MONEY, INFLATION AND THE BALANCE OF PAYMENTS

IN CENTON

MONEY SUPPLY, INFLATION AND THE BALANCE OF PAYMENTS - A CASE STUDY OF CEYLON (1960 - 1971)

by

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RESUME

Cette thèse analyse l'hypothèse qu'une politique monétaire expansionniste accompagnée d'une politique de financement d'un déficit budgétaire a été un facteur important de l'inflation et due déficit de la balance des paiements au Ceylan pour la période 1960 - 71.

Une importante conclusion de cette thèse est que la masse monétaire a eu un impact significatif sur le revenu monétaire et le niveau des prix. Une augmentation de 1% des emprunts du gouvernement de la banque centrale a contribué à une augmentation de 0.4% de la masse monétaire. A son tour, une augmentation de 1% de la masse monétaire a élevé le revenu monétaire et le niveau des prix de 0.80% et de 0.40%, respectivement.

L'accroissement de la demande interne a amené une augmentation du déficit de la balance des paiements de deux façons. Premièrement, les importations se sont accrues, surtout les importations de matière premièr et de machinerie. Deuxièmement, l'accroissement du niveau des prix a réduit la demande étrangère pour les exportations due Ceylan.

ABSTRACT

This thesis examines the argument that monetary expansion associated with the financing of the budget deficit has been an important factor in inflation and balance of payments deficits in Ceylon during the period 1960 - 1971.

A major finding of the thesis is that money supply has exerted a significant impact on nominal income and the price level. A 1 percent increase in government borrowing from the banking system has contributed to a 0.4 percent increase in money supply while a 1 percent increase in money supply in turn has raised nominal income and the price level by 0.80 and 0.40 percent respectively.

The increase in domestic demand has led to an increase in the balance of payments deficit in two ways. Firstly, there has been an increase in imports, especially of industrial inputs. Secondly, the increase in the domestic price level has reduced the foreign demand for some Ceylonese exports.

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PREFACE

This thesis analyses how increases in the money supply have led to inflation and balance of payments deficits in Ceylon during the period, 1960-1971. To be sure, monetary expansion need not be the only factor⁹ responsible for these economic problems. There could be other factors at work. This thesis tries to show that monetary expansion has been an important factor contributing to inflation and balance of payments deficits in Ceylon.

Some justification has to be offered for undertaking First, to the best of my knowledge, no study this thesis. has ever been done on the problems of inflation and balance of payments deficits facing Ceylon. The original contribution of this thesis is to provide a monetary interpretation of these problems. Second, although Ceylon's economic problems have their own peculiarities, they also bear a close resemblance to the economic problems of other developing Therefore, a study of the Ceylonese experience countries. will improve our understanding of the nature of the economic problems of developing countries in general. Finally, this thesis will be of special interest to the westerner because the economic problems of developing countries tend to be somewhat different from those of advanced countries due to political, sociological, and structural dissimilarities.

In the formulation and preparation of the thesis my main debt of gratitude is to Professor J. A. Galbraith for

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INTRODUCTION

Developing countries which undertake development programmes generally experience inflation and balance of payments difficulties. This thesis argues that the particular method of financing economic development bears a heavy responsibility for these problems. Specifically, the central hypothesis which is examined in this study is that monetary expansion originating primarily from government's fiscal operations is one of the principal factors contributing to inflation and balance of payments deficits in developing countries. This hypothesis is tested with Ceylonese data for the period, 1960-71.

Since it is common for governments in developing countries to assume the primary responsibility for economic development, attempts to improve the rate of economic growth often involve substantial budget deficits. There are three ways of financing budget deficits -- mobilising domestic savings, attracting foreign capital, and by borrowing from the banking system. The first two methods are not widely used in developing countries for the following reasons. Domestic savings as a rule are very low in these countries; similarly, as the inflow of foreign capital is largely determined by political considerations, no country would use it as a regular method of financing budget, deficits. Therefore, governments in these countries frequently resort to borrowing from the banking system. The increase in money

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supply resulting from these fiscal operations often leads to balance of payments deficits through an increase in imports. Governments usually respond to balance of payments deficits by placing restrictions on imports. This produces inflationary pressures at home. However, import controls are rarely successful in solving the country's balance of payments problem. With regard to exports, rising domestic prices often tend to undermine their international competitiveness. Moreover, excessive emphasis on manufacturing activity usually associated with policies of import substitution tends to discriminate against traditional exports. Hence exports tend to stagnate or decline at least during the initial stages of development. With regard to imports, there are two influences at work. On the one hand, the increase in domestic income leads to an increase in imports of consumer goods which are not subject to restrictions. On the other hand, the growth of domestic industry often requires the relaxation of existing restrictions on imports of intermediate and investment goods. Therefore, balance of payments deficits tend to become larger at the prevailing fixed exchange rate and eventually governments are often compelled to abandon import restrictions in favour of other policies such as devaluationand import liberalization.

Most of these developments occurred in Ceylon during the period, 1960-71. At the beginning of this period; Ceylon was faced with a severe balance of payments deficit. Export earnings had suffered a drastic decline mainly due to poor

world market conditions whereas expansionary fiscal and monetary policies had stimulated the demand for imports. The Government introduced 'import controls in the early 1960's to correct the balance of payments deficit. During the early years the Government also borrowed heavily from the central The resulting increase in the money supply along with bank. the drastic reduction of imports generated inflation in the economy. Moreover, despite import controls, there was a continuous deterioration in the balance of payments. Export receipts continued to decline while imports could not be re-Therefore, the Government had to resort to duced any more. other measures such as the devaluation of 1967. But attempts made to curb the inflationary pressure in the economy were not very successful. During the major part of this period, the increase in money supply could be attributed mainly to budget deficits and hence was beyond the control of the central bank. Furthermore, the central bank itself encouraged the extension of commercial bank credit to the private sector provided it was used for productive purposes. The increase in real domestic output during the entire period was fairly small and acute shortages were experienced in many sectors of the economy.

Chapter One of this study contains a comprehensive account of monetary policy in Ceylon during the period 1960 -71. The purpose of this chapter is to provide a background for the subsequent discussion of Ceylon's economic problems. Chapter Two deals with the survey of the literature in this

field. Chapter Three contains the basic model we have used in this study. The remaining chapters deal with the statistical application of the model. Chapter Four deals with the demand for and supply of money. Chapter Five contains an analysis of price movements. Chapter Six is devoted to a discussion of the balance of trade difficulties of Ceylon.

CHAPTER ONE

SURVEY OF MONETARY POLICY IN CEYLON (1960-71)

The purpose of this chapter is to provide a background of the main developments in monetary policy in Ceylon during the period, 1960-71.

The first part deals with the structural characteristics of the banking system. The growth of commercial banks, changes in their lending policies, and the beginnings of central banking are described here. Part two deals with the tools of monetary policy. This is followed by a detailed description of monetary policy during the period of this study.

The Banking System in Ceylon

Commercial banking evolved in Ceylon as a means of financing export and import business and the plantations.¹ Until the early 1960's with the sole exception of the Bank of Ceylon, all the commercial banks were foreign owned and the more important of them were branches of a few financially strong British banks whose operations extended to many colonial territories. The overseas head office placed limits on the size and types of loans that the local branch managers in

^{1.} For a very comprehensive account of the origins of commercial banking in Ceylon, see Kannangara (67).

Ceylon could make at their own discretion. The local branch did not feel the need for a central bank because it could always borrow from the head office abroad whenever it was necessary to obtain more funds. Following the British tradition, the banks acted as a source of short-term capital and refused to finance long-term investment. Due to the great importance attached to collateral security and the extremely conservative assessment of credit risks by the commercial banks, the majority of the Ceylonese population found that the banking system could not meet their needs. The only collateral that the peasant could provide, if he could offer " any, was land. Peasant land-holdings have always been notorious for their small size, and to make matters worse, very often the peasant could not furnish documentary evidence to prove his ownership rights to the land.² Finally, most of the bank offices were concentrated in Colombo. In other words, the system of banking which existed before the 1960's can be described as unit banking as opposed to branch banking.

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Several important developments which took place in the 1960's completely changed the above picture of Ceylonese banking. The most noteworthy event was the establishment of the People's Bank in July 1961, which was aimed at helping the peasant cultivator and the small scale industrialist. The People's Bank was empowered to grant:³

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^{2.} Due to his inability to obtain credit from the banks, the peasant had to depend upon the money lenders who usually charged exorbitant interest rates. The literature on rural credit is ably surveyed in Long (78).

^{3.} People's Bank Act, No. 29 of 1961, section 5, sub-section 1.

- "(1) short-term, medium-term, and long-term loans and other accommodation to cooperative societies, approved societies and Cultivation Committees;
 - (2) short-term, medium-term, and long-term loans to cooperative societies, approved societies, Cultivation Committees, individuals for constructing, repairing or renovating buildings;
 - (3) short-term, medium-term, and long-term loans and other accommodation to any person who intends to carry on or is carrying on any agricultural, industrial or business undertaking which, in the opinion of the Board of Directors of the Bank, is a small scale undertaking; and
 - (4) short-term loans to persons resident in rural areas for the purchase of articles necessary for their personal or domestic requirements."

The affairs of the People's Bank are under the control of the Government. All the members of its board of directors are appointed by the Minister of Finance.⁴ The Government is the major shareholder and the remaining shares are made available to the cooperatives.⁵ Finally, no loans and overdrafts can be granted to any person or agency other than the cooperative societies without the approval of the Minister of Finance.⁶

The next important development was the nationalization of the Bank of Ceylon. By an Act of Parliament in 1961, all the shares of the Bank of Ceylon passed into the hands of the Government which became its only shareholder.

- 4. Ibid., section 7.
- 5. Ibid., section 12.
- 6. Ibid., section 5, sub-section 2.

To further strengthen government control over the banking system, an Act of Parliament was passed on April 1, 1961, declaring that no person who is a citizen of Ceylon could open an account in a foreign owned bank.⁷

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With the passing of these legislative measures, the lending policies of the commercial banks underwent a considerable change. Instead of financing mainly plantations and external trade, the banks now also became interested, due to pressure from the Government, in lending for industrial and agricultural purposes. As industrial and agricultural loans are primarily of a long-term nature, a fairly distinct increase in the ratio of long-term lending to total bank lending is noticeable (Table 1).

Another significant change lies in the various items accepted as security against bank loans. Until 1963, documentary bills and stock in trade were the commonest forms of security acceptable to the banks; since then, several new types of security such as trust receipts, and plant and machinery have become very popular (Table 2).

Finally, since the early 1960's, there has developed a significant trend towards branch banking. Whereas earlier banking was confined to Colombo and a few major towns, bank offices have now been opened in many rural areas. In 1960,

^{7.} Later this law was partially relaxed in 1969. By a Gazette notification on February 28, 1969, the Eastern Bank and the Chartered Bank were approved by the Minister of Finance for new accounts.

TABLE 1

COMMERCIAL BANK ADVANCES* CLASSIFIED BY MATURITY

| | Short-term | <u>Medium-term</u> | Long-term |
|------------|----------------------|--------------------|--------------------------|
| | (less than 6 months) | (6 to 30 months) | (exceeding 30 months) |
| Sept. 1959 | 44.7 | 41.0 | 14.3 |
| Sept. 1961 | 32.5 | 51.2 | 16.3 |
| Dec. 1963 | 38.6 | 35.9 | 25.5 |
| Dec. 1965 | 37.6 | 35.8 | 26.5 |
| Dec. 1967 | 39.3 | 36.8 | 23.8 |
| Dec. 1968 | 38.5 | 34.4 | 27.1 |
| Dec. 1969 | • 34•5 | 37•4 | 28.1 |

*Advances include loans, overdrafts and bills discounted, and exclude cash items in process of collection.

Source: Annual Report of the Central Bank of Ceylon (1969)

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TABLE 2

COMMERCIAL BANK ADVANCES CLASSIFIED BY TYPE OF SECURITY

*

| | Sept. 1959 | Sept. 1961 | Dec. 1963 | Dec. 1965 | Dec. 1967 | Dec. 1958 | Dec. 1969 | |
|----------------------------|---------------|---------------|--------------|-----------------|--------------|--------------|--------------|--|
| ſ · · · | | (a | s a % of | 'total a | dvances) | | | |
| Documentary bills | 26.0 | 26.6 | 20.5 | 16.6 | 15.8 | 14.4 | 9.7 | |
| Government securities | 2.0 | 2.1 | 0.8 | 0.6 | 1.5 | 1.3 | 1.2 | |
| Shares of joint stock co. | 6.3 | 5.2 | 2.7 | 2.4 | 1.8 | 1.6 | 1.3 | |
| Time) and savings deposits | 2.5 | 3.7 | 4.5 | 6.7 | 5.3 | 4.0 | 4•9 | |
| Stock in trade | 33.8 | 30.4 | 29.0 | 26.5 | 20.5 | 21.1 | 20.8 | |
| Immovable property | 11.6 | 8.7 | 10.0 | 8.7 | 10.5 | 9.6 | 11.1 | |
| Unsecured | 5 •9 ` | 12.3 | 13.1 | 11.1 | 8.8 | 5.1 | 3.5 | |
| Others* | 12.0 | 11.1 | 19.3 | 27.4 | 35.8 | 42.9 | 47.5 | |

* These include guarantees, trust receipts, hire-purchase agreements, plant and machinery, tractors and motor vehicles, promissory notes, bonds, etc.

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Source: Annual Reports of the Central Bank of Ceylon (1960-69)

there were 45 bank offices in Ceylon, of which 25 were in Colombo. In 1969, the total number of bank offices had increased to 155, of which only 30 were located in Colombo.

Ceylon did not have a central bank until 1950. The Monetary Law Act No. 58 of 1959 establishing a central bank in Ceylon was passed by Parliament in March 1949. The central bank commenced business on August 28, 1950.

The central bank is given the power of note issue and wide powers for controlling the volume of credit created by the commercial banks. The Monetary Law Act does not require the maintenance of any specific proportion of gold or foreign currencies against the note issue. It merely requires the central bank to keep an international reserve "adequate to meet any foreseeable deficit in the balance of payments".⁸

In the sphere of credit control, the central bank is equipped with a wide range of weapons. The central bank is empowered to fix its bank rate "in accordance with the character and term of each such operation".⁹ It is empowered to rediscount for the commercial banks "commercial credits" with not more than 180 days to run from the date of their acquisition by the central bank, and "production credits" with not more than 270 days to run, and also to make advances against similar assets or against government or other specified securities.¹⁰ The central bank may engage in open market

8. Monetary Law Act, paragraph 65.

9. <u>Ibid</u>., paragraph 86.

10. Ibid., paragraph 82.

operations and also vary the reserve requirements of commercial banks. It also has powers to control the nature of commercial bank portfolios. For instance, the central bank may fix the maximum permissible maturities for loans and investments, and the nature and the amount of the security required for various types of credit operations. It may prohibit commercial banks from increasing the amount of their loans and investments or fix limits to their rate of infcrease. It may prescribe the maximum ratios which various classes of assets may bear to the capital of a commercial bank. Finally, the central bank has powers to prescribe the minimum cash margins against which letters of credit may be opened and the power to fix different classes of transactions.¹¹

The objectives of central bank policy are set out in the Monetary Law Act as follows:¹²

- 1. The stabilisation of domestic monetary values.
- 2. The preservation of the par value of the Ceylon rupee and the free use of the rupee for current international transactions.
- 3. The promotion and maintenance of a high level of production, employment and real income in Ceylon.
- 4. The encouragement and promotion of the full development of the productive resources of Ceylon.

In short, the central bank is entrusted with the task of maintaining stability of the price level and the exchange

11. <u>Ibid</u>., paragraph 99-109.

12. Ibid., paragraph 5.

rate, of securing a high level of employment, and finally, of promoting economic development.

Tools of Monetary Policy

One of the most important tools of central banking is open market operations. Economists have long recognized the obvious fact that the central bank cannot carry on traditional open-market operations in an economy where there exists no securities market to conduct these operations. And they have noticed the equally obvious fact that the securities markets of underdeveloped countries are, in general, extremely narrow. Bloomfield (15) mentions three attributes of narrow, as opposed to broad, securities markets. First, the absolute number of buyers and sellers is few, and hence, the maximum average frequency of transactions is low; second, position-takers are lacking; third, there does not exist a wide spectrum of owners and of ownership motives.

Most of these characteristics are found in the securities market of Ceylon. For instance, in 1960, about 83 percent of government securities was held by the banking system, and of this amount about 73 percent was in the hands of the central bank. The rest was distributed among insurance companies and savings institutions. However, in 1971, the latest year for which the statistics are available, the banking system held only 42 percent of government debt; the remainder was held by the Employees' Provident Fund, savings institutions, insurance companies, etc. (Table 3).

Most of the institutions listed in Table 3 are not position-takers because they buy securities and hold them to maturity. The reason why they hold substantial amounts of securities may be largely political. For example, the two leading savings institutions which hold government securities are the State Mortgate Bank and the Post Office Savings Bank, both of which are government corporations. Similarly, the most important holder of government securities among the insurance companies is the Insurance Corporation which again is a government corporation. It is likely that these institutions have almost no choice except to cooperate with the Government although no firm evidence can be given in support of this proposition. With regard to commercial banks, there are several reasons why they purchase government securities. A partial explanation is the liquidity ratio imposed on all commercial banks, because the liquidity ratio includes government securities. A second reason why banks have been willing to hold government securities has been the readiness of the central bank to honour these securities as collateral for advances.¹³ However, in some years the quantity of government securities which the commercial banks hold may be far in excess of what they would desire to have. Why the banks will have to hold these excess securities may be due to the following reasons. Firstly, because of the narrowness of

13. For a more detailed discussion, see Sayers (110).

OWNERSHIP OF GOVERNMENT SECURITIES, 1971

| • | <u>Amount</u> (rupees million) | Percent |
|---------------------------|-----------------------------------|---------|
| Central bank | 2083 | 35 |
| Commercial banks | 384 | 7 |
| Sinking funds | 751 | 14 |
| Insurance companies | 481 | 8 |
| Savings institutions | 652 | 11 |
| Employees' Provident Fund | 811 | 14, |
| Other Provident funds | 469 | 8 |
| Others | _244 | 3 |
| TOTAL | 5875 | 100 |

Source: Annual Report of the Central Bank of Ceylon (1971)

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the market for government securities, outside buyers would require the inducement of significant price discounts. Secondly, even if a bank were successful in selling some of its securities at a loss, the central bank might apply pressure on it to take a correspondingly larger quota when the next * new government securities are issued.

Due to the lack of a well developed securities market, the central bank generally finds it very difficult to conduct open-market operations. Sales and purchase of government securities might lead to wide fluctuations in security prices (55,28). Since the central bank does not wish to upset the securities market by allowing excessively large changes in security prices, it places little reliance on open-market operations.

The bank rate is another instrument used by the central bank to control the banking system. The literature , mentions several reasons to explain the absence of widespread rediscounting practices in many underdeveloped countries.¹⁴ One reason is the habit of commercial banks to keep comparatively large cash reserves (104). The lack of suitable bills for discount may be another factor preventing the wide use of rediscount facilities offered by central banks. Finally, foreign banks which occupy an important position within the banking system of many underdeveloped countries may have

^{14.} See U Tan Wai (115) for a discussion of the effectiveness of the bank rate as a tool of monetary policy in less developed countries.

access to the financial resources of their parent bank and of other branches abroad (42).

The first argument concerning large excess reserves was applicable to commercial banks in Ceylon in the 1950's¹⁵ but is not valid today because excess reserves have declined through the 1960's (Table 4).

Commercial bank borrowing from abroad has been relatively small in the 1960's while borrowing from the central bank appears to have become common in recent years.

The greater dependence of commercial banks on the central bank for their financial resources (see Table 5) has contributed to the growing importance of the bank rate as a tool of monetary policy. This can be seen by the more frequent changes in the bank rate since 1964. From 1954 to 1964, the bank rate was changed only once - in 1960, it was raised from $2\frac{1}{2}$ percent to 4 percent.¹⁶ However, after 1964 it was changed three times - in 1965 it was raised to 5 percent, to $5\frac{1}{2}$ percent in 1968, and finally to $6\frac{1}{2}$ percent in 1970.¹⁷

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- 16. Mention should be made of the increase in the bank rate from 2½ to 3 percent on December 16, 1959. However, due to a difference of opinion between the Government and the central bank, the bank rate was restored to its original level of 2½ percent on December 24, 1959. For more details on this episode, see Wickramasingha (119).
- 17. It is interesting to note that P.C. Thomas in his review of central banking in India (117) mentions that the bank rate was changed only seven times during the long period from 1935 to 1969. According to him, the rare use of the bank rate by the monetary authorities was due to the narrowness of the security markets.

^{15.} N.U. Jayawardana (56).

