MONETARY APPROACH TO BALANCE OF PAYMENTS
A CASE OF FIJI

By
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the requirements for the degree of Master of
Agricultural Development Economics in the
Australian National University

July 1986
DECLARATION

Except where otherwise indicated
this thesis is my own work.

Ray Ah Liki

July 1986
ACKNOWLEDGEMENTS

My first debt must be to the Governments of Australia and Western Samoa without whose assistance through the provision of a scholarship, this study would not have been possible. To the Development Bank of Western Samoa for generously allowing me a study leave, I owe a debt of gratitude.

I also wish to thank Mr Sam Leung Wai for being helpful in finding a place for me in this program and particularly Mr Rodney Cole for his advice, moral support and encouragement throughout the period of my study.

I am deeply grateful to my supervisor, Mr Graeme Dorrance of the National Centre for Development Studies for his valuable advice and guidance. Improvements in the manuscript are due to his suggestions and comments.

To the academic staff of the National Centre for Development Studies from whom I acquired considerable extra knowledge particularly in the field of agricultural development economics I would like to extend my gratitude.

To Ruby my wife. I owe her much for not only being a typist and counselor, but also for her continuous support during the times of my study.

Finally, I wish to thank my classmates and all those persons, who in so many ways contributed to this study.

While this dissertation incorporate the comments received from my supervisor, the responsibility for any errors or inconsistencies rests with myself.
Economists and policymakers have been increasingly preoccupied with the problems of inflation and balance of payments disequilibria since the early 1950s. Their preoccupation has led to new approaches to monetary analysis. In this period, a gradual evolution of a third major approach called the monetary approach to the balance of payments took place: the two best-known earlier approaches are the elasticity (neoclassical) approach and the income absorption (neo-Keynesian) approach.

Each of the three approaches, as often pointed out could in principle produce the right answers if it were correctly applied. However, for applied research and background work for policy discussion on balance of payments problems, the monetary approach suggests itself as simpler and more manageable than the other approaches. It is based on the postulates of a stable demand function for money and of a stable process through which the money supply is generated. By focussing directly on the relevant monetary aggregates, this approach eliminates the intractable problems associated with the estimation of numerous elasticities of international transactions and of the parameters describing their interdependence, which are inherent in other approaches.

This study therefore is concerned with testing the relevance of the monetary approach to the balance of payments problems in Fiji. It involves finding a stable demand for money function and then using it to estimate the desired demand for money in Fiji for the period of the study (1961–1984). The analysis system developed, uses changes in desired demand for money and changes in domestic credit. If an increase in desired demand for money is greater than an increase in domestic credit, then it is expected that there would be a positive change in
international reserves, and if, on the other hand, changes in domestic credit is greater than changes in desired demand for money then a negative change in international reserves would be expected.
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CHAPTER 1
INTRODUCTION

This chapter introduces the focus of, and gives the justification for, this study of the monetary approach to an analysis of the balance of payments of Fiji. The justification, objectives, data and the study's structure are presented here.

1.1 Justification of Study
For decades, the role of money suffered relative neglect in general macroeconomics and especially in the areas of balance of payments. Now, the role of supplies and demands for money has again become the focus of attention. This development is surely welcome, and it shall be illustrated in this study on Fiji. The usefulness of the monetary approach in understanding current conditions and recent economic history, and also for forecasting balance of payments for a developing country is examined.

Balance of payments problems have, in the past decades, been a common phenomenon in developing countries. Fiji is no exception as revealed in this study. This direct approach, therefore may be a better approach in explaining the balance of payments problems for Fiji rather than either the Keynesian or the Elasticity approaches.

1.2 Scope and Objectives of the Study
The lack of effectiveness of inflationary domestic (monetary and fiscal) policies which led to the introduction of all sorts of trade restrictions in Fiji become evident as the external deficits persisted during the period of the study (see table 2-2). These balance of payments deficits reflect mostly large public sector budget deficits financed by recourse to the banking system. This study therefore should
be able to affirm that the causes of these deficits were mainly due to excessive credit creation by the monetary authorities. Perhaps the use of an approach like this one for forecasting the balance of payments developments in Fiji and hence for formulating its financial program and appropriate domestic credit policies should be a possible answer to the balance of payments problems of the country.

This thesis therefore provides an empirical study of the Fijian economy, during the period 1961-1984. Major emphasis is placed on the economy's external developments in an attempt to test the theoretical proposition that the balance of payments is a monetary phenomenon. This proposition derives from what Johnson and Mundell have called a new approach to the theory of the balance of payments and of the adjustment process. The empirical analysis will involve the finding of a stable demand function for money and investigating the relationship between the balance of payments and the rate of domestic credit expansion.

1.3 Data Source and Period of Analysis

The data used for the analysis is obtained from the 1985 IMF Financial Statistics Year Book and from the Annual Reports of the Reserve Bank of Fiji. The period 1961-1984, has been chosen mainly on the basis of the availability of data. The choice, however, appears quite justified as the Fijian economy underwent considerable changes during this period. So if the relationships estimated hold reasonably well in the presence of structural changes, the implication may be drawn that they represent the true state of the world.

---

1 see 'The Balance of Payments' in Mundell[29] and Johnson [19]
2 formerly called the 'Central Monetary Authority'
3 This a priori implication is based on the belief that other things not being equal tends to be a disturbing factor for ceteris paribus hypotheses
1.4 Structure of the Study

The analytical approach used is basically descriptive using single equation regressions. This made possible the estimation of the demand for money function for Fiji which should indicate the required money to be created, consistent with the growth of the economy.

Chapter 2 discusses the economic background perspective of Fiji.

Chapter 3 examines the theoretical concepts relating to the monetary approach to balance of payments and reviews the relevant literature on the approach.

Chapter 4 discusses the development of the demand for money theory by the Cambridge School, Keynes, Friedman and Baumol-Tobin. It presents the theoretical framework for the demand for money function and finds a stable demand for money function for Fiji.

Chapter 5 tests the relevance of the monetary approach to the balance of payments for Fiji and discusses how this approach could be used to formulate a financial program and credit policies for the country. By setting appropriate target policy variables and forecasting desired demand for money for the economy, the Reserve Bank of Fiji could be properly guided in determining the domestic credit required to be created for the country's ever increasing need of credit for both investment and consumption purposes.

Chapter 6 concludes the discussion and draws some of the major policy implications from the study.
CHAPTER 2

BACKGROUND PERSPECTIVE ON FIJI'S ECONOMY

2.1 Introduction

Fiji's economy is based on a highly competitive sugar industry, a well-established and efficient tourism industry and related trade and banking service industries, as well as government services. Fiji's economy performed well between 1970-1978 with real GDP growing inspite of the 1973-74 oil crisis and the ensuing world economic recession. This was mainly due to sound macroeconomic management.

Externally, the economy ran a moderate current account deficit (see table 2-2). Between 1979-84, the growth performance of the Fiji economy stagnated as terms of trade declined, and as a prolonged drought (1981-83) adversely affected sugar production and other export crops.

The structure of the economy of Fiji by industrial origin indicates that agriculture, of which the mixed subsistence sector\(^1\) represents about a quarter, accounts for about 20% GDP while the distribution sector (including tourism) and other services (dominated by the government) account for about 19% of GDP each (see table 2-1 and appendix A). The remainder is divided between manufacturing, finance and insurance, building and construction, and other trade related services.

\(^1\)Defined as the partially monetized sector of the economy where smallholdlers and subsistence farmers are engaged in the production of some cash crops for their own consumption or market sales
Table 2-1: STRUCTURE OF THE FIJI ECONOMY, 1978-1983

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<td>117.0</td>
<td>174.2</td>
<td>131.6</td>
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<tr>
<td>GDP (%)/a</td>
<td>12.0</td>
<td>13.7</td>
<td>17.7</td>
<td>12.5</td>
<td>10.8</td>
<td>9.4</td>
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<td>Tourism</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GFE Receipts</td>
<td>86.0</td>
<td>104.0</td>
<td>109.5</td>
<td>122.0</td>
<td>142.5</td>
<td>136.1</td>
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<tr>
<td>(F$ millions)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GDP (%)/b</td>
<td>12.2</td>
<td>12.2</td>
<td>11.1</td>
<td>11.5</td>
<td>12.3</td>
<td>11.4</td>
</tr>
<tr>
<td>Others</td>
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<td></td>
<td></td>
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<td>F$ millions</td>
<td>132.2</td>
<td>151.8</td>
<td>184.0</td>
<td>208.8</td>
<td>227.2</td>
<td>247.6</td>
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<td>GDP/c</td>
<td>18.8</td>
<td>17.8</td>
<td>18.7</td>
<td>19.7</td>
<td>19.6</td>
<td>20.9</td>
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<td>Real GDP growth</td>
<td>4.3</td>
<td>11.1</td>
<td>-1.6</td>
<td>6.4</td>
<td>-2.5</td>
<td>-4.4</td>
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<tr>
<td>rate (at factor</td>
<td></td>
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<td></td>
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<tr>
<td>cost) (%)</td>
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</tbody>
</table>

Note: /a Export Value/GDP  
/b Tourism receipts/GDP  
/c Value added/GDP  
GFE Gross foreign exchange

2.2 Growth Performance

Real GDP growth stagnated between 1979-83, implying a drop in real GDP per capita. The sluggish growth performance in 1979-83 compares unfavourably with the satisfactory growth rate of 4.5% p.a. in real GDP between 1970-1978, and remained well below the Eighth Development Plan's (DP8, 1981-1985) target of 4.7% p.a. The Central Planning Office (CPO) estimated that real GDP would have to grow at the phenomenal rate of 14.3% between 1984-85 in order to achieve the plan target (see Appendix B), which shows the extent to which the actual GDP growth rates as well as actual sectoral rates fell short of the plan target.

2.3 Structure of Fiji's Balance of Payments

With exports and imports of goods and services estimated at respectively 45% and 55% of GDP (1982), Fiji fits the "the small open economy" case in the trade literature. Fiji's balance of payments is characterized by large merchandise trade deficits which are only partially offset by surpluses in the invisible account due to export receipts from tourism (table 2-2). As a capital-importing country, Fiji's current account deficits have been financed by substantial capital inflows, especially public capital inflows and, to a lesser extent, direct capital inflows related to domestic investment activity. The composition of Fiji's exports has changed little in the recent past as sugar retained its predominance with coconut products, gold and molasses as minor export commodities (see appendix A). Because of the economy's high degree of openness, swings in export earnings, whether induced by changes in terms of trade or external demand, or by domestic supply conditions, in turn significantly affect, through their impact on domestic incomes, the country's imports and associated capital inflows.

