if the central bank sterilises reserve inflows: if there is an exogenous increase in the home demand for money caused, for example, by an increase in world and hence domestic prices, then reserves will flow in. If the monetary authorities sterilise partially, reducing domestic credit by some fraction of the reserve inflow, then home money demand is still unsatisfied and more reserves will flow in.

Because of these problems and all these offsetting effects, tests for deviations of a_5

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from -1 using OLSQ estimates do not constitute a reliable empirical test of the monetary approach to the balance of payments. Hence, even when good results are obtained using this model, further tests and investigations are needed to establish whether monetary policy plays an important role in the determination of the balance of payments.

Causality

It is surprising that most empirical tests of the monetary approach produce good results based on a model with such stringent assumptions such as that y, P and i are exogenous and unaffected by the supply of money. One problem may be that these studies incorrectly infer a causal link between external imbalances and excess domestic credit creation on the basis of the observed correlation between them. It may be wrong to believe that every deficit is caused by monetary disturbances just because each is accompanied by them. Causation could work the other way; an exogenous increase in reserves which increases the money supply may increase real income, increase prices and reduce interest rates. Without proper specification and estimation, we do not know whether the coefficients reflect the demand for money or the effects of the supply of money on y, P and i. All of these money supply phenomena work in the same direction as those on the demand side and make single equation estimates overly favourable to the monetary hypothesis.

The Granger approach allows a to test of the dominant direction of causality between the flow of domestic credit and change in net foreign reserves. The test has been successfully used in other studies which analyse the relationship between credit and the balance of payments (Killick and Mwega 1993). In the Granger methodology, a variable X causes another variable, Y, if past Xs are jointly significant in explaining Y when past Ys are included as explanatory variables of Y in a regression model.

Estimation

Equation 2 was estimated using annual data for Fiji from 1972 to 1995. Quarterly series were not available for all variables. Various attempts were made using different proxies and time periods. Some of the models that were estimated failed to give meaningful results. Only the most 'successful' attempts are reported here. All regressions were estimated using the logarithmic first differences of most variables (denoted as DL at the end of each variable name). International reserves and domestic credit were calculated as ratios of changes in reserves and domestic credit, respectively, to high powered money (which is the preferred formulation in most tests and, according to Civcir and Parikh 1992:11, may avoid unit root nonstationarity problems in the data). Following from Magee (1976) the multiplier was assumed constant, and was dropped from the equation. In some instances (regression 2) the equation was further restricted by eliminating the interest rate proxy. None of the series used were satisfactory as a proxy for the rate of interest. A general problem is that the rate of interest in Fiji has been institutionally determined for many years during the observed period, and it tended to be constant over substantial time periods. Under these circumstances the interest rate may not have statistically well-determined effects.

The main sources of data were *International Financial Statistics* (International Monetary Fund 1997) and various Reserve Bank of Fiji publications. In all the estimations reported, real income was proxied by GDP deflated by the consumer price index (base 1990). The price level (CPI) was measured by the consumer price index (1990 = 100). For the rate of interest,

the best fit was provided by the bank rate (BKIL); a simple average of savings deposit rates and 1 year commercial banks' deposit rates (AVIL) was used, as this series was available for a longer time period. International reserves (NFA, NFAH when calculated as ratio of changes to high powered money) and domestic credit (DC, DCH when calculated as ratio of changes to high powered money) were based on monetary survey statistics.

It can be observed that the coefficients have all the theoretically expected signs but are not statistically significant in most cases (Table 1). The income elasticity of demand for nominal money is positive and close to 1 in both estimations but significant at 5 per cent level only in regression 2. The price elasticity (in both regression 1 and regression 2) and interest rate elasticity (in regression 1) are positive and negative respectively, but not

Table 1 **Regression results** (dependent variable is NFAH)

1) Dependent variable is NFAH
SMPL range: 1975–95, Number of observations: 21

Variable	Coefficient	Std. Error	T-stat.	2-tail sig.
C	0.0523527	0.0301067	1.7389031	0.1013
CPIDL	1.4568361	0.7800912	1.8675203	0.0803
GDPDL	1.1551718	0.6054938	1.9078177	0.0745
BKILDL	-1.0274132	2.4644619	-0.4168915	0.6823
DCH	-0.8398037	0.1652648	-5.0815657	0.0001

R-squared	0.676117	Mean of dependent variable	0.028446
Adjusted R-squared	0.595147	S.D. of dependent variable	0.077749
S.E. of regression	0.049470	Sum of squared residual	0.039157
Log likelihood	36.19161	F-statistic	8.350152
Durbin-Watson statistic	2.007286	Probability (F-statistic)	0.000776

2) Dependent variable is NFAH
SMPL range: 1975–95, Number of observations: 21

Variable	Coefficient	Std. error	T-stat.	2-tail sig.
C	0.0533606	0.0292712	1.8229719	0.0859
CPIDL	1.3882776	0.7437991	1.8664686	0.0793
GDPDL	1.2829486	0.5093416	2.5188374	0.0221
DCH	-0.8401516	0.1611967	-5.2119637	0.0001