TABLE 4

RESERVE POSITION OF COMMERCIAL BANKS

| | | | Total Required Reserves | Actual Rese | erves | Total | Excess Reserves |
|------------------|-------------------|------|----------------------------|--------------------------------------|----------------------------------------------|--------|--------------------|
| , [,] , | 19 ⁶ . | | ۶ | Deposits with the Central Bank | Till Cash set apart <u>as Reserves</u> | | |
| | 1 | 15 | , , | (in rupees | million) | | |
| | | 1950 | 73.5 | م 165 . 2 | - | 165.2 | 91.7 |
| | | 1952 | 90.2 | 131.9 | - | 131.9 | 41.7 |
| | | 1954 | 71.3 | 105.4 | - | 105.4 | 34.1 |
| | *• | 1956 | 88.7 | 150.1 | - | 150.1 | 61.4 |
| | | 1958 | ** 80.4 | 91.5 | | 91.5 | 11.1 |
| | , | 1960 | 96.7 | 140.3 | - | 140.3 | 43.6 |
| | a | 1962 | 105.5 | 106.7 | 8.4 , | 115.1 | 9.6 |
| | 5 | 1964 | 168.6 | 147.9 | 25.4 | 173.3 | °4•7 ·* |
| | | 1966 | 164.4 | 89.6 | 42.2 | 131.8 | - |
| | | 1968 | 210.9 | 142.3 | 70.8 | 213.1 | _2.2 |
| | | 1969 | 191.4 | 137.2 | 55•4 | 192.6 | 1.2 |
| | | 1970 | 318.8 | 224.6 | 109.6 | \$34.2 | 15.4 |
| | | | | 0 | | | |

Source: Annual Reports of the Central Bank of Ceylon (1968-71)

COMMERCIAL BANK BORROWING

| " | n. | • | Foreign <u>Borrowing</u> | Central Bank Borròwing |
|----|-------------------|---------------------------------------|-----------------------------|---------------------------|
| | | с (| (in rupe | es million) |
| | c | | | -A |
| æ | 1950 | Ø | 7.7 | 0 |
| | 1952 | ٢ | 5.7 | Ó . |
| | · 1 954 | | 4.4 | . 0 |
| | 1956 [°] | | 7.5 | 0 |
| i | 1958 | , , | · 6.2 | 0 |
| | 1960 | he 5 | 5.9 | 21.0 |
| | 1962 | | . 1.8 | 0 |
| | 1964 | · · · · · · · · · · · · · · · · · · · | 0.4 | 19.1 |
| 'n | . 1966 | e ta a a a | 2.3 | 42.7 |
| | 1968 | , , , , , , , , , , , , , , , , , , , | 8.5 | 89.2 |
| | 1970 | | 3.6 | 148.8 |
| | • | <u>ہ</u> _ | | |

Source: <u>Annual Reports of the Central Bank of Ceylon</u> (1968-70) Another instrument of monetary control is variable reserve requirements for commercial banks. Provided that the ratio of required reserves to total deposits is greater than the ratio which the commercial banks would maintain voluntarily for their working needs, a minimum cash reserve requirement will be a powerful tool of monetary policy.

When the monetary authorities have the power to vary reserve requirements, changes in reserve requirements can be used to supplement other instruments of monetary control in order to influence credit conditions more quickly and to a greater extent than would otherwise be possible. For example, an increase in reserve requirements may be employed as a means of making the bank rate effective. In the absence of supplementary action, an increase in the bank rate may have little effect on the cost and availability of credit. This may be the case if the commercial banks have excess reserves (42) or are not accustomed to rediscounting at the central bank; but even where these conditions do not exist, there may be considerable delay in transmitting the effect of a change in the bank rate to the operations of the commercial banks. An increase in reserve requirements, however, can force the commercial banks to borrow from the central bank if they wish to expand their loans and may force the more extended commercial banks to borrow immediately in order to meet the higher reserve requirement.

According to Karunatilaka (69), the central bank of Ceylon appears to have followed the above strategy in its

effort to strengthen the effectiveness of the bank rate. Pursuant to regulations laid down under sections 10C, 93, 94, 96 and 97 of the Monetary Law Act, commercial banks are required to maintain with the central bank cash reserves amounting to 12 percent of their demand deposits and 5 percent of their time and savings deposits. With effect from February 10, 1961, commercial banks except the People's Bank are required to maintain special reserves of 38 percent against any increase in their demand deposits over the level of such deposits as at the close of business on February 1, 1961. With effect from June 18, 1965, the People's Bank is required to maintain special reserves of 28 percent against any increase in demand deposits, above the level as at the close of business on June 9, 1965. Note that this is an average cash reserve ratio and does not refer to the marginal reserve ratio.

In addition to the traditional tools of monetary policy, the central bank of Ceylon has also relied very heavily on selective credit controls. The philosophy behind the use of selective credit controls is that monetary management should not merely aim at a general restraint or spur to economic activity; it should also try to influence different economic activities in different ways (100). More specifically, selective credit controls are intended to encourage or discourage certain types of expenditure by influencing the lending policy of banks and other credit institutions. This line of reasoning has been very popular in Ceylon and its

acceptance by the Government and the central bank has led to several developments - the trend towards medium-term and long-term lending, the exemption of government corporations and rural credit associations from credit ceilings, and the acceptability of a larger number of items as collateral for loans.

Review of Monetary Policy in Ceylon:

Before presenting a detailed account of monetary policy in Ceylon, the main points may be summarized.

Monetary policy during the period of this study was concerned with three objectives. First, it was concerned with exchange rate stability. Second, it was interested in the maintenance of price stability. Finally, it was interested in the promotion of economic growth, although the relation between monetary policy and economic growth was nowhere made explicit. In the pursuit of these objectives, the central bank could make its influence felt only on the amount of commercial bank credit extended to the private sector. However, since the major factor in the monetary expansion of this period was the financing of the budget deficit, the central bank's influence on the money supply was only mar-This was an important feature of monetary policy in ginal. Ceylon during the period under examination. The other significant feature of monetary policy at this time was the obvious conflict among the objectives of economic growth,

price stability, and exchange rate stability. The central bank was fully aware of the fact that monetary expansion would lead to inflation and balance of payments deficits. However, due to its interest in economic growth, it did not bring about a drastic reduction in commercial bank credit to the private sector. Instead, it chose to use selective credit controls aimed at channelling commercial bank credit for productive uses. The final outcome of this policy was a substantial increase in commercial bank credit to the private sector mainly because the largest borrowers from the banks were exempted from credit controls.

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The most serious problem facing Ceylon in 1960 was the deficit in the balance of payments. The various measures adopted by the authorities to restore balance of payments equilibrium fall into two categories. On the one hand, the Government undertook direct action in the form of import restrictions. Import duties were raised on many consumer goods, especially on those commodities which were considered to be luxuries. On the other hand, the central bank enforced both general and selective credit controls. The two most important general controls were the imposition of higher reserve requirements and the increase in the bank rate. With effect from August 13, the central bank increased its rate of interest on advances to commercial banks, secured by the pledge

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of government securities, from $2\frac{1}{2}$ to 4 percent. However, a special concessionary rate of $2\frac{1}{2}$ percent was allowed for advances against the pledge of usance promissory notes relating to the financing of imports of certain essential items such as foodstuffs and textiles, as well as activities connected with domestic production and exports. At the same time, the maximum rates of interest chargeable by banks on advances in respect of these transactions were fixed at rates obtaining on August 12, 1960, subject to the condition that these rates were in no case to exceed 6 percent. Similarly, with effect from August 26, 1960, commercial banks were required to increase their reserves with the central bank against demand deposits from 10 percent to 12 percent.

With effect from August 13, commercial banks were required:

- 1. to insist on 50 percent cash margins against letters of credit for the importation of certain specified commodities. The banks were also requested not to grant advances for the purpose of providing these margins. In order to make this requirement more effective, importers were also required to import these commodities only on letters of credit:
- not to increase the amount of their advances as on August 12, for the purpose of importing certain specified goods;
- 3. not to finance hire-purchase operations in respect of

certain goods except on the security of hire-purchase agreements resulting from the hire of such goods; such advances should not exceed either 1/3 of the amount due by hirers to owners, or 1/4 of the value of goods hired, under such agreements whichever is less; and
4. not to increase the amount of their advances for the purpose of purchase of certain goods.

In short, the strategy adopted by the central bank to solve the balance of payments problem involved both general and selective credit controls with greater emphasis on the latter. Credit controls were made selective primarily to discourage the financing of imports of non-essentials.

<u>1961</u>

As a result of these stringent measures, imports fell from 2006 million rupees in 1960 to 1794 million rupees in 1961, with the greatest decline occurring in the category of consumer goods rather than in investment and intermediate goods. 'Although export receipts also declined during the year, the greater drop in imports led to a drastic reduction in the trade deficit from 210 million rupees in 1960 to 87 million rupees in 1961 (Table 6). The loss of external assets was partly offset by borrowing 53.8 million rupees from the International Monetary Fund.

The year 1961 is very important because it marked the beginning of a period of serious concern over another

TABLE 6

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THE BALANCE OF TRADE

| | Exports | Imports | The Balance |
|------|----------|--------------|-------------|
| | (f.o.b.) | (c'.i.f.) | of Trade |
| | | (in millions | of rupees) |
| 1959 | 1773 | . 1958 | -285 |
| 1960 | 1796 | 2006 | -210 |
| 1961 | 1707 | 1794 | - 87 |
| 1962 | 1763 | 1906 | -143 |
| 1963 | 1708 * | 1869 | -161 |
| 1964 | 1767 | 1960 | -193 |
| 1965 | 1917 | 1922 | - 5 |
| 1966 | 1669 | 2018 | -349 |
| 1967 | 1634 | 1985 | -351 |
| 1968 | 1976 | 2356 | -380 |
| 1969 | 1909 | 2655 | -746 · |
| 1970 | 2016 | 2332 | -316 |
| 1971 | 1964 | 2197 | -233 |

Source:

Annual Report of the Central Bank of Ceylon (1971)

objective of monetary policy - the maintenance of price stability. Thus, in the Annual Report of 1961, the central bank stated:

> In previous years the increase in consumer demand generated by the monetary expansion was substantially met out of an expanded volume of imports which in turn was made possible by the running down of external reserves. The increased supplies of imported goods served, to a large extent, to protect the general level of prices in Ceylon from pressures of the monetary expansion. In 1961, with the sharp contraction in the volume of imports the situation has altered basically. Given the continuance of the expansionary factors in the monetary field, the contraction in the supply of goods implies rising pressures on prices and costs. (page 24)

To curb the inflationary pressure in the economy, the central bank was interested in reducing the rate of monetary expansion. However, it could directly influence only one factor contributing to the increase in money supply - commercial bank lending to the private sector. It had no direct influence on government borrowing from the banking system and on external reserves. Accordingly, in January 1961, the special concessionary rate of $2\frac{1}{2}$ percent relating to central bank advances to commercial banks was replaced by a general rate of 4 percent. In February, the central bank further increased the statutory reserve requirements of commercial banks against demand deposits. In addition to the general reserve requirement of 12 percent against total deposits, commercial banks were required to maintain special reserves equal to 38 percent of any increase in demand deposits over

| TABLE | 7 |
|-------|---|
|-------|---|

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MONEY SUPPLY IN CEYLON*

(in millions of rupees)

| | | Amount | %_Change |
|-------------------|----|--------|----------------|
| 1959 | | 1178 | |
| 1960 | | 1209 | 2.63 |
| 1961 | | 1289 | 6.62 |
| 1962 ⁻ | ,1 | 1376 | 6.79 |
| 1963 | | 1499 | 9.01 |
| 1964 | | 1680 | 12.10 |
| 1965 | | 1809 | 7.69 |
| 1966 | | 1749 | -3.31 |
| 1967 | , | 1851 | 5.83 |
| 1968 | 1 | 1971 | 6.49 |
| 1969 | - | 2147 | · 8.9 3 |
| 1970 | | 2246 | . 4.61 |
| 1971 | | 2324 | 3.47 |

*defined as currency and demand deposits in the hands of the public

Source: Annual Report of the Central Bank of Ceylon (1971)

TABLE 8

FISCAL OPERATIONS, COMMERCIAL BANK CREDIT,

AND EXTERNAL RESERVES

| (in millions of rupees) 1959-60 147 30 -142 1960-61 149 13 - 83 1961-62 102 22 - 79 1962-63 163 36 - 73 1963-64 176 38 - 28 1964-65 89 11 23 1965-66 95 2 - 35 1966-67 158 123 -170 1968-69 208 149 -181 1969-70 219 83 -200 1970-71 80 81 -210 | | Changes in govern- ment borrowing from the banking system | Changes in commer- cial bank credit to the private sector | Changes in external reserves |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------|
| 1959-60 147 30 -142 $1960-61$ 149 13 -83 $1961-62$ 102 22 -79 $1962-63$ 163 36 -73 $1963-64$ 176 38 -28 $1964-65$ 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | | (in | millions of rupees) | |
| 1960-61 149 13 -83 $1961-62$ 102 22 -79 $1962-63$ 163 36 -73 $1963-64$ 176 38 -28 $1964-65$ 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1959 - 60 | 147 | 30 | -142 |
| 1961-62 102 22 -79 $1962-63$ 163 36 -73 $1963-64$ 176 38 -28 $1964-65$ 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1960-61 | 149 | 13 | - 83 |
| 1962-63 163 36 -73 $1963-64$ 176 38 -28 $1964-65$ 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1961–62 | 102 | 22 | - 79 |
| 1963-64 176 38 -28 $1964-65$ 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1962-63 | 163 | 36 - | - 73 |
| 1964-65 89 11 23 $1965-66$ 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1963-64 | 176 | 38 | - 28 |
| 1965-66 95 2 -35 $1966-67$ 158 123 -170 $1967-68$ 169 130 -169 $1968-69$ 208 149 -181 $1969-70$ 219 83 -200 $1970-71$ 80 81 -210 | 1964-65 | ` 89 | 11 | 23 |
| 1966-67158123-1701967-68169130-1691968-69208149-1811969-7021983-2001970-718081-210 | 1965-66 | 95 | 2 | - 35 |
| 1967-68169130-1691968-69208149-1811969-7021983-2001970-718081-210 | 1966-67 | 158 | 123 | -170 |
| 1968-69208149-1811969-7021983-2001970-718081-210 | 1967-68 | 169 | · 130 | -169 |
| 1969-7021983-2001970-718081-210 | 1968-69 | 208 | 149 | -181 |
| 1970-71 80 81 -210 | 1969-70 | 219 | 83 | -200 |
| | 1970 - 71 | 80 | 81 | -210 |

Source:

Annual Reports of the Central Bank of Ceylon, 1960-71.
the level prevailing on February 1, 1961. The People's Bank which was formed in July 1961 was exempted from these reserve requirements.

With the passing of these measures, commercial bank lending to the private sector increased by only 13 million rupees in 1961, compared with an increase of 30 million rupees in 1960. However, commercial bank credit to the private sector exerted only a minor impact on the total money supply relative to the expansionary impact of the budget deficit. The budget deficit for the current fiscal year was 254.3 million rupees, of which 149 million rupees was financed by borrowing from the central bank. Consequently, money supply¹⁸ increased by 6.6 percent in 1961 compared with the increase of 2.6 percent during the previous year (Table 7). Thus the impact of the central bank's monetary measures was completely wiped out by the expansionary influence exerted by government borrowing from the banking system. (Table 8).

<u> 1962</u>

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There was a slight decline in government borrowing from the banking system - 102 million rupees in 1961-62 compared with 149 million rupees in the previous fiscal year, 1960-61. The main source of financing the budget deficit was administrative borrowing rather than non-bank borrowing. The

^{18.} Money supply refers to currency plus demand deposits in the hands of the public. The broader definition of money is not used in this section.

Government used money order funds in transit and unexpended balances of various government agencies. However, it should be emphasized that although government borrowing from the banking system was slightly lower in 1962 than in the previous year, it was still the most significant factor in monetary expansion.

During all these years, government borrowing from commercial banks was confined to very small amounts and hence was a negligible factor in the increase in money supply. The main lender to the government was the central bank and the instrument of lending was the treasury bill. The total value of treasury bills outstanding is subject to a ceiling which can be raised only by Act of Parliament. In several years, with the persistence of budget deficits, there was a need for successive increases in the ceiling itself. Thus, during the fiscal year, 1959-60, the authorized limit on treasury bills was raised twice by Parliament to 450 million rupees in October 1959 and 650 million rupees in August 1960; in June 1961, the authorized limit was raised from 650 million rupees to 750 million rupees. In December 1961, the limit was increased further to 1000 million rupees, and again in March 1963 (during the current fiscal year) the authorized limit was raised once more to 1150 million rupees.

While no new credit controls were introduced during 1962, measures passed in the past two years were still operative. Despite these measures, commercial bank credit to the private sector increased by 22 million rupees over the pre-

vious year. The central bank blamed the commercial banks for extending credit for speculative purposes but no action was taken to introduce tighter controls mainly because the central bank felt that the rate of monetary expansion was not too high - 6.7 percent compared with 6.6 percent in 1961.

Finally, there was a marked deterioration in the balance of payments. While export earnings experienced a modest increase, this was more than offset by the expansion of imports. Consequently, the trade deficit for the year was 143 million rupees, compared with the deficit of 87 million rupees during 1961. The increase in imports was confined to the categories of investment and intermediate goods.

1963

The Annual Report of the central bank stated that "two of the main features of the domestic economy during 1963 were the upward movement in the general level of prices and the emergence of shortages in supplies of several categories of imported goods" (page 3). Under these circumstances, one would have normally expected a reduction in the money supply. In contrast, money supply actually increased by 9 percent during the year and this rate of increase was in excess of the rates of increase experienced in the past years - 2.6 percent in 1960; 6.6 percent in 1961; and 6.7 percent in 1962.

The year 1963 was also important as being the first time that commercial bank credit to the private sector became

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a significant factor in the monetary expansion. Commercial bank credit to the private sector increased by 36 million rupees - the highest increase so far. In its Annual Report, the central bank justified the increase in commercial bank credit to the private sector in the following manner:

> A process of development involves increasing requirements of credit to facilitate the expansion in economic activity. With the establishment of new manufacturing activities and the extension of activity in agricultural and other fields there will inevitably be a rising demand for credit in Ceylon (Page 13).

With the emergence of economic growth as a major objective of monetary policy, the central bank now wanted to lessen the conflict between economic growth and the other objectives. One solution adopted by the central bank was to encourage commercial bank lending for productive purposes while restricting credit for activities not directly related to production in order to reduce the inflationary pressure.

The central bank was fully aware of the fact that during the early years of import substitution, many industries needed capital. Arrangements were finalized during the year for a scheme of stimulating the flow of medium and long-term credit both through long-term credit institutions and through the commercial banking system by providing refinance facilities at the central bank within the framework of amendments introduced by the Finance Act of 1963 to the Monetary Law Act.¹⁹ For the latter purposes, a medium and long-term credit

fund was created at the central bank. The capital resources of this fund were to come partly from capital repayments of loans granted out of the resources of the fund, from interest charges on loans granted, and from such funds which may be transferred to the fund out of the reserves of the central bank from time to time. The resources of the fund were to be utilized by the central bank to provide financial accommodation to credit institutions in respect of advances made by such institutions for productive purposes. The terms governing these loans were to be determined by the central bank.

Another strategy of the central bank was to make the objective of exchange rate stability consistent with the objective of economic growth and for this purpose, it encouraged commercial bank credit for the financing of imports of inter-, mediate and investment goods while restricting credit for imports of certain specified consumer goods. This compromise, however, worked heavily against the attainment of exchange rate stability for two reasons. First, export earnings were declining during the major part of the period of our study; hence any increase in imports of investment and intermediate goods immediately resulted in a trade deficit. Second, there was a limit to the reduction of imports of consumer goods because even after the import restrictions came into effect, food and drink alone accounted for roughly 40 percent of total imports.

Some of these factors clearly were at work in 1963.

As usual, exports declined. Imports of consumer goods also declined but there was an increase in imports of intermediate and investment goods. Thus, the decline in total imports was smaller than the decline in exports, with the result that the year ended with a trade deficit of 161 million rupees.

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<u> 1964</u>

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Money supply increased by 12 percent indicating an acceleration in the rate of increase over the previous year. This increase in the rate of monetary expansion was due to several reasons. First, the budget deficit itself was larger than in the past year. Second, government borrowing from the banking system increased by 176 million rupees which was larger than the last year's increase. Finally, commercial bank credit to the private sector also showed a larger increase - 38 million rupees whereas the increase in 1963 was 36 million rupees. The larger increase in commercial bank credit to the private sector was due to an increase in export's bills rather than due to an increase in loans and overdrafts.

Gross National Product at constant (1959) prices increased by 7 percent during the year. However, as was readily admitted by the central bank in its Annual Report, this increase in real output was not sufficient to overcome the shortage of goods experienced in the various sectors of the economy. As a result, the Consumer Price Index increased by 3 percent - the highest increase so far.

The balance of payments showed no signs of improve-The trade deficit for the year was estimated at 193 ment. million rupees, the highest since 1960. There was a slight improvement in export earnings but it was more than offset by the increase in imports. It is interesting to note that the increase in imports took place in the category of consumer goods, especially in food and drink, with slight reductions being noticeable in imports of investment and inter-By now the authorities were almost convinced mediate goods. that the scope for further import restrictions on consumer goods was extremely limited and a new strategy must be adopted to cope with the balance of payments problem. However, no action was taken immediately.