2.3.1 Trade Balance

The export performance worsened on account of lower export prices for major export commodities, particularly between 1982 and 1983 as a reflection of the international economic recession, and declines in export volumes of some export commodities owing to harsh weather conditions and domestic supply constraints.
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<tr>
<td>Exports of goods</td>
<td>202.6</td>
<td>278.8</td>
<td>240.8</td>
<td>236.4</td>
<td>221.4</td>
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<tr>
<td>Imports of goods</td>
<td>340.4</td>
<td>303.0</td>
<td>465.7</td>
<td>411.2</td>
<td>428.9</td>
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<tr>
<td>Trade balance</td>
<td>-137.8</td>
<td>-114.3</td>
<td>-224.9</td>
<td>-174.8</td>
<td>-207.5</td>
</tr>
<tr>
<td>Exports of n/services</td>
<td>173.2</td>
<td>201.6</td>
<td>224.0</td>
<td>257.8</td>
<td>286.4</td>
</tr>
<tr>
<td>Imports of n/services</td>
<td>92.5</td>
<td>117.8</td>
<td>142.3</td>
<td>144.1</td>
<td>132.6</td>
</tr>
<tr>
<td>Nonfactor services balance (deficit = -)</td>
<td>80.7</td>
<td>83.8</td>
<td>81.7</td>
<td>113.7</td>
<td>153.8</td>
</tr>
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<td>Investment income(net)</td>
<td>-13.6</td>
<td>-17.6</td>
<td>-16.0</td>
<td>-40.2</td>
<td>-35.6</td>
</tr>
<tr>
<td>Net transfers</td>
<td>9.0</td>
<td>19.3</td>
<td>14.6</td>
<td>16.3</td>
<td>25.3</td>
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<tr>
<td>Bal. on current a/c</td>
<td>-61.7</td>
<td>-28.8</td>
<td>-144.6</td>
<td>-85.0</td>
<td>-64.0</td>
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<td>Nonmonetary capital</td>
<td>37.9</td>
<td>72.5</td>
<td>117.1</td>
<td>76.1</td>
<td>74.9</td>
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<td>Overall balance</td>
<td>-23.8</td>
<td>43.8</td>
<td>-27.5</td>
<td>-8.9</td>
<td>10.9</td>
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<tr>
<td>Change in net reserves</td>
<td>0.6</td>
<td>-24.8</td>
<td>13.9</td>
<td>13.8</td>
<td>-2.1</td>
</tr>
<tr>
<td>(= increase)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Errors and Omissions</td>
<td>-23.2</td>
<td>19.0</td>
<td>-13.6</td>
<td>4.9</td>
<td>8.8</td>
</tr>
<tr>
<td>Terms of Trade (1977 = 100)</td>
<td>88.9</td>
<td>98.0</td>
<td>76.5</td>
<td>74.2</td>
<td>85.1</td>
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<td>Memorandum Item:</td>
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<tr>
<td>Balance on current</td>
<td>-7.2</td>
<td>-3.0</td>
<td>-13.6</td>
<td>-7.4</td>
<td>-5.4</td>
</tr>
<tr>
<td>account/GDP (%)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Bureau of Statistics (Fiji), 1984
The growth pattern in imports, though with a lag, generally mirrored the fluctuations in real domestic income. They peaked in 1981 under the influence of higher level of investment activity in the 1980-81 period, and the associated higher imports of capital and associated goods. Imports in nominal values fell in 1982-83 period and remained at this level in 1984 due to decline in domestic income. But in spite of stagnant real domestic incomes, consumer goods imports increased in 1983 and 1984 as a result of the impetus from wage and salary increases and the rapid expansion of consumer credit.

2.3.2 Financing

In the past, the Fiji authorities have prudently refrained from substantial borrowing from the commercial banking system and direct borrowing from the Reserve Bank of Fiji to finance the budgetary deficits, they have increasingly resorted to a relatively less inflationary source of financing, the Fiji National Provident Fund (FNPF) and to a lesser extent foreign borrowings on concessional terms.

2.4 Money, Credit and Financial Intermediation

Table 2-3 indicates that total liquidity (as measured by the growth in broad money) generally kept pace with the growth in nominal GDP, except in 1983, due to fiscal impulse associated with wages and salary increases in the public sector and mounting deficits of public enterprises. Demand for money was generally in balance with supply and this implies that the liquidity needs of the economy were adequately met without excessive inflationary "pump priming". However, especially between 1982-1984, the fall in net foreign assets was more than compensated by the faster growth in domestic credit, the more important determinant of the internal monetary impulse (see table 2-3). The annual growth rates in domestic credit far exceeded that in nominal GDP or in the CPI (see table 2-3) between 1981-84, owing to the increased borrowing of the government to finance the higher budget deficit, by the public enterprises to cover their operating losses through budgetary current transfers and subsidies, and private consumer credit\(^2\) for

\(^2\)Between 1983-84 private credit grew by about 22.8% with most of the loans and advances by commercial banks to individuals and to the wholesale and retail trade sector which is essentially import-oriented
financing of imports. Faced with this continued strong demand for credit, the authorities by 1984, took a number of restrictive measures to minimize the pressure on the balance of payments arising from consumer import leakages: the required reserve ratio for commercial banks with the reserve bank of Fiji was raised from 5% to 6% in December 1984, the required liquid asset ratio (as a percentage of domestic and foreign liabilities) was raised from 15% to 18% in June 1984 and the Reserve Bank of Fiji rediscount rates on loans and advances to commercial banks was raised from 9.5% to 11.0%. Again the effectiveness of these restrictive monetary measures will be significantly enhanced if combined with wage and salary restraint in the public sector.

To redirect the orientation of Fiji's commerce and tourism, and to channel long-term credit toward export diversification or import-substitution projects, under the Eight Development Plan, the authorities issued credit allocation guidelines according to which lending to the agricultural and industrial sectors (for new activities) are targeted to a given percentage of deposit liabilities of commercial banks.

2.5 The Capital Account and the External Debt Position

Foreign capital inflows rapidly increased between 1979 and 1981, financing the rapidly increasing current account deficit associated with the public investment led boom during the same year. After the 1981 peak, capital inflows declined, especially borrowing for project investments.

Partly as a result of the high capital inflows between 1980 and 1983, partly in the wake of the country's stagnant export earnings and higher real interest rates on foreign debt, Fiji's external debt burden increased rapidly between 1979 and 1984, as the debt service ratio rose from 5.2% (of exports of goods and non-factor services) in 1979 to 14% (appendix B). Given the high degree of openness of the economy, this translates into a relatively high debt burden in relation to GDP, even though it is considerably less than in many other developing countries: total external debt amounted to 37% of GDP in 1984, and total debt
### Table 2-3: Fiji Monetary Survey, 1979-83
(in F$ million, end of period)

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<tr>
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<td>134.1</td>
<td>120.1</td>
<td>106.3</td>
<td>107.9</td>
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<td>C. Monetary Authority</td>
<td>109.0</td>
<td>130.6</td>
<td>116.8</td>
<td>109.5</td>
<td>108.4</td>
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<td>Commercial Banks</td>
<td>-0.8</td>
<td>1.4</td>
<td>3.0</td>
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<tr>
<td>Government</td>
<td>1.0</td>
<td>2.1</td>
<td>0.4</td>
<td>0.3</td>
<td>0.7</td>
</tr>
<tr>
<td>Domestic Credit</td>
<td>224.1</td>
<td>231.5</td>
<td>279.4</td>
<td>333.7</td>
<td>381.5</td>
</tr>
<tr>
<td>Government (net)</td>
<td>30.0</td>
<td>21.6</td>
<td>20.2</td>
<td>38.6</td>
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<td>Official Entities</td>
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<td>21.2</td>
<td>25.9</td>
<td>49.3</td>
<td>73.3</td>
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<td>Private Sector</td>
<td>167.9</td>
<td>188.7</td>
<td>233.2</td>
<td>254.9</td>
<td>275.3</td>
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<td>Broad Money</td>
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<td>342.8</td>
<td>364.3</td>
<td>395.3</td>
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<td>Demand Deposits</td>
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<td>(76.9)</td>
<td>(77.7)</td>
<td>(88.9)</td>
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<td>Quasi-Money</td>
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<td>237.5</td>
<td>238.7</td>
<td>264.8</td>
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<td>Other Items (net)</td>
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<td>22.8</td>
<td>35.2</td>
<td>44.8</td>
<td>42.5</td>
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Memorandum Items:

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<thead>
<tr>
<th>Memorandum Items:</th>
<th>Annual Growth Rate(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Credit</td>
<td>30.3  3.3  20.7  19.4  14.3</td>
</tr>
<tr>
<td>Broad Money</td>
<td>19.8  12.1  6.3   8.5   19.2</td>
</tr>
<tr>
<td>Money Supply</td>
<td>13.0  -9.7  19.3  3.9   8.5</td>
</tr>
<tr>
<td>Nominal GDP</td>
<td>21.3  15.4  7.5   9.3   2.6</td>
</tr>
<tr>
<td>CPI</td>
<td>7.7   14.5  11.2  7.0   6.8</td>
</tr>
</tbody>
</table>

Source: Reserve Bank of Fiji: Quarterly Review, June 1984
service repayments to some 6% of GDP. Fiji faces a debt problem that is worrisome but not catastrophic.
CHAPTER 3
THEORETICAL CONCEPT AND LITERATURE REVIEW

The theory of the balance of payments adjustment mechanism is conventionally viewed as a succession of approaches. During the past two decades, the monetary approach, which highlights the role of money in the adjustment process has emerged as one of the important channels of explanation of balance of payments development.

3.1 Definition of the Balance of Payments

The conventional meaning of the term is a statement of all transactions, between residents of one country and residents of the rest of the world, that is the balance-of-payments table. The modern monetarists however have implicitly redefined the term balance of payments and took it to mean one of the balances - or, rather, imbalances - in the table. They deal only with financing or accommodating transactions. These accommodating items show how the external payments imbalances has been financed.

The most useful concept for the monetarists' theoretical formulation is one that shows the effects of an overall balance of payments deficit or surplus on the domestic monetary base. For monetarists, the monetary-base-effect balance is active or autonomous, because it is a result of a demand for and supply of money based on predictable behavior approach.

Therefore the monetary approach does not attempt to explain the behavior of individual components of the balance of payments, such as trade and service flows, long-term capital, or short-term capital. They

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1 The various approaches are summarized by Johnson, 1976b, 1977b
are all lumped together into one accommodating category. Nor is the approach concerned with any of the "partial balances," such as the current account balance.

3.2 Origins of the Monetary Approach to the Balance of Payments

This approach, which was developed in the writings of Polak (1957), Mundell (1969, 1971), Johnson (1972), Dornbusch (1973a, 1973b), and other members of the Chicago School, challenges the conventional wisdom derived from orthodox Keynesian balance of payments theory.

This so-called new monetary approach to the theory of balance of payments has been developing and gaining popularity in recent years as an alternative to the elasticity approach, the absorption approach, and various others Keynesian approaches.

The monetary approach actually represent a return to the classical tradition of international monetary theory established in the work of David Hume, summarised in the classical price-specie-flow mechanism of adjustment to international monetary equilibria.

Hume's price-specie-flow analysis was developed as an answer to the mercantilist contention that the path to augmentation of national wealth and power lay in the development and maintenance of a balance of payments surplus through measures to increase exports and decrease imports so as to produce a continuous flow of precious metals into the country (Johnson, 1977).