R-squared	0.672599	Mean of dependent variable	0.028446
Adjusted R-squared	0.614823	S.D. of dependent variable	0.077749
S.E. of regression	0.048253	Sum of squared residual	0.039582
Log likelihood	36.07817	F-statistic	11.64137
Durbin-Watson statistic	1.907179	Probability(F-statistic)	0.000218

Source: Author's results.

statistically significant. The coefficient of domestic credit, which is the main interest of this analysis, is always statistically significant at 1 per cent level. Its value is around -0.84, thus indicating an inverse relationship between domestic credit and net foreign assets, which is however not equal to -1 as should be expected. The adjusted R^2 is around 0.6 in both regressions and the DW statistic appears to have acceptable values. These weak results are not surprising, given that some of the main assumptions of the monetary approach do not hold in the Fiji case.

The choice of the time period and of the proxies and data transformation used appeared to play an important role in influencing the results. For example, the monetarist approach was already tested for Fiji using annual data for the 1974–90 period (Jayaraman 1993). Jayaraman estimated the equation with all variables, including international reserves and domestic credit, expressed as percentage rates of change, and found the value of the estimated coefficient of change in domestic credit to be close to one (-0.90) and to be statistically significant at the 5 per cent level, so that the theory was apparently validated for Fiji. The model also explained a large proportion of the variation in net foreign reserves ($R^2 = 0.90$) to imply that the overall balance in Fiji was essentially determined by monetary factors. The conclusion of the study was therefore that

> balance of payments disequilibria can be corrected through reduction of domestic credit to a level consistent with demand for money. The conventional policy measures, including devaluation, import restrictions and export subsidisation, can succeed only when domestic credit is well under control (Jayaraman 1993:13).

Estimation of the monetary equation following Jayaraman's approach was attempted for the period 1975–95 (Table 2).

The coefficient of domestic credit, which is statistically significant at 1 per cent level, is equal to -1.47, possibly indicating a

Table 2 **Regression results** (dependent variable is NFADL)

Dependent Variable is NFADL

SMPL range: 1975–95, Number of observations: 21

Variable	Coefficient	Std. Error	T-stat.	2-tail sig.
C	0.0683432	0.0312875	2.1843643	0.0442
PIDL	1.5478235	0.8568351	1.8064426	0.0897
GDPDL	0.5442089	0.6623602	0.8216207	0.4234
BKILDL	-4.6916399	2.7072599	-1.7329847	0.1023
DCDL	-1.4712305	0.2679782	-5.4901122	0.0000

R-squared	0.690048	Mean of dependent variable	0.035833
Adjusted R-squared	0.612560	S.D. of dependent variable	0.086990
S.E. of regression	0.054147	Sum of squared residual	0.046910
Log likelihood	34.29475	F-statistic	8.905236
Durbin-Watson stat	1.652186	Probability (F-statistic)	0.000555

Source: Author's results.

magnification effect on reserves resulting from sterilisation, as suggested in the earlier discussion. The adjusted R^2 is 0.61 while the DW statistic is 1.65. These results appear to be quite different from those obtained by Jayaraman, which may be due to the inclusion in the analysis of the period 1990–95, or that the data suffer from the problem of unit root non-stationarities, implying that the classical t and F-tests are not appropriate.

Studies which do not account for the existence of unit root non-stationarity in the data may suffer from two kinds of bias: residuals of the estimated relationship may not be stationary and the estimated dynamic specification does not guarantee that a stable relationship exists. Appropriate tests have been developed by Dickey and Fuller (1981) to test whether a time series has a unit root, that is, whether it is integrated of order one (hence forth I(1) against the alternative I(0)). Each series used in the analysis was tested for unit roots, and so were first differences and second differences. In all cases the hypothesis of nonstationarity could not be rejected. Furthermore, the cointegration test for two lagged first differences was performed. In general, two or more variables are said to be cointegrated if individually each is nonstationary, but there exists a linear combination of the variables that is stationary. If variables are cointegrated then the levels regression is not spurious, however the usual t-tests do not apply. The cointegrating vector and the relevant statistics are presented in Table 3.

The hypothesis that the variables are cointegrated has to be rejected, as the t-statistic is smaller (in absolute value), at each significance level, than the critical values. This suggests great caution in the interpretation of the results obtained using this simple form of the monetarist model.

Granger causality test

Although there are variations in monetary conditions in different periods, a preliminary 'visual' analysis shows that high rates of growth in domestic credit were associated with modest rates of growth in net foreign assets. But what is the direction of causality?