1965

The central bank was concerned over the growing threat of inflation (Table 9). In its Annual Report, the central bank argued that "the shortages of supplies arising both from an inadequate level of domestic production and from the reduction of imports combined with a certain degree of monetary expansion resulted in continued pressure on the domestic price level. While subsidies helped to restrain the prices of the basic or essential goods, there were marked shortages in a wide range of semi-essential commodities" (page 2). The problem of shortages was further aggravated by the poor economic performance during the current year. Gross National

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| | | | - |

THE CONSUMER PRICE INDEX

(1952 = 100)

| | 1959 | 105.2 |
|---|-------|---------|
| | ·1960 | 103.5 - |
| | 1961 | 104.8 |
| | 1962 | 106.3 |
| | 1963 | 108.8 |
| | 1964 | 112.2 |
| | 1965 | 112.5 |
| | 1966 | 112.3 |
| | 1967 | 114.8 |
| | 1968 | 121.5 |
| ł | 1969 | 130.5 |
| | 1970 | 138.2 |
| | 1971 | 141.9 |
| | - | |

Source: Annual Report of the Central Bank of Ceylon (1971)

Product at constant (1959) prices increased by 2 percent, in contrast to the increase of 4.4 percent in 1964. The Consumer Price Index increased by only 0.27 percent which was lower than the percentage increases experienced in the previous years. However, the central bank did not attach too much faith in the Consumer Price Index on the grounds that it contains several subsidised items and has not been revised since 1952. To supplement the prices entering the Consumer Price Index, the central bank started collecting information on retail prices of building materials, oils and paints, household goods (such as furniture and sewing machines), motor vehicles and spare parts, and fertilizers. The prices of all these categories except those of fertilizers rose during 1965.

On the basis of the central bank's assessment of the prevailing monetary situation, the following measures were passed:

- Increased the bank rate from 4 percent to 5 percent with effect from May 28.
- 2. Imposed a ceiling on the expansion of commercial bank credit to the private sector by limiting the increase in the total commercial bank advances under the four asset items of loans, overdrafts, import bills financed and local bills financed. In imposing the ceiling, the central bank impressed on the commercial banks that "each bank's ceilings should be observed in such a manner as to minimize the availability of credit for nonessential purposes and thereby ensure the maximum of

credit for production purposes within the ceiling".²⁰

- 3. With effect from June 18, the People's Bank which hitherto had been exempted from the special reserve ratio, was required to maintain a special reserve of 28 percent of any increase in demand deposits above the level of such liabilities as at the close of business on June 9, 1965. The special reserve ratio imposed on February 10, 1961 on all other banks remained unchanged.
- 4. Finally, in November, margin requirements against letters of credit and commercial bank advances for the purpose of financing certain categories of imports were withdrawn. This was because the central bank felt that "margin requirements were superfluous as a method of restraining imports with the extension of direct controls to cover virtually all imports".²¹

By their nature selective controls are discriminatory. Therefore, in enforcing selective credit controls, the central bank was always trying to make concessions to various types of borrowers and lenders and by so doing, failed to come to grips with the problem of monetary expansion and inflation. This is best illustrated by the decision of the central bank to encourage commercial bank credit for productive purposes. The leading beneficiaries of this concession were the government corporations who were the largest borrowers from the

20. <u>Annual Report of the Central Bank of Ceylon (1965)</u>, page 81.

21. <u>Ibid</u>., page 81.

commercial banks. By exempting them from credit controls, the central bank was not able to bring about a permanent reduction in commercial bank credit to the private sector.

However, the new monetary controls brought temporary relief because there was an immediate drop in the rate of expansion of commercial bank credit to the private sector. The increase in commercial bank lending to the private sector by 11 million rupees was the lowest on record for the past four years. There was also a sharp reduction in government borrowing from the banking system from 176 million rupees in 1964 to 89 million rupees in 1965. The Government tried to reduce the inflationary effects of its borrowing operations by increasing its reliance on non-bank sources than on the banking system. In fact, during the next few years the Government switched from banks to non-bank sources from time to time as part of its policy of keeping down the inflationary pressure. As a result of the smaller increase in commercial bank credit to the private sector and the reduction in government borrowing from the banking system, money supply displayed a slower rate of increase - 7.68 percent in 1965 compared with an increase of 12.09 percent in \$ 1964.

The pressure on external payments which has been a feature of the Ceylonese economy in recent years continued in 1965 although the trade deficit of 5 million rupees was smaller than in any previous year since 1960. This smaller trade deficit was mainly due to an almost unprecedented increase in exports in recent years.

<u> 1966</u>

The expansion of exports witnessed in the previous year was short-lived because the most striking feature of the economic situation during 1966 was a drastic decline in export earnings. Not only did export receipts decline sharply from the level of the previous year but they reached the lowest level since 1958. At the same time, imports increased substantially, with the largest increase being experienced in the consumer goods group. Consequently, the year ended with a trade deficit of 349 million rupees, the highest since 1957. The increase in real output was equally disappointing. Gross National Product at constant (1959) prices increased by 1.6 percent during the year, in contrast to the increase of 1.8 percent in 1965.

One relieving feature of the large trade deficit was that it partially solved the problem of shortages of commodities on a very temporary basis. As a result of the increased inflow of imports made possible by a greater amount of foreign capital and the drawing down of external reserves, the price level as measured by the Consumer Price Index recorded a slight decline from 112.5 in 1965 to 112.3 in 1966. But the decline in the price level should not be exaggerated because the central bank's private survey of prices not covered by the Consumer Price Index indicated that the prices of many

commodities were still higher than last year.

Government borrowing from the banking system increased by 95 million rupees compared with an increase of 89 million rupees in 1965. However, commercial bank credit to the private sector showed an increase of only 2 million rupees, much smaller than the increase which occurred in 1965.

In spite of the expansionary influence of government borrowing operations, money supply declined by 3.32 percent in 1966 mainly due to the drastic reduction in commercial bank credit to the private sector and the reduction in ex-

1967

A substantial increase in real output was the highlight of the economic situation in 1967. Gross National Product at constant (1959) prices increased by 4.2 percent as against an increase of only 2.3 percent in 1966.

The balance of payments situation, however, caused grave concern. Export earnings reached the lowest level since 1958, while import payments were only marginally lower than the peak reached in 1966. Consequently, there was continuous pressure on the balance of payments and the year ended with a trade deficit of 351 million rupees, the highest reached in recent years.

The cumulative effects of the continuous deteriora-

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tion in balance of payments in the past years and the devaluation of the British Pound led to the devaluation of the Ceylonese rupee by 20 percent on November 22, 1967. The central bank's explanation for the devaluation ran along the following lines. First, it was argued that from a longrun point of view, the expansionary impact of the monetaryfiscal imbalance which had continued for some time had resulted in the imposition of severe import and exchange controls on the one hand, and bred circumventions through the over-invoicing of imports and under-invoicing of exports, on the other, with a consequent loss of foreign exchange. Second, rising domestic prices and costs, particularly in the export sector had also tended to diminish progressively Ceylon's competitive position in world trade. Therefore, the central bank felt that "both with a view towards restricting the demand for imports, providing added incentive to import substitution in agriculture and industry and with a view towards affording some relief to exporters, an adjustment of the overvalued exchange rate appeared to be necessary".22

Government borrowing from banking system in 1967 was higher than in the previous year - 158 million rupees in , contrast to 95 million rupees. The private sector had greater recourse to the banking system in the current year than in 1966. Commercial bank credit to the private sector increased by 123 million in 1967 as against 2 million rupees in 1966.

^{22. &}lt;u>Annual Report of the Central Bank of Ceylon (1967)</u>, page 136.

As a result of all these factors, money supply increased by 5.83 percent between the end of December 1966 and the end of December 1967.

No new monetary controls were introduced during the The only noteworthy change was the establishment of a vear. new agricultural credit scheme in September. The maximum credit limit for each individual farmer was raised upwards from 175 rupees per acre to 220 rupees per acre. Under this scheme, the commercial banks were to replace the Department of Agrarian Services in providing cultivation loans to farmers through primary cooperative societies. Since cultivation loans carry a high degree of risk not associated with commercial bank lending, the Government agreed to guarantee the repayment of up to 75 percent of any loan or part of any loan that goes with default. This guarantee scheme was to be operated by the central bank on behalf of the Government. The central bank also made available refinance facilities up to the full extent of loans given by a commercial bank under the provisions of the new agricultural credit scheme, thus ensuring the ready availability of credit for agricultural purposes.

The Consumer Price Index increased by 2.23 percent during the year. However, the prices of items not covered by the Consumer Price Index appear to have increased appreciably. According to the central bank's private survey, the price of steel bars, asbestos sheets, and galvanised sheets increased by 23 percent, 33 percent and 60 percent respec-

tively. The only commodity groups in which prices did not rise, according to the central bank's survey, were fertilizers and oils and paints.

1968

After the devaluation in November 1967, one would have normally expected the central bank to follow a tight monetary policy to ease the balance of payments situation. While some attempt was made in this direction, the new controls that were introduced were not very successful in preventing an expansion of commercial bank credit to the private The bank rate was raised from 5 percent to $5\frac{1}{2}$ persector. cent on May 6. The central bank also fixed new ceilings limiting the increase in specified forms of commercial bank advances to 8 percent of their level at the end of August or September, whichever was higher. This ceiling was to be effective initially from the beginning of October to the end of December and applied to loans, overdrafts, import bills and local bills, but excluded export bills, loans under the new agricultural credit scheme, advances to government corporations, and loans under the tea factory modernisation project.

Money supply increased at a higher rate during the year - 6.48 percent compared to 5.83 percent of the previous year and this increase in the rate of monetary expansion¹ resulted mainly from an increase in government borrowing

from the banking system and from an increase in commercial bank credit to the private sector. Government borrowing from the banking system during the current fiscal year was slightly higher than in the previous year - 169 million rupees as against 158 million rupees in 1967. Similarly. there was a slight increase in commercial bank credit to the private sector - 130 million rupees compared to an increase of 123 million rupees in 1967. This increase was mainly due to the extension of credit for industrial and agricultural The central bank could have done very little to purposes. stop the Government from increasing its borrowing from the banking system. The maximum it could have done was to advise the Government about the adverse effects which its borrowing operations would have on the balance of payments and the price level. Be that as it may, the central bank must accept the blame for the large increase in commercial bank credit to the private sector. By trying to work out a formula to strike a balance between the objective of economic growth on the one hand, and the objectives of exchange rate stability and price stability on the other, the central bank in effect sacrificed the latter two objectives for the sake of the economic growth objective. In the end, however, neither objective was achieved quite satisfactorily.

With the expansion of aggregate demand at home, whatever favourable effects the devaluation may have otherwise had on the balance of payments were completely nullified and the year ended, as usual, with a severe balance of payments

deficit. Exports increased by 16.6 percent but imports rose 'faster by more than 17 percent. The deficit was financed partly by foreign aid and partly by drawings from the International Monetary Fund.

By 1967 it had become apparent to the authorities that the stringent import controls were not capable of solving the balance of payments problem. This explains why the rupee was devalued. However, since the devaluation did not immediately cure the balance of payments problem, the authorities now turned their attention to an alternative policy to stop the adverse trend in the balance of payments. The new policy which came to be known as the Foreign Exchange Entitlement Certificate Scheme (FEECS) was started in May 1968. Briefly, this scheme resulted from the realization that the existing system of import quotas and controls had led to a considerable reduction in the ability of industry to exploit existing capacity to the fullest possible extent. It was felt that a liberalization of imported inputs, particularly of agricultural and industrial raw material and investment goods would enable the more efficient and more dynamic industries in the economy to increase their output. It was also observed that several industrial and minor agricultural products could not be exported because the producers did not find it profitable to do so at the prevailing prices. In view of the fact that large segments in the minor agricultural export product sector were organized on a non-corporate basis, it was felt that a subsidy in the form of a higher premium attached to ear-

nings in foreign exchange would lead to a more socially desirable distribution of income.²³

Under the provisions of the FEECS, certificates are issued to those who surrender foreign exchange to commercial banks against the export of certain specified commodities and against certain inward remittances. The price of these certificates was initially intended to be determined by market forces as reflected by tender prices for certificates offered weekly by the central bank. Subsequently, however, the price was stabilised at 44 rupees per certificate of a face value of 100 rupees. Receipts of foreign exchange from the export of tea, rubber, coconut oil, desicated coconut, copra, and fresh coconuts are not eligible to the benefits of the FEECS. Holders of certificates are entitled, subject to import and exchange control requirements, to purchase foreign exchange from commercial banks at their selling rates, on surrender of certificates of equivalent face value, for the payment of certain items of imports and other remittances as specified.

Merchandise imports are classified into A and B categories. All payments for A category imports are to be made at the official exchange rate while B category imports ^{*} are subdivided into two groups. One group is subject to quota allocations in the foreign exchange budget but requires in addition the surrender of the certificates. The second

^{23. &}lt;u>Annual Report of the Central Bank of Ceylon (1968)</u>, page 220.

group comprises "Open General Licence Imports" which also require the surrender of certificates to the full value of the foreign exchange payment. "Open General Licence Imports" are defined as those imports which are permitted into the economy without the necessity for individual import licence. After the FEECS was put into operation, industrial raw materials and investment goods were brought under the category of "Open General Licence Imports", thus doing away with the quota system under which these items were imported ear-The main commodities which have been included in the lier. A category are foodstuffs, drugs, fertilizers, fuels and lubricants, imports of government departments, local bodies and other government and semi-government agencies. These items were included in the A category as they are basic cost of living items or items imported by institutions which provide basic services such as health and transportation. A11 other imports are classified in the B category.

Basically then, the FEECS had the following features. First, it was an attempt to subsidize minor export products, both agricultural and industrial, by exchange rate manipulation. Second, it also meant a partial liberalization of imports of various inputs needed for domestic production. Finally, the FEECS was an attempt by the authorities to reduce the extent of the overvaluation of the rupee. Instead of devaluing the official rate a second time, the authorities decided to use a dual exchange rate system - the official rate and the FEECS rate. This is the most important feature

of the FEECS.

By offering a subsidy to minor exports and debarring traditional exports from the benefits of this scheme, the FEECS may have diverted economic resources from the latter sector to sectors producing minor exports, although no firm evidence is available on this point. The liberalization of imports of various intermediate and investment goods was also not really complete because the foreign exchange required to finance these imports had to be obtained at the FEECS rate which is much higher than the official rate. Although the abolition of quotas stimulated a greater inflow of imports of these items, shortages still continued. . Finally, the attempt to correct the overvaluation of the rupee was a fai-Before the FEECS came into operation, the black market lure. rate was in the range of 10 to 12 rupees per dollar. After the FEECS was introduced, however, the black market rate soared to roughly 18 rupees per dollar indicating that there is still an acute shortage of foreign exchange at the new exchange rates.

The year 1968 witnessed sharp increases in the prices of many commodities. Prices as measured by the Consumer Price Index which had increased by 2.2 percent in 1967 rose by 5.9 percent in 1968. While the prices of certain consumer goods outside the Consumer Price Index also registered increases, prices of some investment goods fell due to increased imports under the FEECS.

Monetary policy in 1969 continued to be dominated by the exigencies of the balance of payments situation. The central bank was very much interested in reducing the money supply. However, in order to mitigate the severity of the effects of a restrictive monetary policy on economic growth, the central bank felt that it was desirable to permit a limited extent of credit expansion. Thus a selective approach was adopted in the form of credit ceilings. Credit to government corporations was initially exempted from the ceilings imposed on commercial bank credit so as not to place undue restrictions on their activities. However, it was observed that commercial bank credit to government corporations had increased at a fairly rapid rate in the last few years. Accordingly, with effect from June 16, 1969, a ceiling was imposed on advances to government corporations permitting an increase of 7 percent over the amount of total credit outstanding to the private sector (including government corporations) as on April 29, 1969. Moreover, from June 1, 1969, other ceilings were also revised to permit an increase of 7 percent in advances over the amount outstanding as at a new base date (April 29, 1969). A further 7 percent was permitted for advances for the finance of exports, for tourist promotion and for the promotion of tea production.

The external payments situation worsened with the trade deficit reaching record levels during the year. The

1969

trade deficit accounted for 746 million rupees and this large The decrease in deficit was the result of many factors. export earnings was due largely to the decline in the export prices of tea and coconut products, the effect of which was aggravated by a contraction in their export volume. There was, however, an increase in the exports of minor products which was largely the result of favourable world price trends for these commodities. The FEECS also may have contributed to the increase in the output of these commodities. On the imports side, there was a large increase in imports of investment goods and a decline in imports of consumer and intermediate goods. The deficit in the balance of payments was' financed by drawing down external reserves and by borrowing from the International Monetary Fund and from foreign commercial banks.

The deficit in the balance of payments was a very significant factor influencing money supply during the year. As a result of the deficit, net external banking assets declined by 181 million rupees. In the domestic field, while the private sector (including government corporations and the cooperatives) obtained 149 million rupees from the banking system, the Government drew 208 million rupees. Thus while the external sector was exerting a substantial contractionary effect on money supply, the impact of the domestic sector was markedly expansionary. The net effect was an increase in money supply by 8.93 percent.

Prices moved up faster in 1969 than in 1968. The

Consumer Price Index rose by 7.4 percent in 1969 as against a rise of 5.9 percent in 1968. There was also a noticeable increase in the prices of goods and services not covered by the Consumer Price Index. Footwear, wax polishes, motor vehicle spare parts, sewing machines, and electrical bulbs registered a price increase in the range of 4 percent to 30 percent. The rate of increase in the prices of investment goods was in the range of 2 percent to 20 percent. But the greatest increase in price took place in the category of intermediate goods - about 55 percent.

Finally, the rate of economic growth achieved during the year was not encouraging to the authorities. Gross National Product at constant (1959) prices rose by 5.7 percent compared with a rate of growth of 8.3 percent in the previous year. In per capita real terms, the rate of growth was 3.5 percent as compared with 5.8 percent in 1968.

<u>1970</u>

There was no change in the policy of the central bank, except for an increase in the bank rate from $5\frac{1}{2}$ percent to $6\frac{1}{2}$ percent. The ceilings on commercial bank credit, as revised in June 1969, continued to be in force in 1970. While there was a slight drop in credit under the ceiling, there was an expansion of credit outside the ceiling, mainly attributable to an increase in credit for agricultural purposes. Money supply increased by 4.61 percent during the year, which was much less than the increase of 8.93 percent in 1969. Government's indebtedness to the banking system increased by 2.9 million rupees. Central bank holdings of government paper and advances rose by 155 million rupees; commercial bank credit to the Government rose by 64 million rupees and consisted of increases both in treasury bills and government and government guaranteed securities. Bank credit to the private sector including government corporations increased by 83 million rupees which was appreciably lower than the increase of 149 million rupees in the previous year. The decline is most noticeable in the category of loans which fell from 136.3 million rupees in 1969 to 77.2 million rupees in 1970,4 primarily due to a reduction in credit to government corporations.

The trade deficit in 1970 was estimated at 316 million rupees which was a considerable improvement over the previous year when the deficit was 746 million rupees. In spite of this substantial reduction in the trade deficit, the management of the external financial situation presented formidable problems. The cumulative effect of the continuous deficits which had been incurred has resulted in the depletion of Ceylon's exchange reserves. At their current level, the reserves were not adequate to meet a sudden and unexpectedly large difference between external payments and receipts. A further source of anxiety was Ceylon's heavy reliance on short-term debt for financing balance of payments deficits.

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The central bank has, in the past, arranged several lines of credit with foreign banking and financial institutions, with the object of augmenting the external reserves available for meeting any sudden unfavourable change in the country's payments situation. Although arranged for contingencies, the central bank has admitted in its annual report for 1970 that considerable use has been made of this form of credit in recent years for bridging the recurring gap between external payments and receipts. Since this source of finance is not always reliable, the Government wanted to reduce the deficit by its own efforts. Accordingly, when the new Government took office in May 1970, one of its immediate actions was to suspend the "Open General Licence Import Scheme" pending a review of the country's foreign exchange position. It was therefore decided that all imports should be brought under individual import licences and that quotas be issued in accordance with a system of priorities. In other words, there was a significant reversal of government policy from import liberalization back to the former system of import quotas.

Prices went up in 1970 by 5.9 percent as shown by the Consumer Price Index. The average increase in the Consumer Price Index for the last three years has been approximately 5 percent. According to the central bank's private survey, prices of items not included in the Consumer Price Index showed significant increases. Consumer goods presented a mixed picture, with some commodities recording a price de-

cline and others a price increase. On the other hand, investment and intermediate goods showed substantial price increases. Intermediate goods such as copper wire and soda ash increased in price by about 3 percent to 27 percent whereas investment goods such as tea machinery, steel and clay tiles registered a price increase of between 2 percent and 35 percent.

Finally, the rate of growth of real GNP was also lower than the previous year - 4.1 percent in 1970 as against 5.1 percent in 1969. Allowing for a population increase of 2.1 percent, the rise in per capita Gross National Product at constant (1959) prices was about 2 percent. In fact, there has been a slackening in per capita real output during the last two years.

<u>1971</u>

There was no significant change in central bank policy. Money supply increased by 3.48 percent during the year, compared with an increase of 4.61 percent in 1969. Government borrowing from the banking system recorded a very sharp decline from 219 million rupees in 1970 to 80 million rupees in 1971. In contrast, commercial bank credit to the private sector showed only a very small change from the previous year - 81 million rupees in 1971, compared with 83 million rupees in 1970. The small increase in commercial bank lending was due to the imposition of ceilings on com-

mercial bank credit, especially to government corporations.

Despite the slow increase in money supply, the balance of payments continued to be in deficit. As a result of the deficit, net external assets declined by 210 million rupees, whereas in 1970 the decline¹ was 200 million rupees.

The Consumer Price Index increased by 2.90 percent, in contrast to the increase of 5.90 percent in 1970. However, according to the annual survey of the central bank, the prices of many items not covered by the Consumer Price Index have increased more rapidly than in the previous year. In the category of consumer goods, some items such as electric bulbs, footwear, motor car spare parts and cotton thread have increased by about 20 percent. But the greater increase has taken place in the categories of intermediate and investment goods. The average increase in the prices of these items is approximately 40 percent.