3.3 Theories of the Balance of Payments

One can distinguish broadly three analytical approaches to the theory of the balance of payments:

(a) The relative prices/elasticities approach;
(b) The absorption approach; and
(c) The monetary approach
3.3.1 The Elasticity Approach

The chief characteristic of this approach is that its attention is focussed upon the foreign exchange market to the almost complete exclusion of the domestic factor, product, money and financial assets market. The analysis it conducts is principally in terms of relative prices, and variables that alter relative prices, and ignores the influence of such important macro-variables as income flows and stocks of assets (including money). The elasticities analysis operates directly on the balance of trade equation:

\[ B = X - M \]  

where \( X \) = Exports \( M \) = Imports

This model assumes that the three principal determining variables in the \( X \) and \( M \) functions are the domestic price level, of both exports and imports substitutes \((P_d)\) and the foreign price level of both competing exports and imports \((P_f)\) and the rate of exchange which, when altered, will change the ratio \( P_d/P_f \). We can thus rewrite equation (3.1) as:

\[ M = X(P_d/P_f,\pi) - M(P_d/P_f,\pi) \]  

where

\[ \pi = \text{the rate of exchange} \]

The general methodological approach has been to investigate the impact upon the balance of trade of a change in relative prices brought about by a change in exchange rate.

This model therefore suggests that payments imbalances are likely to be the result of the movements in relative prices, and that restoration of equilibrium (if balance between \( X \) and \( M \) is desired) requires relative price adjustments, either via an exchange rate change or via an absolute reduction in \( P_d \) if foreign price level is constant, or a relatively smaller increase in \( P_d \) if the foreign price level is rising.
3.3.2 The Absorption Approach

This approach focuses specific attention upon the product market, rather less on the foreign exchange market, and appears to ignore completely the money market. By concentrating its attention on income and expenditure flows, it omits, as important explanatory variables, cash balances, other monetary variables and relative prices.

This approach operates on the following expression:

\[ B = X - M = Py - (G + I + C) \]

where the bracketed term is aggregate domestic expenditure, referred to as 'absorption' and, 

\[ Py = (G + I + C + X - M) \]

The absorption model assumes that the level of income is the prime determinant of the level of absorption, and hence emphasizes the fact that payments imbalances are characterized by \textit{ex ante} divergences between aggregate income receipts and aggregate domestic expenditure (absorption).

The general message that emerges from the absorption model is that, the elimination of a trade deficit requires that income rise relative to aggregate domestic expenditure or vice versa.

3.4 The Monetary Approach

To understand the real significance of this approach it is first useful to recall that a continuing balance of payments deficit of the type normally considered in balance of payments theory presupposes, under a system of fixed exchange rates, a monetary authority that is prepared to continue supplying exchange to finance excesses of domestic residents' foreign payments over foreign receipts.

The monetary approach to the balance of payments therefore suggests that surpluses and deficits are essentially adjustment phenomena which equilibrate the money stock in existence to the quantity demanded in an open economy. An \textit{increase in the domestic money supply via increased
domestic credit creation, by either central or private banks, leads to larger deficits which in turn, deplete the excess supply of money.  

2 Dornbusch (1978), has explained that balance of payments deficits are a reflection of an excessive money supply because for any given balance of payments deficit, a sufficient contraction of the money stock will restore external balance. The reason is that a monetary contraction, by raising interest rates and reducing spending, generates a contraction in the economic activity, a decline in income, and therefore a decline in exports.

3.4.1 The Cause of External Imbalance under Fixed Exchange Rates

As defined above, the balance of payments is considered by the monetarists to be essentially a monetary phenomenon. They regard the relationship between the demand for and the supply of money as the critical determinant of the balance of payments. The approach rests on the basic premise that, for any country over the long-run, there exists a stable demand function for money as a stock. In its simplest formulation, the demand for real money balances is a stable, linearly homogeneous function of real income.

This function may be obtained from a more general formulation by the following steps:

The amount of nominal money balances demanded (Md) is a function (L) of the price level (P), real income (y), and the interest rate (i). Thus a general formulation of the demand for money function is:

\[ Md = L(P, y, i) \]  

(3.3)

Other things being equal, an increase in the price level or in real income increases the demand for nominal money balances, because there is a larger value of transactions, or nominal income to be financed. An increase in the rate of interest decreases the demand for money balances, because it raises the opportunity cost of holding money. These

\footnote{Connolly & Taylor, 1976}

\footnote{a period longer than a year but shorter than a decade}
relationships are postulated generally by monetarists and nonmonetarists alike.

The supply of nominal money \( (M_s) \) is the product of the money multiplier \( (m) \), and the monetary base \( (B) \), the latter sometimes called high-powered money:

\[
M_s = m \cdot B \quad (3.4)
\]

This is called the "monetary-base" identity.

The money multiplier which represents the extent of multiple credit creation on the part of the commercial banking system, is sometimes assumed to be constant. Alternatively, it is assumed that the money multiplier does not systematically change in response to changes in the monetary base, because the two variables are subject to different influences. The monetary base itself has two components: a domestic component \( (D) \), consisting of credit created by the monetary authorities, and an international component \( (R) \), the domestic-currency value of the international reserves of the government and central bank. The international component can be increased or decreased by any inflow or outflow (respectively) of reserves from or to foreign countries when the balance of payments is in a surplus or a deficit. It can also change with exchange-rate variations. In theory international reserves \( (R) \) are defined in accordance with the component elements of the monetary-base-effect. In notational form,

\[
B = D + R \quad (3.5)
\]

As a most general formulation, the monetary approach identifies balance-of-payments disequilibria with adjustment in the money market. Payments imbalances are rooted in their relationship between the demand for and supply of money. Monetarists postulate that there is always a tendency towards equilibrium in the money market, that is, toward equality between the stock demand for money \( (Md) \) and stock supply of money \( (Ms) \), where the latter is generated by the equation.
\[ Ms = m(D + R) \]  
(3.6)

Therefore, money-market equilibrium is described by the equation,

\[ Md = m(D + R). \]

Assuming, for simplicity, a constant money multiplier \((m)\), changes in the demand for money \((Md)\) and in the domestic component of the monetary base \((D)\) are the active ingredients that can pull the money market out of equilibrium. It is changes in the international component of the monetary base \((R)\) that restore or maintain money market equilibrium under fixed exchange rates. Such changes \((\Delta R)\) constitute balance of payments deficits or surpluses.

Monetarist literature includes three specific formulations of the process of adjustment in the money market. Two of the models relate to the fixed exchange rates and the third to floating rates. The first fixed-rate model views balance-of-payments disequilibrium, considered here to be a change in stock rather than a flow variable, as a discrepancy between stock demand for and supply of money. Converting the equilibrium condition (3.6) to a once-and-for-all change in stock (rather than a continuous flow), one obtains

\[ m\Delta R = \Delta Md - m\Delta D \]  
(3.7)

Change in the domestic-source money supply \((D)\) or in money demanded \((Md)\) can occur quickly, by means of either open-market operations or changes in the arguments of the demand-for-money function. These changes give rise to an excess stock demand for money (positive divergence between \(\Delta Md\) and \(m\Delta D\), the right-hand side of equation (3.7)) or an excess stock supply of money (negative divergence between the two variables).

The equilibrating factor that restores stock equilibrium of money demand and supply is \(\Delta R\), the once and for all change in the international component of the monetary base. But this adjustment takes time. Monetarists do not specify the length of time required for the full \(\Delta R\) to occur and therefore for money-market equilibrium - equation 3.6 - to be restored.
It is important to emphasize that the variables $\Delta Md$, $\Delta D$, and especially $\Delta R$ are not to be interpreted as continuous flows in this model. Rather, they are once-and-for-all changes in stocks. Since the $\Delta R$ adjustment can take many years, only a fraction of it would occur in any given year as temporary balance-of-payments flows. It is this model that monetarists generally employ in their theoretical and policy analysis.

A second, less frequently used formulation involves continuous money-market equilibrium maintained by a continuous payment imbalance. This can be shown by the equation

$$mR = Md - mD \quad (3.8)$$

where dotted variables are expressed in rate-of-change form.

Equation (3.8) models a situation in which there are slow, continuous changes in the demand for money ($Md$) or domestic credit ($D$), giving rise to a continuous balance-of-payments deficit or surplus. The latter flow imbalance in turn maintains continuous money-market equilibrium in both the stock, equation (3.6), and flow, equation (3.7), senses.

The other model which pertains strictly to floating exchange rate involves continuous stock equilibrium in the money market combined with continuous balance of payments equilibrium.

Consider the model portrayed by equation (3.6). Demand for money can be satisfied either from domestic or international sources. Thus, if the demand for money rises (say because of an increase of the rate of growth of real income) while the domestic component remains unchanged, the excess demand would be satisfied by an increase in international component, that is, by drawing international funds into the country. That constitutes a balance of payments surplus.

In general, any change in the domestic component of the monetary base is ultimately offset by an equal and opposite change in international reserve component through the balance of payments. An important assumption underlying this fundamental monetarist proposition is that money demand is a stable function of very few variables, and
that these variables are independent of the factors that influence money supply. In other words, nothing in the change in the domestic component of the monetary base would affect the demand for money.

A surplus or deficit in the balance of payments reflects stock disequilibrium between demand for and supply of money. A surplus occurs when the demand exceeds the money stock.

If the excess demand for money is not satisfied from domestic sources (i.e., by an increase in D), funds will be attracted from abroad to satisfy it. Such an inflow can be generated by a surplus in commodity trade or service account, direct investment by foreign companies, or an attraction of private long-term or short-term portfolio funds. However, assuming no intervention by the monetary authorities to 'sterilize' the resulting inflow of funds (by reducing D in step with the increase in R), such a surplus is necessarily temporary and self-correcting. It will continue only until the money stock rises to the level necessary to satisfy the demand for money balances, that is, until the excess demand for money is eliminated.

The feature responsible for the self-correction is that the demand function for money relates to money as a stock and not as a flow. When the desired stock is reached, the inflow of foreign funds—the counterpart and cause of external surplus—ceases and so does the balance of payments surplus. Under two circumstances, a surplus can be more than temporary. In the first model, equation (3.7), this would occur when official sterilization of the incoming funds prevents the monetary base and hence the money stock, from rising to the desired level. Alternatively, in the second model, equation (3.8), it could be caused by a continuous increase in the demand for money (Md) over and above the rise in domestic component of the money supply (MD). Such an increase can be brought about by a continuous rate of increase in money income in excess of the rate of growth in the domestic component of the money supply.

Returning to the first model, a balance of payments deficit
reflects excess supply of money as a stock. When the stock of money exceeds the demand for money balances, people try to get rid of the excess supply. They do that by increasing purchases of foreign goods and services, by investing abroad, or by transferring short-term funds abroad to acquire foreign assets. Thus the deficit is viewed as a spillover of the excess supply of money.

The deficit is temporary and self-correcting, provided that the monetary authorities do not replace the outflowing funds by creating new domestic credit (by increasing D in accordance with a sterilization policy). The deficit will last only until the excess supply is dissipated abroad and will stop when stock equilibrium in the money market is restored — when the total money stock declines to the level of desired money balances. Continuous deficit is possible only if a policy of complete sterilization is followed by the monetary authorities or (under the second model), if the condition causing the excess supply of money persists. Such a condition could be a growth rate in the domestic source money supply in excess in growth rate in money income.

The self-correcting apparatus outlined above takes time. Except for hints that the period required could be a year or a decade, the monetary approach is silent on the dynamic process that the economy must undergo to reach it. It is concerned strictly with the final, long-run equilibrium position.