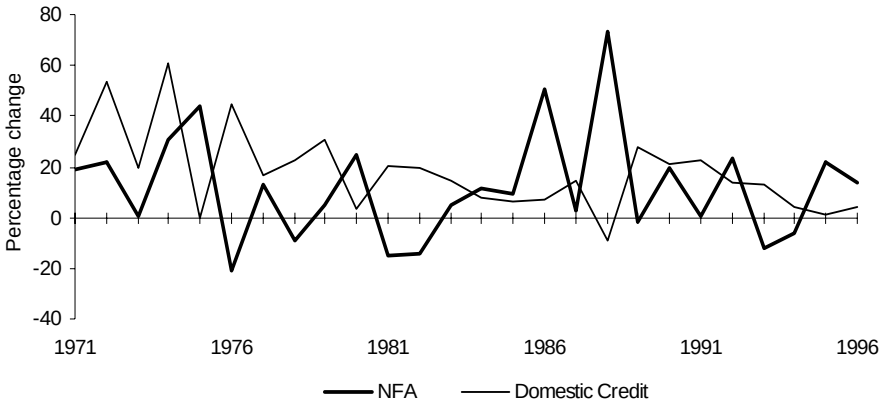
The Granger causality test was performed using quarterly data over 1970:2–1997:2. To purge for systematic temporal movements, both changes in domestic credit (TDC) and international reserves (NFA) were first detrended and

Table 3 **Engle-Granger cointegration test: UROOT(T,2)**

Cointegrating vector	
NFAH	1.000000
GDPDL	-1.298584
CPIDL	-1.531235
DCH	0.829954
TREND	-0.000529
Dickey-Fuller t-statistic	-2.7711
MacKinnon critical values	
1 per cent	-6.3747
5 per cent	-5.2953
10 per cent	-4.7982

Source: Author's results.

Figure 4 **Monetary aggregates (year on year changes), 1971–96** (percentage change)



Source: Calculated from International Monetary Fund, 1996. *International Financial Statistics*, Washington, DC (data on CD ROM).

deseasonalised by regressing them on an annual trend variable and on quarterly dummies, and the unstandardised residuals were used in the analysis. The test was run using four and eight (quarterly) lags (Table 4).

When the F-statistic is significant, the null hypothesis has to be rejected. The hypothesis that total domestic credit is not caused by net foreign assets has to be rejected in both the case of the 1-year lag and the 2-year lag, suggesting that in Fiji there are significant feedback effects from changes in net foreign assets to changes in domestic credit so that domestic credit cannot be treated as an exogenous variable. Total domestic credit (TDC) was further disaggregated into two components—

Table 4 **Granger causality test results**

1-year lag Null hypothesis	F-statistic	Probability
NFA is not Granger Caused by TDC	0.954821	0.4360
TDC is not Granger Caused by NFA	3.543598	0.0097
2-year lag Null hypothesis	F-statistic	Probability
NFA is not Granger Caused by TDC	1.156816	0.3350
TDC is not Granger Caused by NFA	3.024250	0.0049

Source: Author's results.

Table 5 **Granger causality test results for private and public components of domestic credit**

1-year lag Null hypothesis	F-statistic	Probability
NFA is not Granger Caused by DCPRIV	4.585685	0.0020
DCPRIV is not Granger Caused by NFA	4.658075	0.0018
2-year lag Null hypothesis	**F-statistic**	**Probability**
NFA is not Granger Caused by DCPRIV	4.143727	0.0003
DCPRIV is not Granger Caused by NFA	2.466622	0.0188
1-year lag Null hypothesis:	**F-statistic**	**Probability**
NFA is not Granger Caused by DCG	1.752443	0.1448
DCG is not Granger Caused by NFA	2.395697	0.0556
2-year lag Null hypothesis	**F-statistic**	**Probability**
NFA is not Granger Caused by DCG	4.140813	0.0003
DCG is not Granger Caused by NFA	1.909834	0.0690

Source: Author's results.

domestic credit to the private sector (DCPRIV) and domestic credit to the public sector (DCG) (Table 5).

When total domestic credit is disaggregated into its components, the results tentatively indicate that the impact of net foreign assets on domestic credit is filtered mainly through credit to the public sector, although only in the case of the 1-year lag, while the causal relationship between net foreign assets and credit to the private sector appears to be bidirectional.

Conclusions

The relationship between monetary policy and the balance of payments is complex and cannot be easily determined. Different methodologies have been used in the literature to analyse this relationship and this article has adopted a monetarist model.

The issue that this analysis has tried to address is whether it is possible to conclude that Fiji's balance of payments has been determined primarily by the monetary policy actions of the Reserve Bank or, rather, the payments imbalances are the result of other uncontrolled forces. The estimates obtained are quite weak and suggest that other structural factors play an important role in affecting the balance of payments.

These results are not surprising given that Fiji does not fulfil some of the assumptions of the monetary theory of the balance of payments. The monetarist model assumes, among others, a completely liberalised system of trade and payments, a stable demand for money, and price levels and interest rates which are determined in the world market. On the contrary, Fiji appears to have suffered from structural

problems in the period of analysis, above all a very narrow production base with heavy reliance on a few primary commodities and extensive controls such as foreign exchange controls on both the current and capital accounts and institutionally determined interest rates.

However, the empirical analysis conducted here is tentative and the results presented far from conclusive. Problems may have arisen from various sources, and particularly from the data and the method of estimation. The model formulation used appears to have some flaws and the development of a more complex model where structural variables are included is recommended for future research.

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