Finally, the rate of economic growth during the year was also very disappointing. Gross National Product at constant (1959) prices increased by 0.9 percent as against a rise of 4.1 percent in 1970.

Conclusion

The main conclusion which emerges from this survey is that monetary policy in Ceylon Has not been very successful. Monetary policy set out to achieve a satisfactory rate of economic growth, price and exchange rate stability, and

full employment. It is not clear what effect monetary policy could have on economic growth. Therefore, the performance of the central bank should not be judged by the rate of economic growth achieved during the period, 1960-71. Regarding prices, acute shortages experienced in almost all sectors of the economy have contributed to a fairly steep rise in prices although, unfortunately, the Colombo Consumer Price Index does not provide an accurate picture of the price increase. The external payments situation presents a story of continuous deterioration with the result that Ceylon has to resort to distress loans from foreign sources to meet the deficits in the balance of payments every year. Finally, the recent insurgent activity in the country was largely motivated by disenchantment with government policy concerning the unemployment problem, and the primary objective of the new Five Year Plan is to reduce the rate of unemployment in the economy.

In fairness to the central bank, it must be said that it made a fairly correct diagnosis of the monetary problems facing Ceylon. In its annual reports, the central bank mentioned repeatedly that a rapid increase in the money supply has led to balance of payments deficits and to inflation. But where it went wrong was in its policy prescriptions to combat these problems. The central bank has always held the view that the monetary expansion in recent years was due to budget deficits. While this was certainly a constraint on the central bank's operation, the

policies which the latter used to regulate commercial bank credit to the private sector were most unsatisfactory. The central bank was primarily interested in stepping up the rate of economic growth and followed a monetary policy aimed at easing credit to product ve activities while curtailing credit to activities not directly related to production. For this purpose, it had to make various concessions and compromises; some of which reduced the impact of monetary policy)on the economy. For example, after the devaluation, although the central bank wanted to adopt a restrictive monetary policy, it permitted government corporations and co-operatives easy access to commercial bank credit. The net result was a large increase in money supply which completely wiped out the gains which the devaluation would have otherwise brought about. Similarly, the exemption of the People's Bank from statutory reserve requirements was a very serious mistake which was corrected much later during this period.

CHAPTER TWO

A SURVEY OF THE LITERATURE

In this survey we are concerned with the problems of inflation and balance of payments deficits. Although the following discussion covers various aspects of these two problems, the main focus is on the financing of economic development and the extent to which it gives rise to inflation and balance of payments difficulties. Fiscal and monetary policies adopted to avoid inflation and balance of payments deficits and surpluses are also discussed in this ' chapter.

Inflation and Economic Development:

At the outset, it is desirable to discuss the question whether inflation encourages or retards economic growth. This is a difficult question because an observed relation between inflation and growth is not sufficient to establish a causal connection between them. First, cross-sectional differences among countries may vitiate the entire analysis and, second, circumstances relating to inflation in a given country may change from time to time. Finally, there is also the possibility that causation may run from growth to inflation, in the sense that slow growth may be a factor contributing to inflation.

The available empirical evidence (13, 116) reveals

that there is no significant relationship between inflation • and growth. Johnson (59) has given the following reasons for the lack of any historical association between these two First, in the long run one would normally expect variables. an economy to adjust to whatever rate of monetary growth it experiences largely through price movements, or conversely to adjust its rate of growth of money supply to the rate of economic growth and price trends, depending on whether the exchange rate is fixed or flexible. Second, saving and investment of physical capital are only a few of the determinants of economic growth. There are several others such as the spread and application of knowledge through technical and managerial change and the improvement of human skills. These determinants of economic growth have very little direct relationship with monetary developments.

In general, the mobilization of economic resources by development policy is likely to involve some degree of inflation. Johnson (60) has stated that a moderate degree of inflation is the logical concomitant of efficient resource mobilization. Owing to various rigidities and immobilities : prevalent in most economies, some increase in wages and prices may be needed to draw resources out of traditional or subsistence sectors into the developing sectors of the economy. In this sense, a moderate degree of inflation is, indeed, desirable because it performs the function of facilitating resource reællocation.

While it is to be expected that a growing economy may

experience a moderate degree of inflation due to the reasons mentioned above, some economists believe that this rate of inflation is not sufficient and that there should be a deliberate use of inflationary policies to promote economic The main theoretical arguments in favour of development. the deliberate use of inflationary policies stem from both the Keynesian theory of income and the quantity theory of The typical Keynesian view is that inflation promotes money. economic growth in two ways. Firstly, due to the tendency of wages to lag behind prices during inflation, there will be a redistribution of income in favour of profit-earners and away from wage-earners. Some economists such as Kaldor (65) and Holzman (46) contend that such income redistribution is conducive to economic growth because the marginal propensity to save is higher among profit-earners than among wage-earners. Thus inflation leads to an increase in profits which in turn stimulates investment. The system tends to feed on itself because a higher rate of growth raises the rate of profit and the process continues.¹ Secondly, inflation influences investment from the supply side too. As is well known, in order for investment to take place, it is necessary that the expected rate of return on investment projects should exceed the long term rate of interest. Kaldor (65), for example,

^{1.} This follows from Kaldor's formula: P/K = G/A where P = profits; K = capital stock; G = rate of growth of output; and A = percentage of profits saved. This formula assumes that the propensity to save out of wages is zero. For the more general case where wage-earners also save, the formula is more complicated. See Kaldor (65).

argues that inflation tends to widen the differential between the nominal rate of profit and money interest rates, thereby giving an additional boost to investment. Note that the validity of this argument depends on the alleged slow response of interest rates to inflation. Both these propositions have come under severe criticism. With regard to the first point, empirical work done by Alchian and Kessel (3) and Bach and Ando (6) appears to indicate that inflation does not have a significant impact on income distribution. Their conclusion receives further confirmation from Cargill's (19) recent finding that both wages and prices have risen simultaneously during inflationary periods. Regarding the second point, again, the bulk of the evidence indicates that both shortterm and long-term interest rates have increased during inflationary periods (41, 17, 108).

The quantity theory approach argues that during a sustained inflationary period the behaviour of all sectors of the economy will become adjusted to the expectation of inflation, and that consequently the effect of inflation will be to redistribute income not from wage-earners to profitearners but rather from the holders of money balances to the monetary authorities. The basic postulate of the quantity theory approach to inflation is that there is a stable demand for money in real terms, into which the rate of inflation enters as a cost of holding real balances. Given this function, the rate of increase of the nominal stock of money determines the rate of inflation, the public eventually coming

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to expect that rate of inflation and adjusting their stock of real balances to it. In order to maintain its real balances constant in the face of inflation, the public must spend a part of their real income to accumulate money balances at a rate equal to the rate of inflation. The real income sacrificed to accumulate nominal cash balances is equivalent to a tax on the holders of real cash balances and the tax proceeds accrue to the monetary authorities. The above arguments summarize Cagan's (16) pioneering work on hyper-inflation. In his model, it is the expected rather than the actual, rate of inflation which enters as a variable in the demand function for real money balances. The expected rate of inflation in Cagan's model is a weighted average of the rates of inflation in the past, with the weights declining as one goes backwards in time.

The quantity theory approach can be illustrated with the aid of Diagram 1. The rate of inflation is measured on the vertical axis and the ratio of real cash balances to real income is measured on the horizontal axis. DD¹ represents the demand for real cash balances as a function of the rate of inflation. With price stability, the ratio of real balances to real income is OD¹. With the rate of inflation established and expected to continue at OP,the demand for real balances relative to real income falls to OM. The decline in the demand for real balances relative to real income is due to the increase in the cost of holding real balances under inflationary conditions. The area OPP¹M represents the proportion

of real income that the holders of real balances are obliged by the inflation to accumulate in the form of money balances in order to keep their real balances intact. In other words, OPP¹M is the tax revenue from inflation expressed as a proportion of real income.

The deliberate use of inflationary finance, therefore, is a method of obtaining revenue by the government for use in a development programme. As a matter of practical experience, resort to the inflationary tax is often prompted by the inadequacy of foreign capital and by an inability to obtain sufficient revenue by taxation and by borrowing from the public.

A striking feature of the quantity theory approach is that the welfare cost of inflation to the economy appears not as a socially undesirable redistribution of income among the various classes of the community but as a waste of resources involved in the efforts of the public to economize on the use of money by substituting real resources for it. Such substitution generally takes various forms such as shortening the intervals between wage payments and the holding of stocks of goods instead of money. Bailey (8) has shown that the welfare cost of inflation to the economy is measurable by the area $P^{1}MD^{1}$ (Diagram 1), and can be approximated by the formula 1/2 P M/Y N, where P is the rate of inflation, M/Y is the ratio of money to income held at a given rate of inflation, and N is the inflation-elasticity of the ratio of money to in-This formula overlooks the possibility that some of the come.


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revenue collected by the government through the inflationary method may be used for development purposes. However, Marty (84) has shown that, from an empirical point of view, whatever contribution to economic growth there is may be outweighed by the waste of resources produced by the inflationary tax.²

If monetary expansion associated with development policy is likely to lead to inflation, it is interesting to find out whether there is a "safe" limit up to which money supply could be increased without producing inflationary consequences. The answer to this guestion i's that it depends on the willingness of the public to hold the increased cash balances at stable prices. The growth of/demand for money in turn depends on two factors - the increase in real income consequent on the growth of the economy and also to some extent, on the monetization of the traditional or subsistence sector in underdeveloped economies. The amount of resources that can be made available for financing economic development by monetary expansion without producing inflation depends on the rate of growth of demand for money, the ratio of money to income, and the portion of additional money that can be used for government spending (60). For example, with a rate of rgrowth of demand for money of 6 percent, half of which can be used for government spending, the budget deficit financed by

^{2.} Milton Friedman (37) argues that in a growing economy where growth is due to factors other than government investment, the welfare cost of inflation will be less than the estimates provided by Bailey and Marty.

monetary expansion will be 3 percent of the initial money supply. If the ratio of money to income is 2/5, this would make 1.2 percent of national income available for government spending. If, on the other hand, the ratio of money to income is 1/5,only 0.6 percent of national income can be used for government expenditure. The small proportion of income held in the form of money is one reason why deficit financing tends to be more inflationary in less developed countries than in advanced countries.³

Using a very simple quantity theory model, Mundell (91) tried to estimate the contribution that inflationary financing might make to economic growth. His results which are based on rather generous assumptions about the magnitudes of the determinants, designed to produce a maximum estimate, show a maximum inflationary tax yield of 3 percent of national income and a maximum increase in the growth rate of 1.50 percent on one formulation of the influence of the rate of inflation on the demand for money, and a tax vield of 3.2% of national income and an increase in the growth rate of 0.8 percent on another formulation. Mundell's general conclusion is that the contribution of inflationary finance to economic

^{3.} The above argument assures that the money/income ratio remains constant throughout. To the extent that the money/income ratio is sensitive to the rate of inflation, the amount of resparses of breakfords by inflationary finance would be much shaller than the estimates given in the text. Another point not considered here is the currency drain. The high currency ratios prevalent in less developed countries yould reduce the inflationary pressure resulting from monetary expansion.

growth is rather negligible. He ignored the possible effects of the monetization of the subsistence sector on the demand for money. He also overlooked the importance of the currency drain in less developed countries. Finally, Mundell assumed that government spending is entirely for investment purposes. However, as Lotz (73) has pointed out, a large proportion of government spending in many underdeveloped countries goes into activities which are not directly related to economic development. To the extent that this is true, the rate of economic growth resulting from inflationary finance will be much smaller than that assumed by Mundell.

There have been several empirical studies dealing with the application of the quantity theory model to inflation in underdeveloped countries. The pioneering work is Harberger's study of the Chilean inflation (43). According to him, the rate of inflation is a linear function of money supply, real income, wages, and the expected rate of price Since price expectations are based on the behaviour change. of prices in the immediate past, Harberger used the rate of price acceleration in the past as a proxy for the expected rate of price change. Interest rates were left out of the analysis because they were subject to legal control at that time and generally were kept at levels substantially below the rate of price increase in the economy. Implicit in Harberger's study is the assumption that the demand for real balances is a function of real income and the expected rate of inflation. Others who have made the same assumption are

Cagan (16) and Deaver (26). The novelty of Harberger's approach lies in the addition of a wage variable to capture the cost-push elements in the inflationary process. In fact, his is the first study based on the quantity theory approach which combines monetary and cost-push elements in one equation to explain price changes. Harberger's main finding is that changes in money supply have been the key factor in the Chilean inflation. He also found all the other variables except wages to be statistically significant. The poor performance of the wage variable may be due to several reasons. First, cost-push elements may have been weak as Harberger's study seems to suggest. Second, it is also possible that multi-collinearity between wage changes and price acceleration in the past might have reduced the statistical significance of the wage variable.

Colaco (23) has recently attempted to apply Harberger's model to the Indian economy.⁴ When annual data were used, he found that money supply did not have a significant effect on the price level. But when quarterly data were used, money had considerable explanatory power although real income lacked statistical significance. The main difficulty in using real income as an explanatory variable is that it also includes real income originating in the subsistence sector of the economy, which is generally not very sensitive to changes in money supply. Therefore some writers have

^{4.} Other studies based on the Harberger study are those by Diz on Argentine (27) and Hynes (52) on Chile.

argued that in the measurement of real income the subsistence sector should be omitted.⁵

In addition to these studies there have been some international comparisons based on cross-section data. For example, both Argy (5) and Liang-Shin Fan (32) found in their cross-section studies that the money supply variable was statistically significant in the price equation. Particular mention should be made of Argy's study because he tried to compare the performance of the monetary variable with the "structural" variables which are discussed later in this chapter. His main finding was that changes in money supply performed consistently better than the other variables.

Both the Keynesian and the quantity theory versions fall into the general category of demand-pull theories of in-In contrast, the cost-push inflation theories emflation. phasize the importance of cost elements, especially of unit labour costs, in the inflationary process. According to these latter theories, autonomous increases in wages which exceed the average productivity of labour are inflationary if the money supply also is increased at the same time to accommodate the wage increases. Almost all the cost-push theories have the following common features. First, firms set prices in such a way as to cover direct costs and to secure a given profit margin. The price fixed must be consistent with a "normal" rate of utilization of plant and machinery (30). In this case a change in money wages in excess of productivity

5. An excellent discussion is found in Prasad (106).

increases will tend to be transferred on to prices as long as the rate of utilization of capacity is maintained. Second. wage increases in a few "key" industries set the pattern for wage increases elsewhere in the economy. The definition of a key industry is based on either its size as measured by sales or employment, or its strategic importance to the eco-The tendency for wage increases to spill over from nomy. the key industry group to other sectors of the economy is referred to as "pattern bargaining" (77). Thirdly, it/is implicitly assumed that the monetary authorities are committed to the maintenance of full employment in the economy. Therefore, whenever wage increases outstrip productivity increases, the authorities try to avoid the resulting unemployment by monetary expansion (31). This is why it is practically impossible to devise a satisfactory test to determine whether an inflation is of the demand-pull or cost-push variety. An excellent discussion of the various pitfalls involved in drawing a distinction between these two types of inflation is found in Holzman (47). Cost-push inflation theories are not very popular as an explanation of inflation in underdeveloped countries. One reason for this is that 'trade unionism is still rather weak in many of these countries. The other reason is that data on wages, productivity and other cost elements are rather scarce in underdeveloped countries.

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With the exception of the quantity theory, perhaps the most popular explanations of inflation in underdeveloped

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countries relate to the "structuralist" school. These theories, while not denying the connection between the financing of economic development and inflation, emphasize that the structural elements of an economy play a far more important role in the inflationary process than money supply. The three most popular structuralist arguments are the following:

a. The export instability hypothesis.

b. The import bottlenecks hypothesis.

c. The agricultural bottlenecks hypothesis.

a) The export instability hypothesis:⁶

The relationship between changes in the general price level and export receipts can be rationalized in several ways. First, one would normally expect a combination of multiplier and accelerator effects to stem from an expansion of export demand. However, the general result is likely to be inflationary because the supply of goods will not be able to keep pace with rising incomes. On the other hand, when export incomes fall, the domestic price level need not necessarily fall partly due to the downward rigidity of wages and partly due to the fact that the government might try to maintain aggregate demand at its original level. Second, a country's ability to import may be closely related to its export earnings. This implies that a decline in exports will automati-

^{6.} A leading exponent of this hypothesis is G. Maynard (85). Also see Baer (7).

cally lead to a decline in imports which in turn may aggravate the domestic inflationary situation. Even if it is difficult to cut back imports quickly, a balance of payments crisis may be precipitated. If foreign exchange reserves have not been accumulated against this contingency, exchange rate depreciation would raise import prices thereby giving a further fillip to the domestic price level. Finally, there may be a positive relationship between government revenue and export incomes. Thus government expenditure increases during an export boom because government revenue has increased but expenditure may be inflexible in a downward direction.

To test the export instability hypothesis, MacBean (81) used the variance of dollar export receipts as a surrogate for export instability and correlated it with average rates of inflation for 29 developing countries. He found a very low and insignificant correlation; however, when he dropped Ceylon, Malaya and Ghana from the sample, there was a substantial improvement in the correlation. Argy (5) also correlated the variance of annual percentage changes in export receipts with average rates of price change for 22 developing countries and found that the export instability variable was statistically insignificant. However, the findings of these studies are not conclusive. First, they are based on cross-section data and do not shed much light on how export instability and the price level are related in a country over time. Second, as MacBean has argued, while the export instability hypothesis may not be applicable to

all developing countries alike, it may hold true for some countries. Finally, the main difficulty with the export instability hypothesis is that, since several theoretical possibilities are mentioned, it is not always easy to predict in advance what the exact relationship between export receipts and inflation would be.

b) The import bottlenecks hypothesis:

Import bottlenecks are alleged to result from the general tendency of export earnings of developing countries to decline or remain stagnant, thereby making it extremely difficult for these countries to maintain a volume of imports commensurate with the needs of economic development (111). This in turn provokes two types of responses. First, imports, especially of consumer goods, have to be constrained. Second, there is a tendency to resort to expensive import-substitution programmes. Some writers (90, 7) have claimed that these policies contribute to inflation in developing countries.

The empirical evidence on the import bottlenecks hypothesis is somewhat mixed. Using an input-output model, Humphrey (51) has demonstrated that import-substitution had a significant effect on inflation in Argentina during the period, 1953 - .66. However, Argy (5) failed to find much support for the import bottlenecks hypothesis in his study of international comparisons.⁷ He used the ratio of imports

7. Blair (14) also reached a similar conclusion in his study on Brazil.

to GNP as a proxy for import bottlenecks in his multiple regression analysis. One reason for the lack of a strong relationship between imports and inflation is the possibility of a lagged response in the price level to a change in imrorts. Another is the possibility of a bias in the estimates due to the correlation of GNP with other variables like money supply in the same equation. Finally, it is important to note that, even if a strong relationship between imports and inflation was found, the evidence cannot be treated as conclusive due to the two-way causation between these variables. A reduction in imports may cause domestic prices to rise. But the authorities also may relax import restrictions to ease the inflationary pressure.

c) The agricultural bottlenecks hypothesis:

According to this hypothesis, population growth, improvement in living standards, and urbanization continue to increase the demand for food. Due to the short-run inelasticity of supply, the output of food cannot be increased in the short-run to match the increase in demand. Hence an excess demand develops for food. In the absence of imports, food prices will increase, thus setting off an inflationary spiral.

The view that food prices are important in inflation figures prominently in the writings of the structuralist school. Thus, Porter (103) argues that, despite the strong relationship between money supply and the price level, the price of food was the dominant source of inflationary pres-

sure in Pakistan in the 1960's. Unfortunately, he does not provide any empirical evidence in support of this assertion. Similarly, in Harris's model (44), food prices play the major role in the inflationary process. According to him, an increase in food prices leads to an increase in the wage rate which in turn exerts upward pressure on manufacturing prices, through the practice of mark-up pricing.⁸

The general conclusion which emerges from this discussion is that inflation in less developed countries cannot be attributed to a single cause. There is a multiplicity of factors at work and money supply is only one of them. Structural elements of an economy also may be relevant and cannot be completely overlooked.

Balance of Payments and Economic Development

The Keynesian approach to the question of how the state of the balance of payments affects domestic economic activity runs in terms of the familiar foreign trade multiplier according to which an increase in exports leads to a multiple increase in domestic income, a part of which is drained out of the system through an increased demand for imports. Some writers (66, 97, 83) have used this approach to show how fluctuations in export earnings, especially of primary products, create domestic economic instability.

^{8.} Also, see Khusro (70) on the role of food prices in India.

In contrast to the Keynesian approach which shows a direct link between exports and domestic income, the quantity theory approach attempts to establish a causal relationship first between exports and money supply and then between money supply and income. In his fixed exchange rate model, Polak (102) shows that, starting from a position of equilibrium in the economy, a balance of trade surplus caused by an exogenous factor such as an increase in the world demand for exports, leads to an increase in money supply which in turn has a stimulating effect on income. Since a portion of the increase in income is spent on imports, the initial trade surplus will be reduced and this will have a contractionary influence on money supply. The process will continue until the economy is back in equilibrium. In Polak's model, money supply is a function of trade surpluses and deficits. Later, Mundell (92) extended Polak's analysis to include budget deficits as an additional variable influencing money supply. Polak's original paper has formed the basis of several empirical studies, in this field. Perhaps the most outstanding work is that of Michael Kieran (71) who tried to use the Polak model to explain business cycles in Japan. Other studies which try to compare the performance of the Polak model with the Keynesian models are those of Schotta (112) and Bather and grain, Jr. (10). The enter sonales are marred by the difficulty in drawing an empirical distinction between autonomous and induced investment and hence they tend to tilt the balance heavily in favour of the quantity theory

approach.