Clearly money plays a central role in the approach. It is viewed as an active agent and not merely as fulfilling a passive role in transactions. In other words, the crucial decision of individuals and institutions concerns the adequacy of their money balances. Their demand for such balances relative to supply determines the level of their expenditures on goods and services. Indeed aggregate spending is a function of real balances and not income.

Domestically, the monetary approach implies that under fixed exchange rates a country has no control over its money supply. The money supply is endogenous rather than an exogenous or policy variable. The
pursuit of any domestic objective, such as price stability, by altering the domestic component of the monetary base will be frustrated by offsetting changes in the international component through reserve flows. If a country is unable to pursue sterilization policies, all the government can do is control the composition of the money supply, not its level. In precise terms, the government can not determine the level of the monetary base into its domestic (D) and foreign (R) component. A change in D will produce an equivalent and opposite change in R unless there is a change in either the money multiplier or the demand for money. And the direction of causation is from D to R and not the other way around. It should be emphasized that demand for and supply of money are considered to be independent of money-market conditions. Therefore a change in D does not in itself bring about a change in money demand on the money multiplier.

3.4.2 Fluctuating Exchange Rates

According to both monetarists and nonmonetarists, freely floating exchange rates maintain equilibrium in the balance of payments. Since reserve changes ($\Delta R$) are held at zero, the monetary authorities maintain control over the money stock. In the fixed-exchange-rate case such control is absent, because any change in the domestic component of the monetary base (D) is offset by a change in the international component (R). Thus, the nominal money supply, an endogenous variable when the country's currency floats freely in the foreign exchange market.

Monetarists emphasize that floating rates are unnecessary for the maintenance of balance-of-payments equilibrium in the long run. Because imbalances are self-correcting even under fixed exchange rates, a preference for a fixed-rate system is indicated.

While the adjustment of a balance-of-payments deficit or surplus takes place via money-market equilibrium under both fixed and floating rate systems, there is a difference on how this equilibrium is attained. Under fixed exchange rates, quantity of money adjusts gradually through reserve flows to bring equality between actual and desired money stock. Under floating rates, money market equilibrium occurs quickly, if not instantaneously through domestic price changes that alter the valuation of the money stock.
3.4.3 Determination of Market Exchange Rates

Whatever causes a balance-of-payments deficit under a fixed exchange rate will result in a depreciation of a floating currency; whatever causes a balance of payments surplus under a fixed rate will result in an appreciation of a floating currency. In a regime of managed floating, the first set of influences will cause a combination of currency depreciation and reserve losses while the second set will cause a combination of currency appreciation and reserve gains.

In accordance with the general principles of the monetary approach, exchange rates are regarded as the relative prices of different national moneys. They are determined by equilibrium conditions between demand for and supply of the stocks, rather than flows, of various national moneys. Under freely floating exchange rates, the foreign-source component of the money supply is fixed, so that the demand for money can be satisfied only from domestic-credit component.

Absent from the mainstream of the monetarist literature however is recognition of the relationship between monetary and fiscal policy. In particular, the amount of domestic credit created (\(\Delta D\)) is exactly equal to the government's budget deficit less borrowing from the private sector, either domestic or foreign. Nearly all adherents to the monetary approach view monetary policy as active and fiscal policy as passive. Therefore, they ignore the fiscal aspect of creating domestic credit. The issue is whether the monetary or fiscal authorities determine \(\Delta D\). Is domestic credit creation purely a monetary-policy variable or is it determined by fiscal policy?

3.5 Policy Implications

Since external imbalances are viewed as self-correcting, balance of payments policies are generally unnecessary. They are also considered ineffective, except in the short-run. The only possible long-run remedy to a deficit is a reduction in the rate of credit creation, that is in the rate of increase in \(D\). In any case, the effectiveness of the balance of payments measures must be evaluated in the light of their effect on money-market equilibrium.
3.5.1 Devaluation

Only through possible effects on the demand for and supply of money balances can devaluation have an impact on balance of payments. Through its direct effect, devaluation raises domestic-currency prices of importables and exportables. The general price rise increases the demand for nominal money balances, which is a stable function of money income. If that stock demand is not satisfied from domestic sources (i.e., by domestic credit expansion, by increasing D), an inflow of money from abroad will occur, producing a balance of payments surplus and therefore a gain in international reserves. Devaluation reduces real domestic balances and forces residents to restore them through the international credit or commodity markets. However, the resulting balance of payments surplus continues only until the stock money-market equilibrium is restored. In other words, the effect of devaluation is strictly transitory. In the long run, devaluation has no effect on real economic variables: it merely raises the price level.

By the same reasoning, revaluation or currency appreciation produces a transitory balance of payments deficit by lowering domestic prices. The demand for monetary balances is thereby reduced, producing a stock excess supply of money.

Exchange-rate changes therefore are incapable of bringing about lasting change in the balance of payments position. Operating strictly through the domestic price level they produce a temporary stock disequilibrium in the money market and can create a surplus or a deficit that lasts only until money market equilibrium is restored. Furthermore since all external disequilibria produced under fixed exchange rates are self-correcting through currency flows, the adherent to the monetary approach viewed exchange-rate changes as unnecessary. It must be acknowledged however, that devaluation hastens the process of restoring balance of payments equilibrium by absorbing excess money balances.
3.5.2 Tariffs, Quotas, and Exchange Controls

Because a tariff increases domestic prices, it raises the demand for nominal money balances. If that demand is not satisfied from domestic sources, that is, by an increase in D, it will produce a transitory balance of payments surplus until money-market stock equilibrium is restored. Any exogenous rise in domestic prices not accompanied by expansion of the domestic component of the monetary base will have the same consequence.

Import quotas directly restrict the volume of imports and therefore increase their price in the importing country. This raises the demand for nominal money balances and creates a transitory balance of payments surplus, lasting until money market stock equilibrium is restored.

Exchange control is a mechanism of rationing of foreign currencies while maintaining an overvalued domestic currency. By restricting a foreign currency allocation for imports, the government reduces the volume of imports below its free market level. This raises the domestic prices of importables and, through substitution, the general price level. The consequence is a rise in stock demand for money balances. In the absence of an increase in D, this increased demand will be satisfied from abroad, producing a balance of payments surplus or reducing the deficit. This effect is however temporary, lasting only until money-market stock equilibrium is restored.

3.5.3 Effects on Commodity Markets

We have shown that monetarists view devaluation and various forms of trade and payments restrictions as affecting the balance of payments only to the extent that they raise domestic prices, and the rise is not offset by domestic credit expansion. However, any effect is purely temporary. Because its entire focus is on the money market, the monetary approach does not explain the temporary nature of this effect in terms of factors operating on the commodity market. In fact, it is completely silent on this issue. A possible explanation, in terms of commodity markets, is as follows: Devaluation, tariffs, quotas, and exchange control all improve the balance of payments by restricting imports; in the process, they raise the internal prices of importables relative to
exportables. This change the consumption mix away from importables in favour of exportables, while the production mix shifts in the opposite direction, from exportables to import substitutes. As a result, exports eventually decline to the new lower level of imports.

3.5.4 Economic Growth

When the economy is growing in real terms with an unchanged price level, there is growth in the demand for real, and therefore nominal, money balance. The portion of this growth not supplied from domestic sources is reflected in balance of payments surplus. Under the simplest form of the money-demand function, a deficit must develop if the rate of expansion in the domestic component of the monetary base exceeds the growth rate in real income.

The monetarists maintained that the growth rate in a country's reserves will be faster than the growth rate in the world's reserve if the country's real growth rate is faster than the world real growth rate.

This assertion of a positive relation between the rate of income growth and balance of payments, other things being equal, is directly opposed to the prediction of the income/absorption theory of the balance of payments, where imports are a function of income. However, the income absorption prediction refers only to the balance on current account.

3.5.5 Change in the Price Level

An exogenous rise in the price level such as the one caused by quadrupled energy prices, with real income held constant, increased the demand for money in accordance with the demand for money function. The portion of this increase not supplied from domestic sources is reflected in a balance of payments surplus. As in the case of economic growth, this results conflicts with the traditional approaches, which forecast, rather, a deterioration in the balance of payments. Again the traditional prediction refers strictly to the current account component of the balance of payments and can be reconciled with the monetarist result via the capital account.
3.5.6 Change in the Rate of Interest

An increase in the domestic rate of interest raises the opportunity cost of holding money, producing a decrease in the demand for money. The resulting excess supply of money is dissipated abroad in the form of an external deficit, lasting until stock equilibrium is restored. Conversely, a decline in the domestic interest rate lowers the opportunity cost of holding money, producing an excess demand for money. In turn, that creates a balance of payments surplus, which lasts until the stock imbalance is eliminated.
CHAPTER 4
DEMAND FOR MONEY IN FIJI

A substantial body of literature is based on the proposition that the demand for money depends stably and predictably on a few variables: the level of income, the rate of interest and changes in the price level being the most important ones. Perhaps one could ask how much of the variation in the quantity of money demanded in an economy could be explained by reference to variations in these variables. This can, of course, be done through an empirical study. Were it to turn out that all the variations in the demand for money could be explained by the variables in question, it might be concluded that the theory is a perfect one.

4.1 Theories of the Demand for Money

Two interrelated characteristics of money are usually emphasized in theories that set it apart from other goods. The first is that money is acceptable as a means of exchange for goods and services, and secondly is that its market value is highly predictable. These two characteristics of money are collectively called liquidity and even though other assets may also possess them in varying degrees, money is still the most liquid of assets. Because of costs in buying and selling income earning assets, because the price of such assets is uncertain, and because money is always readily acceptable in any transaction, it comes to be held.

Unlike Fisher's approach which asked what determined the amount of money an economy needed to carry out a given volume of transaction, the Cambridge approach theory of demand for money looks at the problem of money holding in an economy, and asked what determine the amount of money an individual would wish to hold given that the desire to
undertake transactions makes money holding desirable. This approach seeks to simplify things by assuming that for an individual, the level of wealth, the volume of transactions and the level of income could be in stable proportion to one another. It then argued that, other things being equal, the demand for money in nominal terms would be proportional to the nominal level of income for each individual and hence for the aggregate economy as well.

Keynes (1936) developed the Cambridge approach to the problem of demand for money and he analysed the motives that lead people to hold money. His analysis arrives at quite different conclusions to those of Fisher. While Fisher implicitly regards the demand for money as being insensitive to the rate of interest and stably related to the volume of transactions (and hence of income) in the short run, Keynes postulated that when the rate of interest is expected to fall, the demand for money is relatively low since people hold bonds and other assets in anticipation of capital gains; when it is expected to rise, however, the demand for money is greater as people seek to avoid capital losses on holding bonds.

So unlike Fisher and the earlier Cambridge school of thoughts who see money as a universally acceptable means of exchange, Keynes recognized that the three motives that underlie the demand for money are the transaction motive, the precautionary motive and the speculative motive. He confined the transactions motive to describing the necessity of holding cash to bridge the gap between receipts and planned regular payments. He called the motive to cover those holdings of money that allowed the economic units to make those payments that cannot be considered regular and planned such as making purchases at unexpectedly favorable prices, the precautionary motive. Keynes's analysis also recognized that the chief importance of interest is to be found in the role it plays in determining the speculative demand for money. So, Keynes, though willing to agree that the demand for money was stable, also found reason to believe that the demand for money in total could be dominated by speculative behavior to such a degree as to make predictions about it based on transactions and precautionary motives alone totally inadequate.
The Modern Quantity Theory, which is comprehensively dealt with in the work of Milton Friedman (e.g. 1959) makes the theory of demand the explicit starting point of the analysis. Friedman's contribution to the monetary theory draws attention away from the motives that prompt the holding of money and - taking for granted the fact that people hold money - carefully analyse the factors that determine how much money people will want to hold under various circumstances.