While it is readily conceded that the balance of payments situation affects economic development, it is also true that causation may run both ways. According to conventional theory, a high rate of economic growth tends, other things equal, to give rise to a deficit in the balance of payments. For example, in Johnson's model (58), each country is completely specialized, -and its imports are a function of income and relative commodity prices. At current prices, then, the higher the rate of growth of a country, the more rapidly its imports increase. If the income elasticity of demand for imports is the same in all countries, a higher rate of growth of a given country relative to that of its trade partners necessarily deteriorates its balance of pay-This is, however, in sharp conflict with reality. ments. The balance of payments of a few rapidly growing countries has tended to be favourable, whereas some countries with slow growth have experienced prolonged balance of payments difficulties.

Therefore, a general equilibrium model is more appropriate for the analysis of the effects of economic growth on the balance of payments. For example, in Komiya's (72) model, there are three markets - good, bonds and money. An excess demand for goods is reflected in the balance of payments on the current account while an excess demand for bonds affects the capital account. In the absence of bond purchases by the banking system, the overall balance of payments is equal to

the private sector's excess demand for money. With the aid of this model, Komiya demonstrates that there are two basic forces which affect the balance of payments in the process of economic growth. One factor is the growth of output which tends to improve the balance of trade, as well as the overall balance of payments, while deteriorating the balance on the capital account. As an economy grows, the demand for money increases, and if there is no autonomous increase in money supply, the balance of payments surplus is the only channel through which the additional money is fed into the Similarly, the balance of payments on the capital economy. account turns into a deficit as the demand for bonds is increased in response to a rise in income and residents buy bonds from abroad. The second factor which is at work is an autonomous increase in money supply. When there is an excess supply of money in the economy, the residents of a country dispose of the redundant money by spending it on goods and bonds. Thus an autonomous increase in money supply leads to a worsening in the balance of payments. According to Komiya, the relative strengths of these two factors determine the exact course of the balance of payments of a growing economy.

Since many countries are on a fixed exchange rate system, recurring deficits in the balance of payments may indicate that their currencies are overvalued and that they need adjustment. Johnson (62) argues that developing countries which embark on planned economic development often experience an over-valuation of their exchange rates. Planned.

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development means a higher level of economic activity which in turn raises the demand for both domestically produced and imported goods. There is also likely to be a shift of demand from consumer goods to capital goods, most of which have to be imported. On the export side, a reduction may be expected for the following reasons. First, a part of the increase in domestic consumption may be at the expense of exports. Second, emphasis on import-substitution would tend to divert resources from sectors producing traditional export goods into other areas. Finally, domestic inflation often experienced during the process of planned development may be another factor affecting adversely the international competitiveness of a country's exports.

One way of correcting the disequilibrium in the foreign exchange market is devaluation. But many countries are reluctant to devalue their currencies for a host of considerations such as their inability to obtain popular support in favour of a redistribution of income from consumers to producers of internationally traded goods which a devaluation entails (57). Therefore, instead of resorting to a devaluation, governments often attempt to correct the disequilibrium in the foreign exchange market by taking direct action on the import side in the form of higher duties and other restrictions.

Several studies have been conducted on the overvaluation of exchange rates. One group of studies (54, 98, 99) attempts to measure the degree of overvaluation by direct

comparison of domestic prices with foreign prices for the same basket of goods.⁹ The other group of studies (34, 63) attempts to arrive at a numerical estimate of the extent of overvaluation by using the elasticities approach. Apart from the numerous data problems which these studies run into, they also suffer from several other weaknesses. First, they concentrate colcly on the trade balance and completely ignore the capital account of the balance of payments. Depending on the magnitude of capital flows, these studies tend to either overestimate or underestimate the degree of overvaluation. Second, some of these studies tend to overlook the fact that the foreign exchange markets in underdeveloped countries are not free due to the existence of trade restrictions and foreign exchange controls. Subject to the above limitations, all these studies seem to indicate that the current exchange rates in many underdeveloped countries are considerably overvalued.

Policies to Achieve Internal and External Balance

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Having discussed the problems of inflation and balance of payments deficits, it is now necessary to discuss the various combinations of monetary and fiscal policies designed to achieve internal and external balance. Internal

^{9.} The pioneering work in this area was undertaken by Houthakker (42) who used the purchasing power parity doctring to estimate the extent of overvaluation of the United Suates dollar. For a criticism of his work, see Aliber (4) and Balassa (9).

balance requires that aggregate demand for domestic output be equal to aggregate supply of domestic output at full employment. If this condition is not fulfilled, there will be inflation or recession according to whether aggregate demand exceeds or falls short of full employment output. External balance, on the other hand, implies that the balance of trade is equal to net capital exports at a given exchange rate which is assumed to be fixed. If the balance of trade exceeds capital exports, there will be a balance of payments surplus and an accumulation of exchange reserves. To keep the exchange reserves at their original level, the central bank buys foreign exchange. Conversely, if the balance of trade falls short of capital exports, there will be a deficit in the balance of payments and a reduction of foreign exchange reserves. Under these circumstances, the central bank will \mathcal{Z}_{i} sell foreign exchange.

To understand how a conflict could arise between internal and external balance, consider an open economy trading with the rest of the world at a fixed exchange rate. To simplify the analysis, assume that, given the exchange rate, the trade surplus (deficit) of the country is a decreasing (increasing) function of its level of income. The influence of other factors will be discussed later on in this section. Whichever choice of combination of policy instruments - fiscal policy and monetary policy - it makes to maintain full employment, the trade surplus (deficit) will be the same. In consequence, it appears that a country on a

fixed exchange rate that would have a deficit at full employment, is faced with a conflict of objectives which it cannot surmount - either it must have full employment and a deficit, or it must have external balance and excessive unemployment.

The solution provided in the immediate post-war period by James Meade (86) and other writers such as Tinbergen (118) was to introduce the possibility of changes in the exchange rate. At a lower exchange rate, given the satisfaction of certain elasticity or stability conditions, the trade deficit (surplus) associated with any particular level of income would be lower (higher). Hence the country could achieve both objectives - internal and external balance - by a proper combination of exchange rate adjustment and monetary and fiscal policies. It should be noted that, although a devaluation would achieve external balance, it would also result in inflation unless expenditure - reducing policies are undertaken at the same time.

In the international monetary system as it has developed since the early post-war work on the theory of international economic policy, exchange rates have become, for practical purposes, relatively rigid. Although several countries have devalued their currencies in recent years, devaluation still appears as a measure of the last resort rather than as a regular feature of the international monetary system. Thus, a country which is faced with the choice between a trade deficit and excessive unemployment would not

ordinarily attempt to solve the dilemma by resorting to a devaluation combined with some mixture of monetary and fiscal policies.

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This dilemma has been dispelled by recognition of the fact that the balance of payments comprises two elements the current account and the capital account, and that while the balance on the current account can be taken as a function of the level of national income and (in principle) the exchange rate, the flow of funds on the capital account of many developed countries is a function of the level of domestic interest rates relative to interest rates abroad. This means that the capital account can be adjusted to match the current account deficit or surplus by a proper choice of the fiscal and monetary policy mix.

The solution to the problem of maintaining internal and external balance can be illustrated with the aid of one of Mundell's (93) diagrams.¹⁰ The economy being studied is assumed to operate under a fixed exchange rate system. It is also assumed that the authorities can use two policy variables - the rate of interest and the budget surplus - to

^{10.} Some economists such as Michaely (88) have used the IS
and LM curves to describe the problem of internal and external balance. The application of the IS and LM analysis to an open economy leads to several complications. First, the IS curve has to be redrawn to take into account the foreign sector. Along the new IS curve saving minus investment is equal to exports minus imports. Second, money supply is no longer an exogenous variable due to its dependence on the balance of payments to some extent. Finally, it is necessary to make some assumption about the exchange rate because of its influence on the various sectors of the economy.

achieve internal and external balance. The rate of interest is measured along the horizontal axis and the budget surpluson the vertical (Diagram 2). The FF curve shows the various combinations of the rate of interest and budget surpluses along which the balance of payments is in equilibrium. Ιt has a negative slope because an increase in the rate of interest, by reducing capital exports and lowering domestic expenditure and hence imports, improves the balance of payments; whereas a decrease in the budget surplus, by raising domestic expenditure and hence imports, worsens the balance of payments. Points above and to the right of FF refer to balance of payments surpluses. Conversely, points below and to the left of FF indicate deficits in the balance of payments. The XX curve shows the various combinations of budget surpluses and the rate of interest that permit continuing full employment equilibrium in the market for goods and services. It is also negatively sloped because an increase in the rate of interest reduces aggregate demand and is deflationary; whereas a decrease in the budget surplus raises aggregate demand and is inflationary. It is only along the XX curve that aggregate demand is equal to the full employment output. Points above and to the right of XX are deflationary while those below and to the left are inflationary.

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Since both XX and FF curves are negatively sloped, the next interesting question to ask is which of these is the steeper one. It can be shown that FF must be steeper than XX if capital is even slightly mobile. The slope of XX is the



ratio between the responsiveness of domestic expenditure to . the rate of interest and the responsiveness of domestic expenditure to the budget surplus. If it is assumed for a moment that capital exports are constant, the balance of payments depends only on domestic expenditure because exports are assumed constant and imports depend only on domestic In other words, if capital exports are constant, expenditure. the slope of FF also is the ratio between the responsiveness of domestic expenditure to the rate of interest and the res- * ponsiveness of domestic expenditure to the budget surplus. This means that if capital exports are constant, the slopes of FF and XX are the same. It is then possible to see that the responsiveness of capital exports to the rate of interest makes the slope of FF greater in absolute value than the slope of XX.

The diagrammatic apparatus described above can be used to illustrate the proper mix of monetary and fiscal policies used to achieve internal and external balance. Consider first the effects of using fiscal policy to achieve external balance and monetary policy to achieve internal ba-⁴ lance. Suppose initially the economy is at Q (Diagram 2). At Q, the goods market is in equilibrium but the balance of payments is in deficit. To correct the deficit in the balance of payments, the budget surplus must be increased. The new equilibrium is at L on FF. At L, the economy is experiencing a recession. To bring the goods market back into equilibrium, the rate of interest must be lowered.

Thus it is clear that the use of monetary policy to achieve internal balance and fiscal policy to achieve external balance moves us away from the overall equilibrium of the economy. Now, consider the effects of using fiscal policy for internal balance and monetary policy for external balance. Starting once again at Q, it is necessary to raise the rate of interest to reduce the deficit in the balance of payments. The new equilibrium is at K. At K, the goods market is experiencing an excess supply. To correct the disequilibrium in the goods market, the budget surplus must be reduced. Thus it is clear that the use of fiscal and monetary policies to achieve internal and external balance respectively results in a stable equilibrium.

The problem of choosing a particular policy instrument to attain a specific target, whether it be external or internal balance, is referred to by Mundell (94) as the "assignment problem", and the choice depends on the relative effectiveness of the various policy instruments in achieving the different targets. The principle of "effective market glassification" provides a useful guide in making these decisions because it matches each instrument with the target on which it exerts the greatest relative influence. Owing ' to the greater relative effectiveness of fiscal policy in maintaining internal balance in the presence of international capital mobility, Mundell (95) assigns fiscal policy to maintain internal balance.

While the adjustment of the capital account balance to match the current account deficit or surplus is applicable to developed countries in general, it has little relevance to less developed countries mainly because capital flows into these countries are not very sensitive to interest rate Therefore, interest rate adjustments cannot be changes (2). considered as a practical solution to the balance of payments difficulties experienced by many less developed countries. Unfortunately, instead of discarding the interest rate variable, recent studies continue to use it while adding new For example, Johnson (61) has suggested that the variables. balance of payments on the capital account should be treated as a function of the rate of interest and the level of income. The rationale for including income is that direct investment tends to be positively related to the level of interme of the capital-receiving country. Without denying the validity of Johnson's argument, it may be said that several other factors such as tax incentives and the political stability of the capital-receiving country, may be equally, if not more important than the level of income.

Returning to Johnson's suggestion, it has several important implications. First, the income variable enters into both the current and the capital accounts of the balance of payments. Second, external balance could be achieved even

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^{11.} There have been several studies supporting this point of view. See, for example, Lent (76), Chandavarkar (20) and Aharoni (2).

when the response of capital flows to the interest rate differential is negligible. Therefore, it need no longer be true that monetary policy has a comparative advantage in dealing with external balance.¹² By way of elaboration, assume that initially the economy is at less than full employment and that the outflow of capital is greater than the trade surplus at the prevailing fixed exchange rate. It is further assumed that capital flows are perfectly inelastic with respect to the rate of interest. Only the income variable enters into the capital account and the current account of the balance of payments. Now suppose the authorities use fiscal policy to achieve full employment while keeping money supply constant.' As income expands and the economy reaches the full employment equilibrium, the balance of payments is affected in two ways. First, the increase in income leads to a reduction of the trade surplus through an increase in imports. Second, the increase in income also results in a reduction in the capital outflow. Therefore, provided that capital flows are sufficiently sensitive to income changes, the capital outflow can be made to match the trade surplus. Of course, the appropriate policy mix needed to restore external balance depends on two crucial elasticities - the interest elasticity and the income elasticity of capital flows.

Finally, Jones (64) has shown that the composition

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. 91

^{12.} Surveys of the recent literature are found in Krueger (74), Helliwell (45) and Takayama (114).

as well as the level of aggregate demand influences the ba-This will be the lance of payments on the current account. case if the import content of aggregate expenditure differs from category to category. To illustrate this, assume that the economy is already at full employment and that the capital outflow is greater than the trade surplus at the prevailing fixed exchange rate. All imports are assumed to be for investment purposes only. Finally, it is assumed that both the current account and the capital account of the . balance of payments are functions of the rate of interest only. Given these assumptions, if the authorities raise the rate of interest to achieve external balance, two things will First, the capital outflow will be reduced. Second, happen. imports will fall due to the decrease in domestic investment With and consequently, the trade surplus will increase. appropriate adjustments in the rate of interest, then, external balance could be achieved and the success of the operation depends, in this particular example, on the interest elasticity of the current account. The implicit assumption on which the Jones model is based is that domestic investment is a function of the rate of interest. Thus, when the rate of interest is altered, domestic investment changes and it in turn affects imports. However, interest rates do not seem to be an important determinant of investment in many less developed countries for several reasons. One reason is that private investment is undertaken mainly by small firms and households who resort to self-financing (107). Some econo-

mists (103, 106) have also argued that government investment which forms the bulk of investment in these countries, is not very responsive to interest rate movements.

The above literature on internal and external balance gives the reader the general impression that most of the recent studies have very little relevance to the problems of underdeveloped countries.¹³ The typical situation which exists in less developed countries is inflation and balance of payments deficits. Reganding the balance of payments, the main emphasis of the policy-makers appears to be on the trade balance rather than on the capital account mainly because capital flows are relatively small. The trade balance is a function of domestic income and relative prices 4 i.e. domestic prices relative to foreign prices. Thus, when a developing country undertakes planned development, a deterioration of the trade balance may be expected. First, the increase in domestic income would result in an increase in Second, the domestic inflation would have an adimports. verse effect on the country's exports. To correct the trade deficit, it is necessary to either devalue the currency or impose trade restrictions. Since devaluation is undertaken only in the last resort, the more frequently used method of correcting a balance of payments disequilibrium seems to be trade restrictions.

13. Johnson (57) has expressed similar views on the recent literature.

CHAPTER THREE

THE MODEL

In this study we have attempted to test two hypotheses. The first hypothesis is that inflation in Ceylon has been largely due to monetary expansion. The second is that the increase in money supply has also contributed to a deterioration in the balance of trade.

To test the above hypotheses, we have constructed a simple model which is presented in this chapter. The model is based on two assumptions. First, the exchange rate is assumed to be fixed. The second assumption is that imports of consumer goods are subject to restrictions.¹

Our model is similar to the models used by Polak (102), Charles Schotta (112) and Baker and Falero (10). All of them use a quantity theory approach in the sense that they try to establish a direct link between money supply and nominal income. Money supply is treated as an endogenous variable determined by the balance of payments and by budget deficits financed by borrowing from the banking system. International capital flows are either ignored or treated as autonomous. Finally, interest rates are omitted from these models.

Despite the above similarities, our model differs

^{1.} In Ceylon some consumer goods such as foodstuffs are not subject to import restrictions. However, the above assumption is retained to simplify the analysis.

from the other models mentioned earlier in two significant respects. First, in the latter models money supply has no effect on the domestic price level which is assumed to be determined by world prices. However, once import restrictions are introduced, the domestic price level is no longer an exogenous variable. In our model, we try to show that money supply influences the domestic price level to a significant extent. The second major difference between our model and other models lies in the treatment of exports. Previous models have assumed exports to be exogenous. In contrast, we treat exports as being determined by real income abroad and the ratio of domestic to international prices. By so doing, we are able to show the connection between domestic inflation and the foreign demand for Ceylonese exports.

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The Model

 $M_s = f(R, G)$ 1. R = f(B)2. $M_d = f(Y, P^e, BG)$ 3. $M_d = M_s$ 4. Y ≡ PQ, 5. $P = f(M_s, P_F, W)$ 6. 7. $B = X - (I_1 + I_2)$ $X = f(Q_F, P/P_F)$ 8. $I_1 = f(Q)$ 9. $P^{e} = f(P_{t-1}, P_{t-2}...)$ 10.

where M_s = money supply

 M_d = the demand for money

B = balance of trade surplus (or deficit)

G = budget deficit financed by borrowing from the banking system

P^e = expected rate of inflation

P = domestic price level

 $P_F = foreign prices$

X = exports

 I_1 = imports of intermediate and investment goods

 I_2 = imports of consumer goods

Q = domestic real income or output

BG = growth of commercial banking

 Q_F = foreign real income or output

R = international reserves

W = wage rate

Endogenous variables

Ms

Md

R

Y

Ρ

Q

В

X

I

pe

' Exogenous variables

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| (excluding lagged variables) |
|------------------------------|
| G |
| $Q_{\mathbf{F}}$ |

P_F

^I2 W

BG

1. The Money Supply Equation

Money supply is subject to both external and internal influences. The external influence is measured by international reserves. The major domestic influence is government borrowing from the banking system (G). Note that G refers to only that part of the deficit which is financed by bank borrowing and <u>not</u> to the total budget deficit. We believe that this is an improvement over some studies (10, 112) which have used the total budget deficit as a variable in the money supply equation. After all, what matters is not the size of the deficit but the way it is financed. A very large deficit financed by borrowing from the public is unlikely to add very much to the money supply.

2. International Reserves Equation

International reserves are positively (negatively) related to balance of trade surpluses (deficits). This equation is also found in Kieran (71).

3. The Demand for Money Equation

Three variables enter into the demand for money equation - nominal income, expected rate of inflation, and the growth of banking. The expected rate of inflation measures the cost of holding cash balances. The reason for using this variable in preference to interest rates is that the

latter may not measure accurately the cost of holding money due to the underdeveloped nature of the financial market in Cevlon.² For example, Adekunle (1) found that the rate of interest was not a significant variable in the demand for money equation for Ceylon. Apart from Adekunle's work, no other study has been done in this area for Ceylon. Our own results presented in the next chapter tend to confirm Ade-In addition to income and the expected rate kunle's finding. of inflation, we have used the growth of banking as a factor \cdot influencing the demand for money. The importance of the monetisation of the subsistence sector in the demand for money has been discussed by Johnson (62). However, very little empirical work has been done with this variable. The only study we have come across is by Diz (27) who found that the growth of banking has exerted a statistically significant influence on the demand for some components of money in Argentina.

4. The Monetary Equilibrium Equation

Equation (4) shows the equality between the demand for and the supply of money. This model assumes that the actual cash balances in the hands of the public are always equal to their desired level. This assumption is dropped in

^{2.} This, however, does not mean that interest rates are unimportant in the demand for money in <u>all</u> underdeveloped countries. For example, Sastry (109) finds it quite important in the demand for money in India.

the next chapter where the possibility of a lagged adjustment is considered. See, for example; Feige (33) and Chow (21) for similar models.

5. The Income Identity

Equation (5) shows the division of nominal income into prices and real output.

6. The Price Equation

Three variables determine the general price level money supply, foreign prices and wages. Foreign prices refer to the prices of imported goods. Wages appear in our model as an exogenous variable. It should be noted, however, that in a more complete model which also includes the labour market, wages would be an endogenous variable.³ Several writers such as Harberger (43), Diz (27) and Deaver (26) have also included a real output variable in their price equations. However, initial experimentation with an output variable showed us that it lacked statistical significance. The reasons for its poor performance are given in Chapter five. In the studies mentioned above, a price expectation variable also appears in the price equation. But we decided against using such a variable for the following reasons. Since Ceylon has experienced only a mild degree of inflation, it is

^{3.} For an application of such a model to an open economy, see Modigliani (89); also see Harris (44).

very unlikely that price expectations have been a dominant factor in the Ceylonese inflation. There is also the possibility of spurious correlation between P^e and P because the former is derived from past rates of change in the price level.

7. The Balance of Trade Equation

The balance of trade is the difference between exports and imports. Some imports (I_2) are subject to restrictions and are treated as exogenous. We have left out international capital movements for two reasons. First, capital flows were relatively small during the period of this study. Second, they consisted mainly of foreign aid.

8. The Export Demand Equation

Exports are a function of foreign real income and the ratio of international to domestic prices. However, in the actual statistical estimation of demand functions for Ceylonese export products, we have used more complicated equations. They are explained in detail in chapter six.

9. The Import Demand Equation

In this model imports which are not subject to restrictions (I_1) are a function of real income only. Rela-

tive prices - i.e. the ratio of international to domestic prices - have been left out mainly because Ceylon does not produce most of the commodities which are imported.

The Working of the Model

To explain how the model works, we can trace the chain of events which would follow from an increase in government borrowing from the central bank (G). The increase in G leads to an increase in the money supply (M_g) which in turn raises nominal income (Y). Some of the increase in Y will be absorbed by real output (Q) while the rest will appear in the form of price increases (P). The increase in P is likely to reduce the foreign demand for exports (X). At the same time, the increase in real output (Q) would lead to an increase in the demand for those imports which are exempted from restrictions (I₁). Consequently, there is a deterioration in the balance of trade (B). International reserves (R) fall. Unless the Government has taken any offsetting action, the fall in R will exert a contractionary influence on M_g .⁴

The remaining chapters deal with the statistical testing of our model for Ceylon. Chapter four deals with the

^{4.} In the preceding discussion we ignored the influence of P^e on the demand for money. If people expect prices to rise in the future, they would reduce their real balances due to the increase in the cost of holding them. In other words, velocity may respond to the expected rate of inflation instead of remaining constant.
supply and demand for money. Chapter five contains an analysis of price movements. Chapter six deals with the deterioration in the balance of trade.

Although ours is, a simultaneous equation model, in the statistical tests presented in the remaining chapters we have estimated each equation separately. This might introduce some bias into our estimates. However, it was not possible to use more sophisticated methods due to data limitations. After all, since we have used annual data for the most part of our analysis, we had only 13 annual observations to run the regressions. It might also be mentioned that some writers have found that the results are not significantly different whether one uses ordinary least squares or two-stage least squares. See, for example, Schotta (112) and Baker and Falero (10).

CHAPTER FOUR

THE SUPPLY AND DEMAND FOR MONEY (1959 - 1971)

This chapter analyses the supply of and the demand for money in Ceylon. The supply of money will be considered first. Next, attention will be focussed on the behaviour of the demand for money. In addition to the aggregate demand for money, the demand for its components will also be discussed.

The Supply of Money

In the statistical work reported in this chapter, two definitions of money supply have been used. According to the narrow definition, money supply (M_1) is the sum of demand deposits and currency in the hands of the public. According to the broad definition, money supply (M_2) is the sum of M_1 and time and savings deposits in the hands of the public.

Equation (1) of the model given in the previous chapter was tested with annual data.¹ All the variables are expressed in nominal terms.

1.1 $\Delta M_1 = 101.8319 + 0.8426 \Delta G^{***} - 0.1036 \Delta R R^2 = 0.67$ (0.2524) (0.7548)

1. All the data used in the statistical analysis reported in this chapter, unless otherwise mentioned, are taken from the <u>Annual Reports of the Central Bank of Ceylon</u> (1960 - 71).

1.2
$$\Delta M_2 = 93.7435 + 0.8057 \Delta G^{***} -0.0124 \Delta R R^2 = 0.56$$

(0.2456) (0.5673)

Where ΔM_1 = change in money supply (narrow definition)

 ΔM_2 = change in money supply (broad definition)

 ΔG = change in government borrowing from the banking system

$$\Delta$$
 R = change in external reserves

- \overline{R}^2 = coefficient of determination adjusted for degrees of freedom
- *** = indicates significance at the one percent level
 - ** = indicates significance at the five percent level

Standard errors are given within brackets.

Equations (1.1) and (1.2) were also re-run, expressing all the variables in real terms. Following Kieran (71), the external reserves variable was deflated by the import price index. The other variable (G) was deflated by the GNP deflator. The results of these regressions are given below:

1.3 $\Delta(M_1/P) = 42.3514 + 0.6236 \qquad \Delta(G/P)^{***} -0.0016 \qquad \Delta(R/P) \ \overline{R}^2 = 0.54 \\ (0.2011) \qquad (1.2894) \qquad (1.2894) \qquad (1.2894) \qquad (1.8025) \qquad (1.8$

In all these equations (1.1 to 1.4), government borrowing from the banking system is the only significant influence on money supply. In fact, a glance at the partial correlation coefficients shows that ΔG alone explains about 55 percent of the variation in nominal money supply. In real terms, the contribution of ΔG is somewhat lower. It explains



PARTIAL CORRELATION COEFFICIENTS

 ΔM_2 $\Delta(M_1/P) \quad \Delta(M_2/P)$ ΔM₁ 0.563 ∆G ∆(G/P) 0.456 0.448 0.547 Δr - 0.019 Δ (R/P) - 0.175 - 0.010 - 0.006

only about 45 percent of the variation in money supply.

It is also interesting to examine the extent to which the expansion in money supply has been due to the increase in monetary base and the money multiplier. For this purpose, we can use the analytical technique developed by Friedman and Schwartz (39, Appendix B).

Money supply based on the narrow definition can be written as:

$$1. M_1 = C + I$$

where C = currency in the hands of the public;

D = demand deposits in the hands of the public.

H .

The money supply equation also can be written as:

2.
$$M_1 = m_1 H$$

where m₁ = money multiplier

H = high-powered money or the monetary base.

High-powered money can be defined as:

3.
$$H = C + R$$

where R = banking reserves composed of vault cash and deposits of the commercial banks with the central bank.

Our next task is to identify the components of the money multiplier.

Since $M_1 = M/H_1 = \frac{C + D}{C + R}$, we can divide the numerator and the denominator on the left hand side by D:

$$m_1 = \frac{C/D + 1}{C/D + R/D}$$

which can be rewritten as

4.
$$m_1 = \frac{c+1}{c+r_1}$$

where c = currency/demand deposit ratio;

 $r_1 = reserve/demand deposit ratio.$

A similar experiment can be done using the broader definition of money (M_2) . We know that

- 5. $M_2 = C + D + T$ where T = time and savings deposits in the hands of the public.
- 6. $M_2 = m_2 H$ where $m_2 =$ money multiplier.

To analyse the components of m_2 , we first write $m_2 = M_2/H = \frac{C + D + T}{C + R}$

Dividing the numerator and the denominator by D, we get $\frac{C/D + T/D + 1}{C/D + R/D}$ which can be rewritten as

7.
$$m_2 = \frac{c+t+1}{c+r_2}$$
 (1+t)

where t = ratio of time and savings deposits to demand deposits (T/D);

 r_2 = ratio of reserves to total deposits (R/D + T).

Table 2 indicates the movements in H, m_1 , and m_2 . While high-powered money has increased by more than 100 percent during the entire period from 1959 to 1971, the money



TABLE 2

HIGH-POWERED MONEY AND THE MONEY MULTIPLIERS

| | Н | ml | ^m 2 |
|------|--------|---------------|----------------|
| | (i | n grupees mil | lion) |
| 1959 | 704 | 1.67 | 2.16 |
| 1960 | 774 | 1.56 | 2.02 |
| 1961 | 837 | 1.54 | 2.02 |
| 1962 | 886 | 1.55 | 2.07 |
| 1963 | 1001 | 1.50 | 2.00 |
| 1964 | 1072 | 1.57 | .2.14 |
| 1965 | 1136 - | 1.59 | 2.22 |
| 1966 | 1077 | 1.62 | 2.40 |
| 1967 | 1212 | 1.53 | 2.28 |
| 1968 | 1315 | 1.46 | 2.31 |
| 1969 | 1342 | 1.59 | 2.50 |
| 1970 | 1306 | 1.72 | 2.80 |
| 1971 | 1490 | 1.55 | 2.68 |
| | | | |

H = high-powered money m_1 = money multiplier (i.e. $M_{1/H}$) m_2 = money multiplier (i.e. $M_{2/H}$)

Source: Data for the above calculations are taken from the Annual Reports of the Central Bank of Ceylon (1969-71)

TABLE 3

| | с | rl | r ₂ | t |
|------|------|------|----------------|------|
| 1959 | 0.92 | 0.23 | 0.15 | 0.56 |
| 1960 | 0.97 | 0.29 | 0.18 | 0.58 |
| 1961 | 1.16 | 0.24 | 0.15 | 0.67 |
| 1962 | 1.08 | 0.26 | 0.16 | 0.68 |
| 1963 | 1.23 | 0.26 | 0.15 | 0.75 |
| 1964 | 1.03 | 0.27 | 0.15 | 0.75 |
| 1965 | 0.99 | 0.26 | 0.15 | 0.78 |
| 1966 | 1.02 | 0.23 | 0.12 | 0.97 |
| 1967 | 1.13 | 0.27 | 0.13 | 1.07 |
| 1968 | 1.18 | 0.28 | 0.13 | 1.17 |
| 1969 | 1.02 | 0.24 | 0.20 | 1.13 |
| 1970 | 0.71 | 0.27 | 0.22 | 1.08 |
| 1971 | 0.92 | 0.31 | 0.20 | 1.37 |

DETERMINANTS OF THE MONEY MULTIPLIERS

c = currency/demand deposits ratio
r₁ = reserve /demand deposits ratio
r₂ = reserve/demand, time and savings deposits ratio
t = time and savings deposits/demand deposits ratio

Source: Data used to make the above calculations are taken from the <u>Annual Reports of the Central Bank of</u> <u>Ceylon (1968 - 1971)</u> multipliers have shown very little increase. m_1 has remained virtually constant while m_2 has increased by approximately 25 percent. In short, much of the increase in money supply during this period can be accounted for by the increase in high-powered money rather than by m_1 and m_2 .

The behaviour of the money multiplier based on the narrow definition (m_1) is determined by two factors - c and r_1 . According to Table 3, while r_1 has increased, on the average, by about 3 percent annually, c has been subject to fairly wide fluctuations. However, it is important to note that during a major part of the period covered in this study, the currency component was in excess of demand deposits. More will be said about this in the next section.

The behaviour of m_2 is determined by three factors c, t, and r_2 . Like r_1 , r_2 also has increased, on the average, by about 3 percent each year. But the most significant influence on m_2 has come from t which has more than doubled between 1959 and 1971. In fact, after 1967, time and savings deposits were in excess of demand deposits.

To sum up this section, there have been several important influences on money supply during the period of this study. Firstly, government borrowing from the banking system to finance the budget deficit has exerted an expansionary influence on money supply. Secondly, much of the variation in money supply can be explained in terms of highpowered money rather than in terms of money multipliers. Thirdly, there has been a significant currency drain which

has dampened the rate of monetary expansion to some extent. Finally, there has been a noticeable increase in time and savings deposits relative to demand deposits.

The Demand for Money:

The literature on the demand for money reveals several controversial issues regarding its measurement. One issue concerns the definition of money. Some such as Friedman (40) have used the broad defidition while others have preferred the narrow definition. Meltzer (87) has shown that the definition of money has great relevance to the interestelasticity of the demand for real balances in the United States. His results indicate that the rate of interest assumes statistical significance only when the narrow definition of money is used. There is also some controversy over which measure of income should be used in the demand for money equation. Some have used measured or current income while others have used a long-term concept such as permanent * income which is taken as a proxy for wealth. Finally, some economists have preferred to use the expected rate of inflation rather than interest rates to measure the cost of holding cash balances. For example, Cagan (16) found that the expected rate of inflation was a highly significant Diz (27), Deaver variable in the demand for/money equation. (26), and Harberger (43) also included the expected rate of inflation in their demand for money equations and found it

to be statistically significant.

To examine the demand for real cash balances in Ceylon, we experimented with several equations. First, assuming that actual cash balances are always equal to their desired level, we attempted to examine the statistical significance of several variables. Later, we relaxed the assumption that the actual and desired cash balances are equal, and examined the process of adjustment of actual balances to their desired level.

All the equations given below cover both definitions of money:

| 2.1 | $(M/P)_t = d0$ | + √1 | (Y/P) _t | | |
|-----|----------------------|------|------------------------------------|-----------------------|--------------------|
| 2.2 | $(M/P)_t = K0$ | + x1 | (Y/P) _t + | K2 ^r lt , | |
| 2.3 | $(M/P)_t = \ll 0$ | + ~1 | (Y/P) _t + | K2 ^r 2t | |
| 2.4 | $(M/P)_t = 40$ | + %1 | (Y ^e /P) _t | | |
| 2.5 | $(M/P)_t = KO$ | + &1 | (Y ^e /P) _t + | ∞2 ^r lt | |
| 2.6 | $(M/P)_t = \star 0$ | + %1 | (Y ^e /P) _t + | ≪2 ^r 2t | |
| 2.7 | $(M/P)_t = KO$ | + &1 | (Y ^e /P) _t + | ≪3 P ^e t | |
| 2.8 | $(M/P)_t = \alpha 0$ | + %1 | (Y ^e /P) _t + | ≪2 P ^e t + | ≪4 BG _t |

Where M/P = real cash balances in the hands of the public Y/P =real measured income $Y^{e}/P =$ real permanent income $\mathbf{r_1}$ treasury bill rate = r_2 central bank rediscount rate = Pe expected rate of inflation Ξ BG number of bank offices opened in various parts =

of the country.²

The deflator used to estimate M/P, Y/P, Y^e/P is the GNP deflator. P^e refers to the expected rate of change in the Consumer Price Index. Only annual data are used.

Equation (2.1) is a simple regression equation with real measured income as the independent variable. In equations (2.2), (2.3), (2.5) and (2.6), the rate of interest is used as an additional independent variable. Two interest rates were used - the treasury bill rate (r_1) and the central bank rediscount rate (r_2) . In equations (2.4) to (2.8), permanent income was used instead of measured income. Permanent income was estimated in the following way.³

2.9
$$Y_{t}^{e} - Y_{t-1}^{e} = B(Y_{t-1} - Y_{t-1}^{e}), \quad 0 \le B \le 1$$

where B is the coefficient of income expectation. This formulation implies that permanent income can be constructed as an exponentially weighted average of past incomes. This technique assumes the following geometrically declining distributed lag:

3.0
$$Y_{t}^{e} = B \overset{a}{\leq} (1 - B)^{i} Y_{t-i}$$

By trying out different B's, we can construct the associated Y^e series, and choose that B which gives the highest R^2 . In

^{2.} During this period, almost all the new bank offices were opened in rural areas.

^{3.} See Friedman (35); also Koyck (73) and Christ (22).

this study, the B which maximized the R^2 in equation (2.4) was approximately 0.40, and the weights used to construct the Y^e series are given in Table 4. Moreover, we also experimented with other values of B, ranging from 0.20 to 1.00.

The expected rate of price change (P^e) was used in equations (2.7) and (2.8). This variable was estimated by the same method which was used to calculate permanent income,⁴ with D appearing as the coefficient of price expectation. The value of D which gave the maximum R^2 in equation (2.7) was approximately 0.60. The weights associated with this particular value of D are also given in Table 4. To test the influence of P^e on the demand for real cash balances, we also experimented with other values of D.

In equation (2.8), BG is used as a proxy for the monetization of the economy. In an underdeveloped country where the subsistence sector is very important and where money is not widely used, the growth of banking may have a significant influence on the demand for money. See the excellent discussion on this point in Harry Johnson (62, page 287).

The results of the regression analysis dealing with the demand for M_1 are given in Table 5 and can be summarised as follows. First, interest rates have not been a significant factor in the demand for M_1 . Both r_1 and r_2 are insignificant and have the wrong sign. We could not improve the

^{4.} There is another method of estimation based on Nerlove (96). It has been used to estimate the demand for money in China by Hu (50).

| WEIGHTS | USED | TO | CONS | STRUCI | PI PI | ERMANEN | T | INCOM | IE () | Y ^e) | AND |
|---------|-------|------|------|--------|-------|---------|----|-------|-----------------|------------------|-----|
| | THE E | XPEC | TED | RATE | OF | PRICE | СН | ANGE | (P ^e | } | |

TABLE 4

| · B = 0.40 | υ | | 0 | D = 0.60 | |
|------------|---------------|---|---|----------|---|
| 0.394 | ~ > | U | ` | 0.433 | |
| 0.239 | | | ı | 0.306 | |
| 0.146 | | | | 0.145 | |
| 0.089 | | | | 0.064 | |
| 0.054 | | | | 0.037 | |
| 0.033 | | | | 0.009 | |
| 0.020 | | | | 0.005 | |
| 0.013 | | | | Ö.001 | |
| 0.007 | | | | , | , |
| 0.004 | | | | 1 | ' |
| 0 001 | • | | | , | |

B = coefficient of income expectations
Q
D = coefficient of price expectations

·'t.

Source:

Basic data to estimate permanent income are taken from the I.M.F., <u>International Financial Statistics</u> (1963 - 1972); the original price data are taken from the <u>Annual Reports of the Central Bank of</u> <u>Ceylon (1970 - 1971)</u>

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results by lagging the interest rate variable. Second, the real income variable is highly significant in all equations. Real measured income explains about 89 percent of the variations in the cash holdings of the public. There was some improvement in the results when real permanent, income was used instead of real measured income. For example, the \widehat{R}^2 in equations (2.4), (2.5) and (2.6) is higher than the \overline{R}^2 in equations (2.1), (2.2) and (2.3). The elasticity of demand for real cash balances with respect to real measured income is about 0.78, whereas the elasticity with respect to real permanent income is approximately 0.81. Thus we might conclude that the income elasticity of demand for M_1 in real terms is less than unity, regardless of which measure of real income is used. The expected rate of price change is significant only at the 10 percent level. In other words, P^e does not perform so well as the real income variable. Finally, the growth of banking variable (BG) is highly significant in the demand for money in Ceylon.

Turning next to Table 6, we find that interest rates are not a significant determinant of the demand for M_2 in real terms. Real measured income does very well but the results are even better with real permanent income. The elasticity of demand for M_2 in real terms with respect to real measured income is roughly 0.80 while the same elasticity with respect to real permanent income is about 0.85. Therefore, it appears that the income elasticity of demand for M_2 in real terms is also less than unity, like in the case of M_1 . P^e,

| quation Number | Constant Term | (Y/P)t (Y ^e /P)t | r_{lt} | $r_{2}t$ | , Pt | • BGt | R ² | D. W.` |
|-------------------|------------------|-----------------------------------|--------------------|---------------------|------------------------------------------|-----------------------------------|----------------|--------|
| 2.1 | 57,2391 | 0.1441*** (0.0335) | | • | | ı | , 0.8901 | 1.45 |
| 2.2 | 96.4814 | 0.1452*** (0.0586) | 1.2830 (1.7614) | | 1 | | 0.7682 | 2.36 |
| 2.3 | 86.2885 | 0.1417*** (0.0355) | | 0.8870 (0.6824). | | | 0.6615 | 2.34 |
| 2.4 | 59.4124 | 0.1465*** (0.0400) | | • | | - | 0.9035 | . 1.62 |
| 2.5 | 83.5972 | 0.1469*** (0.0456) | 0.8876 (0.8190) | | , | | 0.8191 | 2.28 |
| 2.6 | 80.1182 | 0.1466*** (0.031) | | 0.9324 (1.9663) | | | 0.8018 | 2.00 |
| 2.7 | 70.7258 | 0.1480 ^{***} (0.0478) | | | -1.6572 [*] (0.8300) | · . | 0.9427 | 2.47 |
| 2.8 | 70.7136 | 0.1480*** (0.0471) | | - | -1.5 436 [*] (0.7229) | 0.6132 ^{***} (0.2017) | 0.9739 | 2.55 |

TABLE 5

**

= significant at the 1 percent level = significant at the 5 percent level = significant at the 10 percent level = Durbin - Watson statistic *

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| | | $\sum_{i=1}^{n}$ | TABLE 6 | N | | | | |
|--------------------|------------------|-----------------------------------|-----------------------------|--------------------|----------------------------------|-----------------------------------|---------------------------|-------|
| | | THE DEMAND FOR MONEY | (M ₂) IN | REAL TERMS | (1959 - 71) | | | |
| Equation Number | Constant Term | $(Y/P)_t (Y^e/P)_t$ | ^r l _t | r2t | P_t^e | \mathtt{BG}_{t} | $\overline{\mathbf{R}}^2$ | D. W. |
| 2.1 | 78.3914 | 0.1484 ^{***} (0.0416) | | | | | 0.9126 | 0.95 |
| 2.2 | 78.0692 | 0.1447*** (0.0400) | 0.8615 (1.7200) | | | | 0.8234 | 2.29 |
| 2.3 | 72.2663 | 0.1590*** (0.0426) | ~ | 1.2417 (1.0826) | | | 0.8116 | 2.48 |
| 2.4 | 68.3091 | 0.1786 ^{***} (0.0554) | | | | | 0.9335 | 0.96 |
| 2.5 | 66.5772 | 0.1619 ^{***} (0.0502) | 1.2678 (1.0342) |) | | | 0.9132 | 1.78 |
| 2.6 | 79.5286 | 0.1664 ^{***} (0.0517) | | 0.8977 (1.2816) | | | 0.8736 | 2.01 |
| 2.7 | 69.3214 | 0.1677 ^{***} (0.0505) | | | -1.7356 [*] (0.8680) | | 0.9432 | 2.28 |
| 2.8 | 53.5227 | 0.1639 ^{***} (0.0516) | | | -1.7953 [*] (0.8991) | 0.5611 ^{***} (0.1730) | 0.9615 | 2.28 |
| | | | | | | | | |

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See the footnotes at the bottom of Table 5

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once again, is significant at the 10 percent level. Finally, BG is again highly significant in the demand for M_2 in real terms.