Friedman begins by postulating that money, like any other asset, yields a flow of services to the person who holds it. Thus the opportunity cost of holding money is the income to be earned from holding bonds and equity (in the sense of durable goods yielding a service income to their owners as well as corporate stock). So, the principle of the diminishing marginal rate of substitution between money and other assets ensures that if the return on any of these other assets rises, the demand for money will fall. Now the return on these other assets has two components to it. First the interest income yield by them must be considered, but so also must be the way in which the market prices are expected to vary. For a forgone capital gain (loss) is as much a part of the opportunity cost of holding money as is interest. As the price of income earning assets varies inversely with the market rate of interest, the expected percentage rate of change of this rate of interest may be used to measure the expected rate of capital gain and loss upon holding other assets. And the percentage rate of change of the rate of interest, is of course opposite in sign to the rate of capital gain (loss).

Though we have talked about the rates of return on various assets as separate variables, it should be obvious that a change in one rate of return will lead to all others also changing. If the rate of return on bonds rises, for example, they will become more attractive to hold so people will try to exchange other assets such as equities for them, thus bidding up their price and bidding down the price of equities, continuing to do so until the rates of return on various assets are brought back into an equilibrium relationship.
If the price level rises the real value of money holdings, denominated as they are in real terms, must fall, and vice-versa. Rising or falling price levels provide a return to money holding, which in the former case will be negative and in the latter case positive. The expected rate of change of the price level must be interpreted as an expected rate of return to money holding and, other things being equal, the higher is the expected rate of return to money holding the more of it will be held and the lower it is the less will be held. Thus the expected rate of change of the price level becomes a potentially important variable in the demand for money function.

Thus this theory specifies certain variables as being important determinants of the demand for money, and also specifies the sign of the relationship that the demand for money might be expected to bear toward them.

Modern theoretical work on the transactions demand for money are due mainly to Baumol (1956) and Tobin (1959) who draw more precise implications about the variables that determine it. They developed the Keynesian demand for money function and make transactions and precautionary balances functions of the level of income and speculative balances a function of the current rate of interest, and the level of wealth. These relationships are thought of as being additive. We then get, as the demand for money (with $W$ representing real wealth).

$$Md = [kY + \lambda(r)(W)]P$$

4.2 The Money Concept

There is no sharp distinction between "money" and "other assets". However the theories that are explicitly based on the transactions motive for holding money emphasize the proposition that a demand for money exists because unlike other assets, money is highly liquid relative to the others. Such theories are theories of the demand for assets that are readily acceptable and transferable in everyday transactions and the money concept to which they apply are currency and demand deposits at commercial banks. The sum of these assets available to the public at any time must constitute the relevant measure of the
money stock so far as concerns theories of the transactions demand for money.

Currency and demand deposits although they have the characteristic as a means of exchange, are not the only assets that possess it. Time deposits and deposits at savings banks may be just as much money also.

Theories which simply rest on the general proposition that money yields a flow of services to those who hold it also raises difficulties. Every asset yields services to its owner, and in defining one set of assets as money and another as not being money, one is really arguing that the services yielded by the various assets in the first category are sufficiently similar to one another to make it possible to treat them as if they were all one asset.

In the context of this more general approach to the problem of the demand for money, the correct definition of money becomes an empirical matter. Meltzer (1963) argued that the M1 (currency plus demand deposits) definition of money is equally stable as the M2 (M1 plus time deposits) definition of money posed by Friedman. Since the coefficient of determination (R-Squared) for the two regression equations: M1 and M2 came out very close, Meltzer concludes that M1 is an equally appropriate definition of money. Chetty (1969) argued that M2 is a better and more stable definition of money as M2 gave the lowest mean squared error. Thus the two definitions of money M1 and M2 have been employed in the course of testing theories of the demand for money in this study.

4.3 Main Issues in the Demand for Money Specification

The main economic issues in estimating the demand for money was listed by Goldfeld (1976):

(a) What should be the appropriate scale variable: current income, permanent income, or wealth?

(b) Is the rate of interest as opportunity cost of holding money an important explanatory variable?

(c) Do inflation rates have an independent role in the demand for money function?
(d) Are there economies of scale in cash holding?
(e) Does growing monetization of the economy affect the demand for money?
(f) Is the demand for money a stable function?

4.3.1 Scale Variable

Little guidance is offered by the economic theory in answering these questions. There is also controversy on empirical evidence. Feige and Pearce (1977), for example, address the question (a) in their survey by saying that selection of current income as scale variable may suggest greater emphasis on the transactive motive for cash balance holdings, whereas permanent income or wealth places greater emphasis on the asset portfolio behavior. Hence the choice of the appropriate scale in estimating the demand for money is an empirical issue.

If income is the appropriate scale variable, which of the following measures income accurately - Gross Domestic Product (GDP), Gross National Expenditure (GNE), or National Income (NI)? What is the income elasticity of demand? Is it greater than one indicating money as a luxury good (Friedman), less than one indicating economies of scale in holding cash balances (Baumol-Tobin) or equal to one (Classical and Keynesian)?

4.3.2 Interest Variable

It has been firmly established theoretically, that the interest rate has an important role in the determination of the demand for money as an asset. There is, however, no agreement as to which interest rate is the relevant measure of the opportunity cost of holding money. Laidler (1969) stated in his survey of literature on the demand for money that nothing is firmly settled in the choice between long-run and short-run interest rates. Feige and Pearce (1977) maintained that on theoretical grounds one would include all possible candidates: the rate on bank time deposits, treasury bills, etc. The Neo-Keynesians tend to take the short-run interest rate, because they are more interested in the short-run processes of the economy. They tend to focus on transactions demand and short-run portfolio adjustments. The monetarists on the other hand, treat the demand for money like the
demand for any durable good because they see money as part of an individual's assets. So, since they are more interested in longer time horizon, the monetarists tend to include the long run rate.

4.3.3 Price Variable

Inclusion of (the expected) inflation rate in the demand for money is also controversial. According to Ando and Shell (1972), inflationary expectations are already reflected in the nominal interest rate and thus indirectly affect the demand for money. On the contrary, in the theoretical writing in the demand for money in the Chicago tradition, the expected inflation rate is given a predominant role since, to monetarists, money serves as alternative for physical goods. In studying cases of hyperinflation in many countries, Cagan (1956) argued that the quantity of real cash balances tends to decline in countries with high inflation rates. This however is an empirical matter as there are cases in which even mild inflation can lead to a decline in demand for real cash balances.

4.3.4 Economies of Scale

The issue of economies of scale of cash holding is an empirical matter. Generally, however, an income elasticity of demand for money greater than unity suggests the absence of economies of scale while one less than unity indicates their presence. Both Baumol and Tobin, deduce from their models that there are economies of scale in holding transaction balances. Friedman's empirical findings suggest that money is a "luxury" and that the relevant elasticity is greater than unity. There is however no real conflict on this issue as money can be a luxury in the absence of economies of scale. For example, in a country like Fiji with well established financial institutions, even though there are economies of scale in cash holding, money may be treated as a luxury good. One aspect of this 'luxury' attribute of money is to be found in its growing use as an economy expands. As it does so, the economy becomes more monetised and subsistence production declines in relative importance. Greater variety of consumption can only be obtained with a greater use of money.
4.3.5 Stable Money Function

A stable demand for money function is meaningful for policy-makers in forecasting money supply, prices and other related macro-economic variables.

The usual criteria of high t-ratios and high R-squared values do not preclude significant shifts in the estimated coefficients between different sub-periods. It is desirable to check for such shifts in order to get some feeling for the stability over time of the demand for money.

The Chow test is used to test the stability of the demand for money function by testing a set of regression coefficients whether they will remain the same over two (or more) periods. The null hypothesis therefore is that no change in structure has occurred.

The Chow test has substantial economic interest. The question of stability over time of the essential parameters of the demand for money has implications for:

(a) Variations in the growth rate of some monetary aggregate are frequently cited as prima facie evidence that monetary policy has been destabilizing. This argument is vitiated if the parameters of the demand function for money have shifted.

(b) The only way to test the forecasting ability of an equation is to examine how well it would have forecast in the past. This can be done by extrapolating with the estimates for one sub-period into another sub-period and observing the prediction errors.

(c) Policy decisions are often predicated on a view as to the nature of certain crucial relationships. Clearly, the policy-maker should be made aware of such parametric changes in the relevant functions that have taken place in the past, if any changes are found.
4.4 Finding a Stable Demand Function for Money for Fiji

4.4.1 Data Source

The data for determining the demand for money for Fiji came from the *International Financial Statistics Yearbook 1985*, of the IMF for the period 1961-1984. Since annual data are used, it has been assumed that either the adjustment of desired and actual money holding is instantaneous or such that it is fully adjusted within the year.

4.4.2 Functional Form

Although the demand for money in the literature is dominated by three functional forms of: the linear additive type, log-linear type, and the linear-non-additive type, the log-linear form is the one most commonly used. The log-linear form is considered by most economists as the most appropriate because it assumes constant rates of change and also because it allows one to test some of the important hypothesis easily. Conventionally, economic variables are treated as rates of change, thus, for the purpose of this study the log-linear form is used.

4.4.3 Estimation Procedure

The single equation estimation method has been used, thereby implicitly assuming that the independent variables are exogenously determined in the sense of being independent of the error term in the demand for money equation, and the reverse connection for money to income and interest rates and other variables did not exist. The results were obtained with ordinary least squares (OLS), using the Cochrane-Orcutt technique to correct for serial correlation.

4.4.4 Specification of the Demand for Money Function

The empirical literature on the specification of the demand for money has given attention to income, interest rate and expected rate of inflation as arguments in the function. Conventionally therefore, the desired demand for real balances is assumed to be a function of real income, interest rate and expected inflation as follows:

$$\ln(M/P)^d_t = a_0 + a_1\ln Y_t + a_2\ln R_t + a_3\ln r_t (4.1)$$

where $M =$ stock of nominal money;
\[ P = \text{price level}; \]
\[ R = \text{interest rate}; \]
\[ Y = \text{real income}; \]
\[ \text{Ir} = \text{expected rate of inflation as the opportunity cost of holding money relative to real goods}; \]

The superscript \( d \) represents desired demand and subscript \( t \) refers to time.

The above expression (1) assumes that there is an instantaneous money market equilibrium and hence the stock of nominal money is considered as a proxy for the demand for money.