To obtain additional insights into the behaviour of Y^e and P^e, we experimented with different values of B and D (Table 7). The performance of Y^e is somewhat superior to that of measured income. When B was taken to be equal to 1.00 (in which case, $Y_t^e = Y_{t-1}$), the regression coefficient of ${\tt Y}^{\tt e}$ is significant at the 5 percent level in both ${\tt M}_{\tt l}$ and M_2 equations. But when B was taken to be equal to 0.50, Y^e becomes significant at the 1 percent level in both M_1 and M_2 equations. In the case of P^e, it is significant at the 10 percent level, when D = 1.00 (in which case $P_t^e = P_{t-1}$). It is also significant at the 10 percent level when D = 0.50. However, when D = 0.20, the P^e variable turned out to be insignificant. The relatively low significance of P^e is probably due to the fact that the inflation in Ceylon has been fairly mild, without approaching anything comparable to a hyper inflation. To quote Colin D. Campbell:

> When price changes are only a few percent a year, they may have no discernible effect on the demand for money. But, when the inflation is rapid and long continued, it is believed that changes in the rate of inflation will have a major effect on the demand for money - and will be discernible (18, pabe 341).

There is one last point which should be mentioned regarding the aggregate demand for real cash balances. The

| | (E | TH STIMATED C | E DEMAND CEFFICIE OF P | FOR MONEY I NTS OF Y ^e /P RICE AND INC | N REAL TER and P ^e FOR COME EXPECT | MS (1959 DIFFERE ATIONS) | , -71) NT COEFFICIE | NTS | | | |
|--------------|----------------------------------|---------------------------------------|------------------------------|---------------------------------------------------------|-----------------------------------------------------|--------------------------------|---------------------------------------------------|---------------------|---------------------------|-----|--|
| Coefficient | | Coefficient of income expectations(B) | | | | | | | | | |
| expectation: | s1.00 | | | ÷ . | 0.50 | | | 0.20 | | | |
| (D) | (Y ^e /P)t | Pt ^e | $\overline{\mathbb{R}}^2$ | (Y ^e /P)t | P_t^e | $\overline{\mathbb{R}}^2$ | $(Y_t^e/P)_t$ | P_t^e | $\overline{\mathtt{R}}^2$ | | |
| | , cj | | | THE DEM | AND FOR M1 | /P | | | 1 | , | |
| 1.00 | 0.1507 ^{**} (0.0564) | -1.6055* (0.8031) | 0.8627 | 0.1428*** (0.0406) | -1.7183* (0.8614) | 0.9310 | 0.1419 ^{***} (0.0447) | -0.6944 (0.5031) | 0.7916 | | |
| 0.50 | 0.1223** (0.0471). | -1.6417* (0.8218) | 0.9035 | 0.1476*** (0.0418) | -1.6924* (0.8491) | 0.9400 | 0.1438 ^{***} (0.0419) | -0.8366 (1.0948) | 0.8020 | | |
| 0.20 | 0.1414** (0.0502) | -1. 5391 (0.8286) | 0.8046 | 0.1459 ^{***} (0.0462) | -0.8035 (0.9254) | 0.8824 | 0.1464 ^{***} (0.0418) | 0.8817 (0.9739) | 0.8029 | | |
| | | | , | THE DEM | AND FOR M2 | /P - | | | | | |
| 1.00 | 0.1587** | -1.7256 * (0.8631) | 0.8701 | 0.1531*** (0.0415) | -1.7090* (0.8848) | 0.9351 | 0 .1618^{***} (0 . 0396) | -0.5086 (0.5034) | 0.7026 | | |
| 0.50 | 0.1544** (0.0629) | -1.7847* (0.8924) | 0.9148 | 0.1617 ^{***} (0.0409) | -1.7718 [*] (0.8900) | 0.9418 | 0.1656 ^{***} (0.0406) | 0.5891 (0.7233) | 0.8013 | | |
| 0.20 | 0.1652 ^{**} (0.0564) | -1.7133 [*] (0.8571) | 0.8236 | 0.1829 ^{***} (0.0416) | -1.7025* (0.8513) | 0.8920 | 0.1689 ^{***} (0.0416) | 0.5639 (0.7916) | 0.8001 | 120 | |
| | | See,foot | notes at | the bottom | of Table 5 | • | | | | 0 | |

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TABLĘ 7

preceding analysis is based on the assumption that the money market is in constant equilibrium in the sense that the actual stock of real cash balances is always equal to the desired level. However, some writers such as Chow (21) and Feige (33) have assumed a disequilibrium situation and tried to show the process of adjustment of the actual to the desired level of real balances. To take the adjustment factor into account, rewrite equation (2.8) with $(M/P)_t^*$ to represent the desired level of real balances.

3.1.
$$(M/P)_t^* = \propto 0 + \ll_1 (Y^e/P)_t + \ll_3 P_t^e + \ll_4 BG_t$$

The adjustment to the desired amount of real cash balances in one period is defined as

3.2 $(M/P)_t - (M/P)_{t-1} = K \left[(M/P)_t^* - (M/P)_{t-1} \right]$, where $0 \leq k \leq 1$, and k is the coefficient of adjustment. By substituting equation (3.1) for $(M/P)_t^*$ in equation (3.2), we have

3.3
$$(M/P)_{t} = K \ll_{0} + K \ll_{1} (Y^{e}/P)_{t} + K \ll_{3} P^{e}_{t} + (1-K) (M/P)_{t-1} + K \ll_{4} BG_{t}$$

Equation (3.3) was tested with Ceylonese data and the results are given in Table 8. The lagged dependent variable is significant at the 5 percent level, and K is approximately equal to 0.405 and 0.432 for M_1/P and M_2/P respectively. A comparison of the two equations in Table 8 with those in Tables 6 and 7 indicates that the explanatory power of the

| | | | TABLE 8 | | | و | |
|------------------------|-------------------|----------------------------|----------------------------------|-----------------------------------|-----------------------------------|--------|---------------------------|
| | THE DEM | AAND FOR MONES | Y IN REAL TH | SRMS (EQUATION | N 3.3) (1959-7 | 71) | |
| Definition of Money | -Constant Term | (Y ^e /P)t | Pt, | $\mathtt{BG}_{\mathtt{t}}$ | (M/P) _{t-l} | К | $\overline{\mathbf{R}}^2$ |
| M _{l/P} | 58.3911 | • 0.1602*** (0.0437) | -0.4832* (0.2441) | 0.5976 ^{***} (0.2010) | 0.6008 ^{***} (0.2016) | 0.3992 | 0.9817 |
| ^M 2/P | 73.9465 | 0.1748*** | -0.5647 [*] (0.2830) | 0.6488 ^{**} (0.2849) | 0.5791 ^{***} (0.2042) | 0.4209 | 0.9883 |

See footnotes at the bottom of Table 5

equations also has improved as a consequence of the inclusion of $(M/P)_{t-1}$ as an independent variable.

To sum up the first part of this section, the real income and growth of banking variables are consistently significant in all the equations dealing with the aggregate demand for real cash balances. Both the measured and the permanent versions of real income do well in the equations, with the latter performing somewhat better than the former. The expected rate of price change has a marginally significant influence on the demand for real balances. There is also some evidence of an adjustment factor at work in the demand for real balances. None of the interest rate variables are statistically significant and therefore, are left out of the analysis presented in the rest of this section.

Our next task is to consider the demand functions for various components of roney in real terms. In addition to real income, several other variables also were considered.

One factor which night affect the composition of real money holdings is the distribution of real income. This is likely to be true if individuals in different income groups have different preferences for various components of money. For example, ceftain low income groups such as estate workers might find that currency hoarding is a more convenient financial mean: of holding wealth than having deposits at the bank. In fact, it is interesting to note that in its Annual Report for 1969, the Central Bank of Ceylon has mentioned the rise in wages as a possible reason for the in-

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crease in currency holdings. No data are available on the share of wages in GNP. We used the real wage rate as a proxy variable but the results were so bad that we had to discard it.

The spread of banking facilities and the accessibility of banking services also might explain some changes in the amounts of desired currency and deposit holdings. For example, individuals living in areas without banking facilities might have a higher desired level of currency holdings than those living in areas where bank offices are located. To test this hypothesis, we used the number of new bank offices opened as an independent variable. Since an extremely large proportion of new bank offices opened in the 1960's has been in remote rural areas, this variable will enable us to examine the impact of rural banking on the demand for various components of money.

Finally, tax evasion may be an important motive for holding money in the form of currency rather than in bank deposits. This is important because no official records are kept on a person's wealth held in the form of currency. Both the Government of Ceylon and the central bank were of the opinion that the increase in the currency holdings in the 1960's was motivated largely by tax evasion. By an Act of Parliament passed in November 1970, all currency notes of denominations of Rs. 50 and Rs. 100 ceased to be legal tender and all persons holding these notes had to surrender them to , the bank. Moreover, all persons were asked to make a declaration to the Commissioner of Inland Revenue in regard to any evasion of taxes during the last five years. A tax of 33 1/3 percent was levied on incomes of those who were found guilty of tax evasion. To assess the impact of tax evasion on the demand for various components of money, we used taxes as a percentage of real GNP.

`The demand equations for currency, demand deposits, and time and savings deposits, all expressed in real terms, are given in Tables 9, 10 and 11 respectively. The results are mixed and pose several interesting puzzles which we cannot solve at present. Real income, both measured and permanent, is highly significant in all the equations. The variable representing the growth of banking does reasonably well in some equations. It is significant in the equations dealing with demand deposits and time and savings deposits. But it is insignificant and has a positive sign in the currency Does this mean that the opening of bank offices equation. led to an increase in bank deposits without decreasing the currency holdings of the public? Normally we would have expected the public to hold lower currency holdings and more bank deposits with the establishment of bank offices. The tax variable is significant in the currency equation. But it has a positive sign in the equations dealing with the other two components of money. In fact, the tax variable is significant in the equation for time and savings deposits. We are unable to explain why the tax variable is positively related to time and savings deposits, because we would have

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| | ŢĤ | E DEMAND FOR | CURRENCY IN | REAL TERMS | (1959-71) | · | |
|------------------|-----------------------------------|-----------------------------------|---------------------|-----------------------------------|---------------------|----------------------|-----------------------|
| Constant Term | (Y/P) _t | (Y ^e ∕P) _t | BG _t | (T/Y) _t | Pt. | (C/P) _{t-1} | R ² |
| 112.1270 | 0.1433 ^{***} (0.0374) | | | | -0.3250 (0.2614) | | 0.6168 |
| 89.1532 | 0.1468*** (0.0448) | | 0.5957 (0.6208.) | 0.3015 ^{***} (0.0991) | -0.3316 (0.2728) | - | 0.6890 |
| 150.1867 | | 0.1270 ^{***} (0.0402) | 0.5019 (0.7386) | 0.3614 ^{***} (0.1012) | ' | 0.7999 (0.8618) | 0.6892 |

TABLE 9

See footnotes at the bottom of Table 5

| | | | | | • 1 | | | | |
|---|------------------|----------|-----------------------------------|-----------------------|-----------------------------------------------------|-----------------------|----------------------|----------------------|------------------|
| • | e - | | THE DE | MAND FOR DEMA | ND DEPOSITS | IN REAL TEP | RMS (1959-71 |) ` | , |
| , | Constant Term | | (Y/P) _t | (Y ^e /P)t | $\mathtt{BG}_{\mathtt{t}}$ | (T/Y) _t | Pt | (D/P) _{t-1} | \overline{R}^2 |
| _ | 86.2190 | - / } | 0.1448*** (0.0415) | | - | | -1.4182* (0.7100) | | 0.6325 |
| | 91. 2934 | , | 0.1420 ^{***} (0.0408) | · · · | 0.4835*** (0.1550) | * 0.1226 (0.1817) | -1.4958* (0.7501) | 0.6936* (0.3471) | 0.6680 |
| | 75.5555 | | • | 0.1522*** (0.0331) | 0.4464** (0.1876) | 0.1007 (0.3571) | 71.5162* (0.7600) | 0.6672* (0.3340) | 0.7091 |
| / | | | | See footnote | es at the 'bd | ottom of Tat | ole 5 | | r s |
| | | 2 | | | • • • • • • • • • • • | | | | |
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TABLE 10

| | THE DEM | AND FOR TIME | AND SAVINGS | DEPOSITS | (1959-71) | ~ | |
|-------------------|-----------------------------------|-----------------------------------|----------------------------------|---------------------|----------------------------------|---------------------------------|------------------|
| Constant Term | (Y/P) _t | (Y ^e /P)t | BG _t | (T/Y) _t | P_t^e | (TD/P) _{t-1} | \overline{R}^2 |
| 76.8332 | 0.1535*** (0.0361) | | 6 | - | -1.5881* (0.8024) | | 0.6921 |
| ,90 .96 15 | 0.1548 ^{***} (0.0378) | 4 | 0.5558 ^{**} (0.2012) | 0.4800* (0.2401) | -1.5613 [*] (0.7815) | 0.7383 [*] (0.3700) | 0.8033 |
| 101.3573 | | 0.1659 ^{***} (0.0347) | 0.5324** (0.2116) | 0.3723* (0.1892) | 1.4945* (0.7480) | 0.7356 [*] (0.3698) | 0.8519 |

TABLE 11

See footnotes at the bottom of Table 5

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expected tax evasion to reduce the demand for time and savings deposits as well as for demand deposits. Alternatively, does it mean that there was no tax evasion, which appears to be contrary to Ceylon's real experience? We cannot offer definite answers to any of these questions although we are inclined to believe that our strange results may be partly due to the misspecification of variables. The adjustment factor is significant in the equations for demand deposits and time and savings deposits. But it is not significant in the currency equation. Our results seem to indicate that the public has adjusted the actual level of real currency to the desired level fairly rapidly. Finally, the expected rate of price change is significant in the equations dealing with demand deposits and time and savings deposits. But it lacks significance in the currency equation. Does this mean that the expected rate of inflation has an influence on bank deposits only? Clearly, further research is necessary to firmly establish some of the relationships we have looked at in this chapter.

To sum up this chapter, money supply during the period, 1959 - 71, was influenced largely by government borrowing from the banking system to finance the growing budget deficits. On the demand side, the important determinants are the increase in real income, the growth of bankingg and the expected rate of inflation. The last variable is only marginally significant in the aggregate demand for real cash balances. There is also evidence of an adjustment factor at work in the aggregate demand for money. Regarding the demand for the components of money, real income is once again the most significant variable. The performance of the other variables is somewhat mixed.

CHAPTER FIVE

AN ANALYSIS OF PRICE MOVEMENTS

IN CEYLON (1959 - 1971)

Two hypotheses are tested in this chapter. The first is that, given import restrictions and the inability of domestic production to expand sufficiently to match the increase in domestic demand, increases in money supply will tend to raise the general price level. The second hypothesis is that the impact of monetary expansion on the various commodity groups of the Consumer Price Index depends on the degree of import restrictions in each group.

During the period, 1959 - 71, not all imports were restricted to the same extent. Imports of foodstuffs were relatively free of restrictions. Almost all other consumer goods were subject to tight import restrictions (Table 1). There were some restrictions on imports of intermediate and investment goods but later they were relaxed. Import restrictions would not have become an important factor in inflation if domestic production had shown a substantial increase. Although there was some increase in output, the overall contribution of the industrial sector to real Gross National Product was very low (Table 2).

Between 1959 and 1971, the Consumer Price Index increased on the average by about 4 percent annually. The sharpest increase occurred after 1967. Between 1967 and

INDICES OF THE VOLUME OF IMPORTS

(1967 = 100)

| 1 | Food and Drinks | Tex- <u>tiles</u> | Other Con- sumer Goods | Interme- diate Goods | Investment <u>Goods</u> |
|-------|--------------------|----------------------|---------------------------|-------------------------|----------------------------|
| , | | | | | |
| 1959 | 108 | 228 | 369 | 95 | 202 |
| ,1960 | 101 | 221 | 423 | 95 | 180 |
| 1961 | 100 | 192 | 140 | 92 | 177 |
| 1962 | | 180 | 129 | 102 | 146 |
| 1963 | 100 | ' 108 | 111 | 103 | 159 |
| 164 | 114 | 104 | 109 | 106 | 150 |
| 1965 | 116 | 85 | 94 | 92 | 177 |
| 1966 | 112 | 70 | 98 | , 104 | 150 |
| 1967 | 100 | 100 | 100 | 100 | 100 |
| ÷1968 | 102 | 99 | 108 | 112 | 124 |
| 1969 | 98 | [`] 76 | 79 | 138 | 172 |
| 1970 | 107 | 82 | 94 | 186 | 178 |
| 1971 | 107 | 80 | 47 | 190 | 106 |
| | - | | | | |

Source: Annual Reports of the Central Bank of Ceylon

(1970 - 71)

TABLE 2

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RATIO OF MANUFACTURING OUTPUT TO GNP AT CONSTANT (1959) PRICES

(expressed as percentages)

| | <u>1962</u> | <u>1964</u> | <u> 1966</u> | <u>1968</u> | <u>1970</u> |
|-----------------------|-------------|-------------|--------------|-------------|-------------|
| Food and Beverages | 2.0 | 2.4 | 3.5 | 4.3 | 4.9 |
| Tobacco | 0.5 | 0.5 | 0.8 | 1.0 | 1.1 |
| Textiles and Clothing | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 |
| Leather | 0.3 | 0.5 | 0.8 | 0.8 | 1.0 |
| Wood | 0 | 0.1 | 0.1 | 0.2 | 0.3 |
| Paper | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 |
| Chemicals | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 |
| Petroleum and Coal | 0 | 0 | 0 | 0 | 0.1 |
| Rubber | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 |
| Non-metallic | fo | 0.3 | 0.4 | 0.4 | 0.5 |
| Iron and Steel | / o | 0 | 0 | 0 | 0 |
| Electrical | 0 | 0 | 0 | 0.2 | 0.4 |
| Fabricated Metal | 0 | 0.1 | 0.1 | 0.1 | 0.2 |
| Machinery | _0 | 0 | _0 | 0 | _0 |
| TOTAL | 4.3 | 5.7 | 7.8 | 9.4 | 11.0 |

Source: <u>Annual Reports of the Central Bank of Ceylon</u> (1965 - 70)

1971, the average annual increase was about 5 percent compared with an average annual increase of about 2 percent between 1959 and 1967. Of course, the Consumer Price Index used in this study is not a very accurate index of the general price level for the following reasons. It is based on a budgetary survey of working class families in Colombo and may not be very representative of the whole country. It includes several items which are either subsidised or subject to price controls, and excludes others which are generally considered important. Despite these limitations, the Consumer Price Index is used in this study because it is the only price index available.¹

One way of examining the relationship between rates of change in the price level and money supply is to correlate the former with lagged rates of change in the latter.

4.1 $\Delta P/P t = 41 \Delta M/M t + 42 \Delta M/M t - 1 + 43 \Delta M/M t - 2$

Several comments are in order about this relationship. First, on theoretical grounds, one should expect that, other things being equal, an upward and sustained shift in the rate of monetary expansion would, after a while, bring about a similar increase in the price level in an economy in which imports are restricted and real output is either constant or

^{1.} Ceylon does not have a wholesale price index. In recent years, the central bank has tried to correct some of the deficiencies of the Consumer Price Index by collecting data on prices not covered by the C.P.I.

expanding very slowly. This is often taken to mean by some writers such as Harberger (43) and Diz (27) that the sum of the \checkmark coefficients would add up to unity when all the relevant lags are taken into consideration. However, to the extent that real output also shows some expansion, the sum of the \checkmark coefficients will not be equal to one. In fact, as Milton Friedman (38) has recently stated, the central problem in monetary theory is to determine what proportion of an "increase in money supply goes into an increase in real output on the one hand, and an increase in the price level on the other.

Second, according to the theory of the demand for money, one should expect a lower level of real cash balances to be consistent with the new and higher rate of change in the price level after the above upward shift has fully worked its effects in the economy. It is possible that some overshooting might occur in the path of the rate of change in the price level during the adjustment period, especially because the public would take sometime to correctly gauge the expected rate of inflation and adjust their real balances to it.

Third, nothing definite can be said on theoretical grounds about the number of \checkmark coefficients or their individual values, since they depend on the speed of adjustment and on the particular periods chosen for the analysis.

From an empirical point of view, the relationship described by equation (4.1) presents some difficult problems, particularly for choosing the appropriate number of lagged

rates of change in money supply. The stepwise inclusion of lagged values of the rate of change in money supply cannot be terminated on the basis of a sum of \checkmark coefficients equal to one as assumed by some writers, or the lack of statistical significance of the last estimated \checkmark coefficient, because the overshooting of prices might produce both effects before all the relevant lags are included (38). In addition, multicollinearity will almost surely become a problem in an estimation which includes many values of the same variable at successive points in time.

In this study we have used only annual data. Instead of using different lagged values of money supply, we included only one value of the rate of change in money supply in the price equation. Basically, our method consisted of running simple correlations between percentage changes in the Consumer Price Index and percentage changes in money supply and selecting that value of the rate of change in money supply which gave the highest R^2 . According to this technique, R^2 was maximized when there was no lag in the money supply variable. This was true for both definitions of money supply.²

In addition to money supply, we also experimented with several other variables. One of them was import prices. During the period, 1959 - 71, about 55 percent of Gross National Expenditure at current prices was devoted to imports. The most important item to be imported was food and drink

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^{2.} For an application of this technique, see Lund and Holden (80).

which accounted for about 45 percent of total imports. The remainder consisted largely of intermediate and investment goods. Since Ceylon does not produce intermediate and investment goods in sufficient quantities, it has always been heavily dependent on imports of these items. For example, as late as 1970, over 70 percent of intermediate goods required for domestic industries was imported. Perhaps, the figure would be even higher for investment goods although no such estimate is available. To test the impact of import prices on the domestic price level, three import price indices were used. The first is a composite import price index of food and drink, intermediate goods and investment goods. Theoretically, this variable should bring out accurately the impact of import prices on the domestic price level. However, due to the existence of price controls and consumer subsidies on food and drink, this variable did not fare too well. Therefore, two other import price indices were also used. One of these is the import price index of intermediate and investment goods. The other is the import price index of intermediate goods only.