In practice however, the assumption of instantaneous adjustment between desired money and actual money holdings may not be feasible. The usual distinction therefore is made between long and short run behavior in the money market with a long run function defined in terms of an aggregate desired cash balance, \( M_t^* \), so that

\[ M_t^* = \alpha^1 Y_t \alpha^2 R_t \alpha^3 \text{Ir}_t \]  \hspace{1cm} (4.2)

and a partial adjustment model of actual cash balances towards this desired level of the form.

\[ \ln M_t - \ln M_{t-1} = \alpha(\ln M_t^* - \ln M_{t-1}) \]  \hspace{1cm} (4.3)

where \( 0 < \alpha < 1 \)

When equation (4.2) and (4.3) are combined, the short run function is derived for estimation purposes as follows.

\[ M_t = \beta Y_t \alpha^1 R_t \alpha^2 \text{Ir}_t \alpha^3 1-\alpha M_{t-1} \]  \hspace{1cm} (4.4)

There is no lag in adjustment if \( \alpha = 1 \). The closer to unity the value of \( \alpha \), the greater the proportion of any discrepancy between actual and desired balances that is made up in the course of the given period.
Thus under money market equilibrium, \( \alpha = 1 \), and the expression (4.4) is identically the same as equation (4.2).

4.4.5 Models to be Tested

In order to find a stable demand for money function for Fiji, the following models are tested in various combinations using both real and nominal terms for the money, income, interest rate and price variations.

\[
\begin{align*}
\text{(1) } \ln M_1 &= a_0 + a_1 \ln Y_n + a_2 \ln R_n \\
\text{(2) } \ln M_2 &= a_0 + a_1 \ln Y_n + a_2 \ln R_n \\
\text{(3) } \ln R M_1 &= a_0 + a_1 \ln Y_r + a_2 \ln R_n \\
\text{(4) } \ln R M_1 &= a_0 + a_1 \ln Y_r + a_2 \ln R_r \\
\text{(5) } \ln R M_2 &= a_0 + a_1 \ln Y_r + a_2 \ln R_n \\
\text{(6) } \ln R M_2 &= a_0 + a_1 \ln Y_r + a_2 \ln R_r \\
\text{(7) } \ln M_1 &= a_0 + a_1 \ln Y_n + a_2 \ln R_n + a_3 \ln R_r \\
\text{(8) } \ln M_2 &= a_0 + a_1 \ln Y_n + a_2 \ln R_n + a_3 \ln R_r \\
\text{(9) } \ln R M_1 &= a_0 + a_1 \ln Y_r + a_2 \ln R_n + a_3 \ln R_r \\
\text{(10) } \ln R M_1 &= a_0 + a_1 \ln Y_r + a_2 \ln R_r + a_3 \ln R_r \\
\text{(11) } \ln R M_2 &= a_0 + a_1 \ln Y_r + a_2 \ln R_n + a_3 \ln R_r \\
\text{(12) } \ln R M_2 &= a_0 + a_1 \ln Y_r + a_2 \ln R_r + a_3 \ln R_r
\end{align*}
\]

where, \( M_1 = \text{Currency plus Demand Deposits}; \)
\( M_2 = M_1 \text{ plus Time Deposits}; \)
\( R M_1 = \text{Real } M_1; \)
\( R M_2 = \text{Real } M_2; \)
\( Y_n = \text{Gross National Product}; \)
4.5 Empirical Results

With regard to income, GNP is taken as an argument in the models rather than GDP because the desire of the people to hold money depends on the income they receive and not the domestic economic activity of Fiji. Bank rate (short term) is used as no data is available on market rates for the whole period of the study. It is expected therefore that this rate will not reflect the condition of financial market in a truly perfect competitive sense since bank rates are set by the monetary authorities.

4.5.1 Empirical Definition of Money

Of the 12 equations regressed, only 4 are statistically significant.

Money demand equations are defined in nominal and real terms and are estimated using the above-mentioned twelve functional equations using M1 and M2 definitions of money. Regression results in tables 4-1 and 4-2 indicate that M2 is a better definition of money than M1 for Fiji in terms of R-squared and t-ratios. This is to be expected as there has been a shift in money holding from money to quasi-money (see figure 4-1).

4.5.2 Income Elasticity for Demand for Money

It can be seen from tables 4-1 and 4-2 that for the narrow definition of money (M1), the income elasticities are less than unity with the real equations having lower values and nominal ones having higher values thereby indicating economies of scale for those parts of M2 that are held primarily for transaction purposes though not as low as 0.50 as predicted by Baumol-Tobin Models.

The broader definition of money (M2) have higher income
### Table 4-1: Ordinary Least Squares Estimates 1961-2 to 1983-4

#### NOMINAL MONEY EQUATIONS

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Intercept</th>
<th>Yn</th>
<th>Rn</th>
<th>Ir</th>
<th>$R^2$</th>
<th>D.W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnM1</td>
<td>-0.507</td>
<td>0.789**</td>
<td>-0.023</td>
<td>-</td>
<td>0.9587</td>
<td>1.875</td>
</tr>
<tr>
<td></td>
<td>(1.55)</td>
<td>(18.36)</td>
<td>(0.12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnM2</td>
<td>-1.627</td>
<td>1.049**</td>
<td>0.180</td>
<td>-</td>
<td>0.9904</td>
<td>1.832</td>
</tr>
<tr>
<td></td>
<td>(7.05)</td>
<td>(39.49)</td>
<td>(1.32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnM1</td>
<td>-0.838</td>
<td>0.866**</td>
<td>-0.031</td>
<td>-0.022</td>
<td>0.9554</td>
<td>1.851</td>
</tr>
<tr>
<td></td>
<td>(2.25)</td>
<td>(14.31)</td>
<td>(0.16)</td>
<td>(2.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnM2</td>
<td>-1.862</td>
<td>1.102**</td>
<td>0.177</td>
<td>-0.014</td>
<td>0.9917</td>
<td>1.855</td>
</tr>
<tr>
<td></td>
<td>(6.85)</td>
<td>(24.34)</td>
<td>(1.25)</td>
<td>(1.28)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Regression Equations

Note:
- figures in parenthesis are t-values
- ** significant at 99% level
### Table 4-2: Ordinary Least Square Estimates 1961 - 1984

**REAL MONEY EQUATIONS**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Intercept</th>
<th>Yr</th>
<th>Rr/Rn#</th>
<th>Ir</th>
<th>R²</th>
<th>D.W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnRM1</td>
<td>-0.712</td>
<td>0.584</td>
<td>-0.179#</td>
<td>-</td>
<td>0.5928</td>
<td>1.934</td>
</tr>
<tr>
<td></td>
<td>(1.82)</td>
<td>(4.83)</td>
<td>(0.80)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM1</td>
<td>-0.962</td>
<td>0.539</td>
<td>0.014</td>
<td>-</td>
<td>0.5610</td>
<td>1.924</td>
</tr>
<tr>
<td></td>
<td>(4.36)</td>
<td>(4.34)</td>
<td>(0.60)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM2</td>
<td>-1.599</td>
<td>1.098**</td>
<td>0.227#</td>
<td>-</td>
<td>0.9613</td>
<td>1.838</td>
</tr>
<tr>
<td></td>
<td>(7.04)</td>
<td>(20.30)</td>
<td>(1.79)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM2</td>
<td>-1.211</td>
<td>1.122</td>
<td>0.001</td>
<td>-</td>
<td>0.9432</td>
<td>1.859</td>
</tr>
<tr>
<td></td>
<td>(8.74)</td>
<td>(15.26)</td>
<td>(0.06)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM1</td>
<td>-1.022</td>
<td>0.755</td>
<td>-0.113#</td>
<td>-0.025</td>
<td>0.6520</td>
<td>1.845</td>
</tr>
<tr>
<td></td>
<td>(2.63)</td>
<td>(5.32)</td>
<td>(0.54)</td>
<td>(2.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM1</td>
<td>-1.270</td>
<td>0.781</td>
<td>0.010</td>
<td>-0.031</td>
<td>0.6149</td>
<td>1.631</td>
</tr>
<tr>
<td></td>
<td>(4.84)</td>
<td>(4.74)</td>
<td>(0.47)</td>
<td>(2.43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM2</td>
<td>-1.749</td>
<td>1.187**</td>
<td>0.252#</td>
<td>-0.012</td>
<td>0.9670</td>
<td>1.870</td>
</tr>
<tr>
<td></td>
<td>(6.93)</td>
<td>(12.92)</td>
<td>(2.03)*</td>
<td>(1.15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnRM2</td>
<td>-1.341</td>
<td>1.219</td>
<td>0.008</td>
<td>-0.011</td>
<td>0.9432</td>
<td>1.859</td>
</tr>
<tr>
<td></td>
<td>(6.56)</td>
<td>(8.99)</td>
<td>(0.35)</td>
<td>(0.83)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Regression Equations

Note:
- Figures in parenthesis are t-values
- # nominal interest rate (Rn)
- * significant at 95% level
- ** significant at 99% level
Figure 4-1: Money and Quasi-Money, Fiji, 1961-1984.
elasticities ranging from 1.05 to 1.22 with nominal equations having the lower values. (Inclusion of the price variable also seems to lead to higher income elasticity). This supports the monetarist contention and the model predicted by Brunner and Meltzer and the proportionality principle. It also supports the view that, on the broader definition of money, money is essentially a luxury good.

The above can be explained by structural shifts that has taken place to Fiji's demand for money function. Like any other developing country, Fiji would be expected to undergo structural shifts in its economy and hence its money demand function. The shifts could be due to changes in interest rates and bank practices. As interest rates on quasi-money rises people will shift their asset holdings towards quasi-money. Similarly, as bank practices become more liberal by giving people better terms and condition, like allowing them to withdraw their deposits on demand, there will be a shift towards time and savings deposits.

4.5.3 Interest Elasticity Parameters

From tables 4-1 and 4-2, the following inferences can be drawn. The short-run rate of interest (bank rate) consistently has positive algebraic signs though mostly insignificant. Out of the 12 estimates, only 2 are found to be statistically significant at 90% level of confidence. All of these equations have positive signs contrary to economic theoretical expectations. This however is quite possible as the bank rate is controlled by the monetary authority of Fiji and may be changed in response to current developments. That is, if the money stock is rising more rapidly than the authorities desire, bank rate may be raised to restrain monetary expansion. Hence, bank rate may rise as money increases rather than falling as a market determined rate is expected to move. For example, in 1983, the Reserve Bank of Fiji increased its minimum lending rate by 1 percent to 10.5 percent after it was found that the domestic liquidity growth was excessive relative to real growth rate of output in the economy.¹

¹see the Annual Report of Report of the Reserve Bank of Fiji
The implication of this is that the interest rate is kept by the monetary authorities at a level that may be higher than the effective rate determined by the market so as to keep the money supply under control. Thus the positive interest elasticity for the demand for money function in Fiji reflects the responsible actions of the Fiji monetary authorities rather than the effect of the market forces.

4.5.4 Price Elasticity of Demand across Money Demand Equations

Generally regression results in tables 4-1 and 4-2 show that the price variables, although having the correct algebraic signs, are mostly insignificant. It also has very low parameter values ranging from 0.011 to 0.031. In equations where it has significant values, the R-squared values are very low.

4.5.5 Stability

Chow tests were performed on the 4 best equation estimates with reasonably high R-squared values to test for their structural stability. It was found that the only stable functions are equations:

\[ \ln RM2 = -1.599 + 1.098 \ln Yr + 0.227 \ln Rn \]

\[ \ln RM2 = -1.806 + 1.187 \ln Yr + 0.269 \ln Rn - 0.014 \ln Fr \]

Both these functions have R-squared values that are almost the same. The second equation however, appears to be the better function statistically of the two and hence is chosen for the purpose of testing the monetary approach to the balance of payments for Fiji.

4.5.6 Conclusion

The above function means that the real demand for broad money (M2), is dependent on real income and nominal interest rate and the expected price change.

Due to data limitations, the above conclusions have to be taken as tentative and subject to further validation.

\(^2\text{see appendix D for the result of the Chow test on the chosen function}\)
CHAPTER 5
RELEVANCE OF THE MONETARY APPROACH TO BALANCE OF PAYMENTS OF FIJI

5.1 Empirical Test

In testing the monetary approach to the balance of payments of Fiji, the following stable demand for money function estimated in chapter 4 was used;

\[ \ln R^M_2 = -1.806 + 1.187 \ln Y_r + 0.269 \ln R_n - 0.014 \ln r \]

This function was used to calculate the desired demand for money in Fiji for the period of the study (1961-1984). Actual real M2 is the endogenous variable with real GNP and nominal bank interest rate and change in consumer price index as a proxy for expected inflation, as exogenous variables in the function.

From estimated desired demand for money, changes in demand for money for each year was calculated. Actual changes in domestic credit and in international reserves were also calculated (see table 5-1).

Table 5-1 below has shown that the monetary approach is a relevant theory in explaining the balance of payments of Fiji in most years. The analysis was based on the monetary identity equation, \( \Delta R = \Delta M^*_2 - \Delta DC \). The interpretation of this equation is as follows:

If the increase in desired demand for money (\( \Delta M^*_2 \)) is greater than the increase in domestic credit (\( \Delta DC \)), then it is expected that there would be an increase in international reserves, i.e., a positive (\( \Delta R \)). If however changes in desired demand for money is less than changes in
Table 5-1: Desired Money, Domestic Credit and Reserves (F$ in millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual M2</th>
<th>Desired M2*</th>
<th>Changes in Desired M2*</th>
<th>Changes in DC</th>
<th>Column Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>27.5</td>
<td>28.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1962</td>
<td>27.7</td>
<td>32.3</td>
<td>4.2</td>
<td>-1.2</td>
<td>5.4</td>
</tr>
<tr>
<td>1963</td>
<td>35.0</td>
<td>34.6</td>
<td>2.3</td>
<td>-1.4</td>
<td>3.7</td>
</tr>
<tr>
<td>1964</td>
<td>41.8</td>
<td>37.9</td>
<td>3.3</td>
<td>-0.3</td>
<td>3.6</td>
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<td>1965</td>
<td>38.3</td>
<td>40.8</td>
<td>2.9</td>
<td>1.0</td>
<td>1.9</td>
</tr>
<tr>
<td>1966</td>
<td>40.7</td>
<td>42.6</td>
<td>1.8</td>
<td>4.3</td>
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<tr>
<td>1967</td>
<td>43.0</td>
<td>47.5</td>
<td>4.9</td>
<td>-0.7</td>
<td>5.6</td>
</tr>
<tr>
<td>1968</td>
<td>47.4</td>
<td>46.3</td>
<td>-1.2</td>
<td>5.1</td>
<td>-6.3</td>
</tr>
<tr>
<td>1969</td>
<td>56.0</td>
<td>50.5</td>
<td>4.2</td>
<td>-1.5</td>
<td>5.7</td>
</tr>
<tr>
<td>1970</td>
<td>66.1</td>
<td>62.4</td>
<td>11.9</td>
<td>7.9</td>
<td>4.0</td>
</tr>
<tr>
<td>1971</td>
<td>78.6</td>
<td>69.1</td>
<td>6.7</td>
<td>5.5</td>
<td>1.2</td>
</tr>
<tr>
<td>1972</td>
<td>96.6</td>
<td>87.4</td>
<td>18.3</td>
<td>15.1</td>
<td>3.2</td>
</tr>
<tr>
<td>1973</td>
<td>110.7</td>
<td>118.1</td>
<td>30.7</td>
<td>8.6</td>
<td>22.1</td>
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<tr>
<td>1974</td>
<td>153.4</td>
<td>159.6</td>
<td>41.5</td>
<td>31.6</td>
<td>9.9</td>
</tr>
<tr>
<td>1975</td>
<td>194.2</td>
<td>205.7</td>
<td>46.1</td>
<td>-0.1</td>
<td>46.2</td>
</tr>
<tr>
<td>1976</td>
<td>200.4</td>
<td>221.8</td>
<td>16.1</td>
<td>37.2</td>
<td>-21.1</td>
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<td>1977</td>
<td>236.2</td>
<td>224.7</td>
<td>2.9</td>
<td>20.2</td>
<td>-17.3</td>
</tr>
<tr>
<td>1978</td>
<td>255.4</td>
<td>238.5</td>
<td>13.8</td>
<td>31.3</td>
<td>-17.5</td>
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<td>1979</td>
<td>305.9</td>
<td>291.6</td>
<td>53.1</td>
<td>52.1</td>
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<tr>
<td>1980</td>
<td>324.8</td>
<td>347.1</td>
<td>55.5</td>
<td>7.4</td>
<td>48.1</td>
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<tr>
<td>1981</td>
<td>364.3</td>
<td>383.9</td>
<td>36.8</td>
<td>47.9</td>
<td>-11.1</td>
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<tr>
<td>1982</td>
<td>395.3</td>
<td>398.5</td>
<td>14.1</td>
<td>54.3</td>
<td>-40.2</td>
</tr>
<tr>
<td>1983</td>
<td>443.7</td>
<td>437.1</td>
<td>38.6</td>
<td>47.8</td>
<td>-9.2</td>
</tr>
<tr>
<td>1984</td>
<td>490.0</td>
<td>483.9</td>
<td>46.8</td>
<td>31.1</td>
<td>15.7</td>
</tr>
</tbody>
</table>

Note: Columns (6) and (7) are compared in testing the Monetary Approach to Balance of Payments for Fiji.

Changes for each year in these two columns, (6) and (7), should have the same signs. A different sign would indicate that the Monetary Approach is not relevant in explaining the Balance of Payments for that year.

# Indicate years that are not consistent with the Monetary Approach to Balance of Payments theory.
domestic credit changes in international reserves is expected to be negative.

5.1.1 Domestic Credit Creation

From the monetary equation, \( M = DC + R \), where \( M \) is money, \( DC \) is domestic credit and \( R \) is international reserves, it could be deduced that a lasting increase in the rate of credit expansion by the monetary system will, by itself, gradually bring about:

1. the same increase in the rate of money income and of the stock of money;
2. a rate of loss in reserves that will approach the difference between the rate of credit expansion and the desired increase in the money stock;
3. an increase in the rate of imports equal to the excess rate of credit expansion;

In certain countries, bank credit tended to expand particularly rapidly after exchange reserves had increased. But from the vantage point of monetary authorities, a different approach is a more reasonable one. Credit expansion is subject to the responsibility of the banking system. It may be difficult, perhaps in some circumstances, for the system to withstand demands for credit from the government or from other insistent borrowers. This is because, in such circumstances, the desire to make public and private development expenditures, from many points of view, could be the cause of the expansion in the economy. However for purposes of monetary analysis and monetary policy, the economic development could be financed by higher taxes or foreign loans and private developments could be financed by restriction of consumption. In a real sense therefore, the credit expansion is the cause of the payments problem. If credit expansion by the banking system is spent by

---

1. Compare with figure 5-3 for income velocity of M2 in Fiji
2. Compare with figure 5-2 for ratio of reserve money to M2
borrowers to pay out as income, e.g., in connection with investment activities or government deficit spending, there will be a loss of reserves equaling the excess injection of credit.

In the case of Fiji, as recorded in table 5-1, a monetarist relation linking changes in international reserves to changes in domestic credit appears to hold in most years. The exceptions to this relation in less than one-fifth of the years under this study, indicates that there are other forces at work on Fiji's balance of payments, that should be examined. Their relatively small number also indicates that the monetay approach provides a valid starting point for any analysis of Fiji's international economic problems.

5.2 Projection of Monetary Aggregates

If economic developments relating to national income, the rate of inflation, balance of payments, unemployment, etc., are unfavourable, government policymakers will desire to take corrective actions including changes in monetary aggregates. Usually, before taking any monetary or credit policy measure, the authorities will need some forecasts in respect of the monetary aggregates concerned so that they can compare the likely outcome with and without policy measure under consideration.

Some monetary aggregates, such as net domestic credit of the monetary authorities, are controlled by the monetary authorities themselves. Other monetary aggregates reflect performances of various sectors of the economy; for example, the change in net foreign assets of the monetary authorities reflects the balance of payments outturn.

In order to make the projections realistic, it will be necessary to review the performance of the banking system in the past few years and to observe the outlook or the objectives in relation to the balance of payments and to government budget operations. Developments in output, prices, and possibly other economic aggregates that closely relate to the monetary aggregates would have to be predicted. The projected amounts of monetary aggregates must be consistent with the expected overall economic activity in the future period. For example, on the
balance sheet of the monetary authorities, the planned expansion of the net domestic credit of the monetary authorities plus desired (or forecast) increase in net foreign assets must be equal to forecast increase in reserve money. Thus, if this balance sheet identity is not observed, the policy contemplation and the economic objectives are not compatible, given other variables over which the authority have limited control.

The consolidated monetary account - namely, the monetary survey- is a good basis over which to make monetary projections, as expected results of government operations and of the balance of payments are reflected in this monetary account. Furthermore, monetary policies often involves a restraint on credit expansion. The projected growth of monetary stock (money and quasi-money) consistent with the expected rate of credit expansion can be derived from this account. When the target level for net foreign assets of the banking system, the target rate for growth in income, and other targets are set and necessary policy measures to achieve these targets are spelled out, the monetary survey in the forecast period becomes a desired balance sheet for the banking system and often constitutes a component in a financial program.

5.2.1 Formulating a Financial Program for Fiji using this Approach

Using the stable desired demand for money function estimated above, and on the basis of assumed values for target variables of income, interest rate, and expected inflation (exogenous variables) forecast desired demand for money could be estimated through the statistical procedure of simulation or by mechanical calculation. Thus if Net Foreign Assets is taken as the target variable and a value that is desirable in view of the circumstances is assigned to it, desired domestic credit for the period could then be estimated. In this financial program for the country, the rate of growth of real national income, the interest rate and expected inflation are the policy objectives that must be realistic and also be consistent with other policy objectives.

Once a desired money stock has been estimated and the target value for net foreign assets has been fixed, the amount of domestic credit of the banking system for the forecasting years can be calculated; that is:
\[ DC_t = Md_t - NFA_t \] (5.1)

where DC stand for domestic credit, Md for money stock, NFA for net foreign assets, and the subscript \( t \) stands for the value of the variable at the end of the year.

Thus, in order to reach the specified target for net foreign assets, the authorities would have to ensure that domestic credit created by the banking system by the end of the year does not exceed the amount.

\[ \Delta DC_t = DC_t - DC_{t-1} \] (5.2)

where \( DC_t \) is given by equation (5.1) and the subscript \( t-1 \) stands for the value of the variable at the beginning of the year.
Figure 5-1: Ratio of Reserve Money to Money plus Quasi-Money.
Figure 5-2: Income Velocity of Money plus Quasi-Money (1980=100)
CHAPTER 6
SUMMARY AND CONCLUSIONS

As stated in Chapter One, the major objective of this study is to test the proposition that the balance of payments is a monetary phenomenon. This is done by testing the relevance of the monetary approach to the balance of payments in the context of Fiji.

The study has therefore been focussed on two things:

1. Finding a stable demand for money function for Fiji, and
2. Testing how well the monetary approach explains changes in the balance of payments in Fiji.

The major findings of the study are as follows:

(a) The M2 definition of money explains the behavior of the economic units\(^1\) better than does M1. This could be explained by the fact that there has been a marked shift in money holding in Fiji from money to quasi-money due mainly to both attractive interest rates on time and demand deposits and improvement in bank practices.

(b) Gross National Product (GNP) has both a higher level of significance and explanatory power than does GDP. This could be explained by the fact that the desire of people to hold money is determined more by income they have at their disposal than the level of domestic economic activities in the country.

\(^{1}\)households and enterprises
(c) The interest elasticity calculated for the stable demand for money function for Fiji has a positive sign which does not agree with theoretical expectations which says that a rise in interest rate would result in a fall in desired demand for money holding. An explanation for this discrepancy is that the role of the interest rate here reflects the responsible actions of the monetary authorities in determining the desired demand for money holding in Fiji. It must be noted here however that the administered bank rate had to be used instead of a market rate.

(d) The proxy (changes in consumer price index) for the price level has very little effect on the desired demand for money holding. This may be due to the fact that people are used to price changes in Fiji that they have considered it as a normal phenomenon, and hence would not change their expectations so as to influence their decisions on their holding.

(e) International reserve growth and the balance of payments are positively related to economic growth and the income elasticity for money and negatively related to the domestic credit expansion.

(f) With no domestic growth, international reserve growth and balance of payments are inversely related to domestic credit expansion.

These results are to be contrasted with various Keynesians theories of the relation between economic growth and balance of payments. According to one such theory derived from the multiplier analysis.
economic growth must worsen the balance of payments through increasing imports relative to exports; this theory neglects the influence of the demand for money on export supply and import demand and on the international flow of securities. According to another theory, domestic credit expansion will tend to improve the balance of payments by stimulating investment and productivity increase and so lowering domestic prices in relation to foreign prices and improving the current account through the resulting substitutions of domestic for foreign goods in the foreign and domestic markets; this theory deduces the consequences of domestic credit expansion without reference to the monetary aspect of balance-of-payments surpluses or deficits.

An economy growing steadily in real terms, at constant prices and interest rates demands a growing stock of real and therefore nominal money balances; and if the domestic credit component of the money supply grows at the same rate, so must the international reserve component, with the result that the country will run a balance of payments surplus equal to a constant proportion of its national income and growing at the same time. A deficit will develop if domestic credit expands sufficiently more rapidly than real output at constant prices.

Thus, for a growing country like Fiji, it is important to make some provision for increasing its international reserves over time to provide the extra safety, convenience, choice of adjustment measures, and cushioning for bad harvests that foreign reserves can provide. This would therefore mean a more effective control of domestic credit extended to the public and private sectors. Generally monetary authorities allow too much credit when there is an inflow of international reserves. This might not be a healthy thing to do as the country could very well need to do some sterilization during periods of no domestic growth.

A balance of payments surplus or deficit is not in itself, as has often been assumed, evidence that the economy in question is in fact out of equilibrium. The central message of the monetary theory is that, a growing open economy, buffeted by external variations in prices and
interest rates, will have a varying demand for money, which would only fortuitously be supplied exactly from domestic sources. A country's balance of payments, in other words, could be positive or negative over the course of a year even if all asset and commodity markets in the country were continuously in equilibrium for the flow of money into the country during the year could exactly meet the year's change in the demand for money.

The foregoing analysis therefore suggests that the Monetary Approach to the Balance of Payments can provide useful guidance for better domestic credit control by the monetary authorities. It also reveals the simplicity and directness of this approach relative to other approaches to the balance of payments.

The central point relevant to this study is that if Fiji is subject to a chronic condition of balance-of-payments deficit as a result of such a constellation of causal factors, the only possible long-run remedy within the control of the national policy-making authorities is reduction in the rate of domestic credit expansion. Application of the conventional balance of payments policies like: the deflation of money supply or of aggregate demand by fiscal policy, devaluation, import restriction or export subsidization will not remedy the problem as these will only create a temporary balance of payments surplus. As has been shown from the empirical test in chapter 5, domestic credit expansion appears to be the major determinant of the evolution of the balance of payments.

Finally, this finding, if accurate, is of relevance from the policy point of view because the monetary authorities can clearly control the rate of Central Bank credit expansion. Their control over this variable may enable the monetary authorities, for any given demand for money, to attain their desired stock of international reserves. This study has also shown that the bank rate is not a suitable variable in determining the desired demand for money under a freely operating market as it does not reflect the actions of the market forces but rather that of the monetary authorities' responsible actions.
BIBLIOGRAPHY


1976b, pp187-221.


[37] ----, 'Money and Wealth in an Open Economy Income-Expenditure Model,' in Frenkel and Johnson, eds., 1976b, pp222-236.


APPENDIX A

STRUCTURE OF EXPORTS BY MAJOR COMMODITY, 1979-1984

(PERCENTAGE)

<table>
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<tbody>
<tr>
<td>Sugar</td>
<td>69.1</td>
<td>73.9</td>
<td>67.0</td>
<td>68.8</td>
<td>62.7</td>
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<td>Coconut products</td>
<td>6.9</td>
<td>2.7</td>
<td>3.2</td>
<td>3.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Gold</td>
<td>3.8</td>
<td>5.2</td>
<td>6.0</td>
<td>8.5</td>
<td>9.5</td>
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<tr>
<td>Molasses</td>
<td>4.3</td>
<td>5.1</td>
<td>4.9</td>
<td>2.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Forest Products</td>
<td>1.6</td>
<td>2.2</td>
<td>1.9</td>
<td>2.2</td>
<td>2.4</td>
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<tr>
<td>Others</td>
<td>14.3</td>
<td>10.9</td>
<td>17.0</td>
<td>14.3</td>
<td>17.7</td>
</tr>
<tr>
<td>Total</td>
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<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
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APPENDIX B

ACTUAL GROWTH PERFORMANCE, 1980-1983 AND PLAN TARGETS.
(BASED ON GDP AT FACTOR COST IN CONSTANT 1980 PRICES)

<table>
<thead>
<tr>
<th>Category</th>
<th>DP8 Growth Targets</th>
<th>Actual Performance 1980/1983</th>
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<tbody>
<tr>
<td>1. Agriculture and Forestry</td>
<td>4.6</td>
<td>-3.1</td>
</tr>
<tr>
<td>2. Mining and Quarrying</td>
<td>4.6</td>
<td>15.2</td>
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<tr>
<td>3. Manufacturing</td>
<td>5.8</td>
<td>-2.6</td>
</tr>
<tr>
<td>4. Electricity, Gas and Water</td>
<td>4.5</td>
<td>3.8</td>
</tr>
<tr>
<td>5. Construction</td>
<td>7.8</td>
<td>-10.1</td>
</tr>
<tr>
<td>6. Own Dwellings</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>7. Trade, Hotels and Restaurant</td>
<td>)</td>
<td>-1.4</td>
</tr>
<tr>
<td>8. Transport and Communication</td>
<td>)</td>
<td>6.1</td>
</tr>
<tr>
<td>9. Finance, Insurance and Business, Services</td>
<td>4.4</td>
<td>2.1</td>
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<tr>
<td>10. Community, Social and Personal Services</td>
<td>)</td>
<td>-0.02</td>
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<td>GDP at Factor Cost</td>
<td>4.7</td>
<td>-1.1</td>
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APPENDIX C

EXTERNAL DEBT, 1979-83 (US$ MILLION)

<table>
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<tbody>
<tr>
<td>External public-debt outstanding</td>
<td>220.2</td>
<td>300.8</td>
<td>341.0</td>
<td>362.6</td>
<td>343.7</td>
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<td>External private-non-guaranteed debt outstanding</td>
<td>52.8</td>
<td>53.8</td>
<td>54.5</td>
<td>54.4</td>
<td>57.7</td>
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<tr>
<td>Debt service ratio/a</td>
<td>3.0</td>
<td>3.4</td>
<td>4.9</td>
<td>6.6</td>
<td>7.4</td>
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<td>Debt service ratio/b</td>
<td>5.2</td>
<td>5.5</td>
<td>7.9</td>
<td>8.3</td>
<td>9.4</td>
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<tr>
<td>Memorandum items</td>
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<tr>
<td>External debt/GDP</td>
<td>29.0</td>
<td>31.2</td>
<td>36.3</td>
<td>34.4</td>
<td>35.2</td>
</tr>
<tr>
<td>Total service payment/d(%)</td>
<td>2.5</td>
<td>2.3</td>
<td>3.8</td>
<td>3.5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

/a As % of exports of goods and nonfactor services excluding private non-guaranteed debt.

/b As % of exports of goods and nonfactor services including private non-guaranteed debt.

/c Including private non-guaranteed debt.

/d Including private non-guaranteed debt/GDP.

Source: Bureau of Statistics
APPENDIX D

CHOW TEST FOR THE STABILITY OF THE FOLLOWING DEMAND FOR
MONEY FUNCTION (1961–1984)

\[ \ln RM2 = -1.806 + 1.187 \ln Yr + 0.269 \ln Rn - 0.14 \ln Ir \]

Unexplained variation for the whole period of the study:
\[ \text{Sum of Squared Residuals (1961–1984) = 0.1652188} = Q1 \]
with \((n1 + n2 - K) = 21\) degrees of freedom

Splitting the whole period into two, where the first period
represents period before Fiji’s independence and the second
period, after its independence.

(2) Unexplained variation for first period:
\[ \text{Sum of Squared Residuals (1961–1972) = 0.04366971} \]
with \((n1 - K) = 8\) degrees of freedom

(3) Unexplained variation for second period:
\[ \text{Sum of Squared Residuals (1973–1984) = 0.07324193} \]
with \((n2 - K) = 8\) degrees of freedom

(4) The sum of the squared residuals between the two separate
regressions (first and second period) is
\[ 0.04366971 + 0.07324193 = 0.11691164 = Q2 \]
with \((n1 + n2 - 2K) = 16\) degrees of freedom

(5) The difference of the above sum (Q2) and the whole period
residuals (Q1) is:
\[ Q3 = Q1 - Q2 = 0.0483072 \text{ with } K = 4 \text{ degrees of freedom.} \]

(6) The \(F^*\) ratio is
\[
F^* = \frac{Q3/K}{Q2/(n1 + n2 - 2K)} = \frac{0.0483072/4}{0.11691164/16} \approx 2.48
\]

(7) The theoretical value of \(F\) at the 95\% level of significance
with \(v1 = 4\) and \(v2 = 16\) degrees of freedom is 3.01.
Thus \(F^* < F\) critical at 95\% and hence null hypothesis is
accepted. That is, the two relationships do not differ at the
95\% level. So we could conclude that the demand for money for
Fiji using the above functional form is stable throughout the
period of the study.