Another variable used in the statistical analysis is wages. During the process of economic development, resources tend to be transferred from the "traditional" sectors into new industries. The traditional sectors are the subsistence agricultural sector and the plantations. To attract resources into new industries, their prices have to be bid up. In fact, as Johnson (62) has argued, the presence of factor immobili-
ties in less developed countries might call for substantial increases in factor prices. There is no simple way of taking into account the influence of the prices of domestic resources on the general price level. As a crude measure, we used wage rates. The use of wage rates is rather tricky due to the two-way causation between wages and the Consumer Price Therefore, to reduce the possible interrelation be-Index. tween these two variables, we lagged the wage variable. The data on wages used in this study suffer from several shortcomings. Firstly, the wage variable refers to the minimum wage rate paid in agriculture, industry and commerce. As it is only the minimum wage rate, it may not be an accurate indicator of the behaviour of wage rates actually paid in an Secondly, most of the new industries started occupation. since 1960 are not covered by the wage rate survey. It is important to bear in mind these shortcomings of the data while appraising the performance of the wage rate variable.

Finally, we also experimented with an output variable. The increase in domestic production would be a factor reducing the inflationary pressure in the economy. For example, Harberger (43) and Diz (27) used real output as a variable in their price equations and found it to be statistically significant. We used two output variables - Gross National Product at constant (1959) prices and the Index of Industrial Production at constant (1959) prices. Both variables turned out to be statistically insignificant. One reason for their poor performance may be the crude nature of

the data. In fact, it is only in recent years that the central bank has started publishing data on output, and there is reason to believe that the data are rather crude. Another important reason for the poor performance of real output is the relative insensitivity of the traditional subsistence sector to monetary changes. There was no way of using output data excluding the subsistence sector. Therefore, the real output variable was dropped from the rest of the analysis presented in this chapter.

The final list of equations is given below:³

4.2 $\Delta P/P_t = \alpha_0 + \alpha_1 \Delta M/M_t + \alpha_2 \Delta PM_1/PM_{1t} + \alpha_3 \Delta W/W_{t-1}$ 4.3 $\Delta P/P_t = \alpha_0 + \alpha_1 \Delta M/M_t + \alpha_2 \Delta PM_2/PM_{2t} + \alpha_3 \Delta W/W_{t-1}$ 4.4 $\Delta P/P_t = \alpha_0 + \alpha_1 \Delta M/M_t + \alpha_2 \Delta PM_3/PM_3 + \alpha_3 \Delta W/W_{t-1}$ where $\Delta P/P_t = \rhoercentage change in the Consumer Price Index$ $\Delta M/M_t = percent ohange in money supply. Both definitions of money supply were used.$

> $\Delta PM_1/PM_1$ = percentage change in the import price index of food and drink, intermediate goods, and investment goods.

 $\Delta PM_2/PM_2^=$ percentage change in the import price index of intermediate and investment goods.

 $\Delta PM_3/PM_3^{\pm}$ percentage change in the import price index of intermediate goods.

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3. All the data are taken from the <u>Annual Reports of the</u> <u>Central Bank of Ceylon</u>.

$\Delta W/W$ = percentage change in the average minimum wage rate index.

The results of the statistical analysis are presented in Tables 3 and 4. The money supply variable does well in all the equations. Both M_1 and M_2 are significant at the 5 per-. cent level and explain about 40 percent of the variation in the Consumer Price Index. The performance of the import price variable is somewhat mixed. When PM, is used, it is significant only at the 10 percent level. Perhaps the low statistical significance of this variable is due to the existence of price controls and consumer subsidies. PM_2 is also significant only at the 10 percent level mainly due to the erratic behaviour of the import price index of investment It is only when PM_3 is used that the import price goods. variable becomes significant at the 1 percent level. The wage variable is marginally significant at the 10 percent In view of the fact that the trade union movement is level. not so developed in Ceylon as in many western countries, we are inclined to believe that the wage-push element in inflation has been relatively minor.

Table 5 gives the breakdown of the Consumer Price Index by commodity groups. Some items have moved up faster than others. The smallest increase has taken place in the category of rents. In fact rents remained constant until 1968 mainly due to the enforcement of rent controls. Therefore, rents were omitted from the rest of the analysis. Clothing has shown the greatest increase (58%), followed by

AGGREGATE PRICE EQUATIONS, 1959 - 1971

 $\overline{\mathbf{R}}^2$ $(4W/W)_{t-1}$ Equation Constant $(\Delta M_1/M_1)_t$ $(\Delta PM_1/PM_1)_t$ D. W. $(\Delta PM_2/PM_2)_t (\Delta PM_3/PM_3)_t$ Number Term 0.3915 2.56 0.402** 4.1 10.7891 (0.173)0.369* 0.4828 2.49 0.330** 0.405* 11.6232 4.2 (0.203)(0.138)0.5110 2.46 0.370* 0.405** 10.8924 0.336 4.3 (0.169)(0.186)(0.180)0.329* 0.6792 2.68 0.640*** 4.4 10.8648 .0.405** (0.178)(0.180)= Significant at the 1 percent level *** = Significant at the 5 percent revel ** = Significant at the 10 percent level **R**² = Coefficient of determination adjusted for degrees of freedom = Durbin-Watson Statistic D.W. Standard errors are given within brackets

| Equation Number | Constant Term | $(\Delta M_2/M_2)_t$ | $(\Delta PM_1/PM_1)_t$ | $(\Delta PM_2/PM_2)_t$ | (Δ PM ₃ /PM ₃) _t | $(\Delta W/W)_{t-1}$ | $\overline{\mathbf{R}}^2$ | D. W. |
|--------------------|------------------|---------------------------------|-------------------------------|------------------------|------------------------------------------------------------|----------------------|---------------------------|----------------|
| 4.1 | 12.3472 | 0.42 ³ ** (0.185) | • | | 3 | | 0.4117 | 2.68 |
| 4.2 | 10.8914 | 0.421 ^{**} (0.186) | 0.370 [*] (0.186) | x | | 0.301* (0.151) | 0.4725 | ·2 · 46 |
| 4.3 | 9.7225 | 0.405 ^{**} (0.189) | | 0.369* (0.285) | • | 0.305* (0.154) | 0.4729 | 2.50 |
| 4.4 | 12.4627 | 0.419** (0.173) | | | 0 .622^{***} (0 . 211) | 0.301* (0.154) | 0.6924 | 2.77 |

AGGREGATE PRICE EQUATIONS, 1959 - 1971

See footnotes at the bottom of Table 3

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THE CONSUMER PRICE INDEX (1952 = 100)

| Year | Food | . <u>Clothing</u> | Fuel and Light | Rent | Miscel- <u>laneous</u> | All <u>Items</u> |
|------|-------|-------------------|-------------------|-------|---------------------------|---------------------|
| | | ~ | ı | ı | | |
| 1959 | 104.7 | 92.1 | 102.4 | 101.5 | 115.3 | 105.2 |
| 1960 | 100.8 | 95.1 | 102.7 | 101.5 | 117.5 | 103.5 |
| 1961 | 100.8 | 103.9 | 104.4 | 101.5 | 122.8 | 104.8 |
| 1962 | 100.9 | 108.2 | 105.6 | 101.5 | 124.9 | 106.3 |
| 1963 | 103.0 | 118.2 | 103.0 | 101.5 | 126.6 | 108.8 |
| 1964 | 106.4 | 127.2 | 103.2 | 101.5 | 129.3 | 112.2 |
| 1965 | 107.3 | 126.8 | 100.7 | 101.5 | 128.3 | 112.5 |
| 1966 | 109.1 | 117.0 | 95•9 | 101.5 | 127.3 | 112.3 |
| 1967 | 112.7 | 116.7 | 96.5 | 101.5 | 128.9 | 114.8 |
| 1968 | 121.2 | 120.1 | 103.2 | 101.5 | 133.6 | 121.5 |
| 1969 | 127.9 | 130.9 | 124.9 | 108.4 | 147.1 | 130.5 |
| 1970 | 136.6 | 137.3 | 136.1 | 109.8 | 153.2 | 138.2 |
| 1971 | 139.1 | 145.0 | 140.8 | 109.8 | 159.5 | 141.9 |

Source: Annual Report of the Central Bank of Ceylon (1971)

fuel and light (39%) and miscellaneous products (38%). Food has recorded an increase of about 32%.

To analyse the price behaviour of the above components, we ran several regressions, using money supply, wage rates, and import prices as the independent variables. The results of the regression analysis are given in Tables 6 - 9and may be summarised as follows.

<u>Food</u>

Both M_1 and M_2 are significant at the 10° percent In other words, money supply had only a marginal imlevel. pact on food prices mainly because most of the foodstuffs The import prices of foodwere imported during this period. stuffs are also significant only at the 10 percent level due to subsidies and price controls. In fact, it might be mentioned that the most important food item, rice, has been subsidised throughout this period. Another item which was subsidised during the 'early 1960's was sugar. While most of the important foodstuffs were imported, the Government has also encouraged the domestic manufacture of some food products oils and fats, bread and bakery products, sugar refining, confectionery, beverages and spirits, etc. A large proportion of the materials and equipment needed for these manufacturing , operations was imported (Table 10). This explains why PM_2 and PM3 are significant at the 10 percent and 5 percent levels respectively. However, the wage variable is not significant

DISAGGREGATED PRICE EQUATIONS - FOODSTUFFS (1959 - 71)

Equation Constant $(\Delta M_1/M_1)_t (\Delta M_2/M_2)_t (\Delta PF/PF)_t (\Delta PM_2/PM_2)_t (\Delta PM_3/PM_3)_t (\Delta W/W)$ $\overline{\mathbb{R}}^2$ D.W. Number Term 0.2336^{*} (0.1170) 1. 27.3415 0.2810* 0.1157 0.3507 0.79 (0.1093) (0.1406)25.8556 0.2934* 0.2517* 0.1032 0.4008 0.68 2 (0.1470)16.8932 0.3136^{*} (0.1584) 0.3628* 0.1568 (0.1729) 3 0.5629 1.05 0.2755* 0.2714* 4 29.7354 0.0816 (0.0934) 0.3440 0.73 5 0.2784* 31.0517 0.2704* 0.2550 0.4134 0.80 (0.1353) (0.1394)(0.5016) , ". / 6 33.6848 0.2716* 0.2986** 0.2627 (0.4001) 0.5526 0.91 (0.1227)(0.1361)

> Δ PF/PF = percentage change in the import price index of foodstuffs. All other symbols are given in the text. See footnotes at the bottom of Table 3.

at all. Perhaps, the reason for the lack of statistical significance of the wage variable is that most agricultural activities are still conducted as family enterprises without using much hired labour.

<u>Clothing</u>

This is a category which was subject to stringent import restrictions during this period (Table 1). Therefore, one would not expect the import price of clothing to have a significant effect on domestic prices. This is confirmed by the regression analysis which shows that the import price index of clothing is not significant at all. While restricting imports, the Government has tried to promote importsubstitution by establishing textile mills. Most of the materials and equipment needed for the textile mills were This is why PM_2 and PM_3 are significant at the 5 imported. percent level. The money supply variables - M_1 and M_2 also perform well and are significant at the 5 percent level. The wage rate variable is significant only at the LO percent level.

Fuel and Light

Much of what was said regarding clothing also applies to fuel and light. This is another category which was subject to import restrictions. There has also been a strong drive

| DISAGGREGATED | PRICE | EQUATIONS | _ | CLOTHING | (1050 - | 1071) |
|---------------|-------|-----------|---|----------|---------|-------|
| DIDROGUEGATED | LUTOD | TAOUTIOND | - | CLUITING | (1909 - | 19/1) |

| | Equation Number | Constant Term | $(\Delta M_1/M_1)_t$ | $(\Delta_{M_2/M_2})_t$ | $(\Delta_{\text{PC/PC}})_{t}$ | $(\Delta_{PM_2/PM_2})_t$ | (<u>APM</u> 3/PM3)t | (/ W/W) _{t-1} | \overline{R}^2 D.W | • |
|---|--------------------|---------------------|----------------------------------|----------------------------------|-------------------------------|----------------------------------|----------------------|-----------------------------------|----------------------|---|
| • | i | 70.1882 | 0.3144 ^{**} (0.1330) | | 0.6122 (0.7234) | | | 0.2200 [*] (0.1102) | 0.2830 0.8 | 3 |
| | 2 | 69.235 ¹ | 0.3073 ^{**} (0.1314) | | | 0.3737** (0.1544) | | 0.2316 [*] (0.1161) | 0.3586 0.9 | 4 |
| | 3 | 71.8316 | 0.3148 ^{**} (0.1404) | | | | 0.3406** (0.1440) | 0.2028* (0.1015) | 0.5915 1.0 | 1 |
| | <u> </u> | 58.5434 | | 0.3827 ^{**} (0.1725) | 0.6017 (0.9228) | | | 0.262 ^j 4* (0.1314) | 0.2918 0.7 | 1 |
| | [,] 5 | 83.7076 | | 0.3530 ^{**} (0.1449) | | 0.3648 ^{**} (0.1508) | | 0.2428* (0.1215) | 0.3134 0.8 | 1 |
| | 6 | 73.8192 | | °0.3572** (0.1509) | | ۲ ب | 0.3827** (0.1725) | 0.2116 [*] (0.1064) | 0.6227 1.0 | 6 |

 Δ PC/PC = percentage change in the import price index of clothing. See footnotes at the bottom of Table 3.

towards import substitution as can be seen by the establishment of petroleum refineries and manufacturing plants for batteries and lighting equipment. It might also be mentioned that the price increase in the category of fuel and light has not been accurately reflected in the Consumer Price Index due to the omission of several important items.⁴ According to the annual surveys of the central bank on prices not covered by the Consumer Price Index, several items which should normally be placed in the category of fuel and light have recorded substantial price increases. For example, between 1965 and 1971, the price of electrical bulbs has increased by approximately 35%; the price of batteries has increased by about 20 percent; and the price of gasoline has gone up by about 40 percent.⁵

According to our regression analysis, the money supply variable is significant at the 5 percent level. Import prices of raw materials (PM_3) is significant at the 1 percent level, whereas the combined import price index of raw materials and investment goods (PM_2) is significant at the 5 percent level. The wage variable is significant only at the 10 percent level.

^{4.} The only items included under this heading in the Consumer Price Index are kerosene oil and oil lamps.

^{5. &}lt;u>Annual Reports of the Central Bank of Ceylon</u>, <u>1965 - 1971</u>, page 123.

DISAGGREGATED PRICE EQUATIONS - FUEL AND LIGHT (1959 - 1971)

| Equation Number | Constant Term | $(\Delta M_1/M_1)_t$ | $(\Delta M_2/M_2)_t$ | $(\Delta PM_2/PM_2)_t$ | (4 PM ₃ /PM ₃) _t | (∆w/w) _{t-1} | $\overline{\mathbf{R}}^2$ | D. W. |
|--------------------|------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------------------------------------|---------------------------------|---------------------------|-------|
| 1 | 55.8954 | 0.4146** (0.1706) | | 0.4093 ^{**} (0.1616) | | 0.2817 [*] (0.1410) | 0.5020 | 0.60 |
| 2 | 70.7124 | 0.4073 ^{**} (0.1629) | | | 0.5234 ^{***} (0.1655) | 0.2800 [*] (0.1402) | 0.7104 | 0.88 |
| 3 | 92.8335 | | 0.5278 ^{**} (0.2425) | 0.4128** × (0.1709) | ÷ | 0.2338* (0.1173) | 0.5134 | 0.90 |
| 4 | 49.6417 | | 0.5019 ^{**} (0.2354) | • | 0.5166 ^{***} (0.1659) | 0.2924* (0.1506) | 0.7084 | 1.01 |
| | | | | \sim | | | | |

See footnotes at the bottom of Table 3.

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Miscellaneous Products

This is a vaguely defined category but its more important components are ceramic products, footwear, glassware, tyres and tubes, radios and pharmaceutical products. Almost all these items are subject to tight import restrictions. Once again, the price increase in this category has been badly underestimated by the Consumer Price Index. As mentioned in the Annual Report of the central bank for 1970, some of the items mentioned above have come under price control. Consequently, their black market prices have gone up very rapidly. For example, according to the annual surveys of the central bank, between 1965 and 1970, the price of footwear has increased by 15% - 33%; drugs by about 20%; radios by 55% - 200%; and wristwatches by 100% - 200%.⁶

According to our statistical analysis, money supply had a very significant influence on prices of miscellaneous products. Both M_1 and M_2 are significant at the 1 percent level. Import prices as measured by PM_2 and PM_3 are significant at the 10 percent level and 5 percent levels. The wage variable is significant at the 10 percent level.

To examine further the importance of import restrictions in the inflationary process, we experimented with the volume of imports as an independent variable. In the aggregate price equation, we used the ratio of imports of consumer

6. <u>Annual Reports of the Central Bank of Ceylon, 1965 -</u> <u>1971</u>, page 123.

| ¢ | | DISAGGREGATED | SAGGREGATED PRICE EQUATIONS - MISCELLANEOUS COMMODITIES (1959-71) | | | | | | | |
|---------------------|------------------|-----------------------------------|-------------------------------------------------------------------|----------------------------------|----------------------------------|---------------------------------|----------------|--------|--|--|
| Equation Number | Constant Term | $(\Delta M_1/M_1)_t$ | $(\Delta M_2/M_2)_t$ | $(\Delta PM_2/PM_2)_t$ | $(\Delta PM_3/PM_3)_t$ | (Δw/w) _{t-1} | R ² | D. W. | | |
| 1 | 156.2914 | 0.4183 ^{***} (0.1318) | • * | 0.3719 [*] (0.1863) | | 0.2173 [*] (0.1091) | 0.5629 | 0.88 | | |
| 2 | 102.8270 | 0.4056 ^{***} (0.1332) | ĸ | | 0.4028 ^{**} (0.2015) | 0.2054 [*] (0.1028) | 0.6572 | 0.80 | | |
| 3 | 100.9171 | - | 0.3926 ^{***} (0.1312) | 0.3640 ^{*-} (0.1821) | | 0.2055* (0.1030) | 0.5021 | • 1.40 | | |
|) † • | 87.3419 | • | 0.4016 ^{***} (0.1410) | | 0.4007 ^{**} (0.2003) | 0.1819 [*] (0.0911) | 0.6224 | 0.62 | | |
| | | L. | | | | | | | | |

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See footnotes at the bottom of Table 3.

IMPORTED RAW MATERIALS USED IN DOMESTIC INDUSTRIES (1971)

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(as a % of total raw materials used)

| Food, beverages and tobacco | 57.6 |
|--------------------------------------|-------|
| Textiles, clothing, leather | 59•7 |
| Wood products | 14.3 |
| Paper products | 75.2 |
| Chemicals, petroleum, coal | 84.2 |
| Rubber and Plastic products | |
| Non-matallic products | 66.0 |
| Basic metal products | 100.0 |
| Fabricated metal products, transport | |
| equipment and machinery | 81.8 |
| Manufactured products, N.E.S. | 78.5 |
| TOTAL | 74.5 |

Source: Annual Report of the Central Bank of Ceylon (1971)

goods (excluding food) to GNP in real terms⁷ but it turned out to be insignificant.⁸ Much better results were obtained for the disaggregated price equations. In the price equation for clothing,⁹ the ratio of imports of clothing to GNP in real terms (I_1/Y) was significant at the 5 percent level (Table 11). Similarly, the ratio of imports of petroleum and coal and electrical products to GNP in real terms (I_2/Y) was significant at the 5 percent level in the price equation for fuel and light. In the case of miscellaneous products, we were not quite sure of how to specify the imports variable. As a crude proxy, we used the ratio of imports of consumer goods excluding food, clothing, petroleum and coal, and electrical products, to GNP in real terms (I_3/Y) . The variable was significant only at the 10 percent level. Perhaps, the relatively poor performance of the imports variable in the miscellaneous products equation may be due to misspecification of the variable.

- 7. Argy (5) also used the same variable in his price equations.
- 8. $\Delta P/P = -15.8961 + 0.2674 \Delta M_1/M_1 + 0.0681 IC/Y \overline{R}^2 = 0.4134$ (0.1044) (1.3625) Where IC = imports of consumer goods other than food-

stuffs. There does not seem to be much multi-collinearity between $\Delta M_1/M_1$ and IC/Y (r = 0.26).

9. All the data on the volume of imports for each category were obtained from the <u>Customs Returns of Ceylon</u>. The imports variable was not used in the food equation because, as mentioned earlier, most foodstuffs are still imported.

| | | | | - INDEG II | | | | | |
|----------------|-----------------------------------|-----------------------------------|------------------------------------------------------------|-----------------------------------------|----------------------------------|-----------------------------------|----------------------------------|------------------|------|
| Ŧ | | DISA | GGREGATED PR | ICE EQUATION | s (1959 - | 1971) | | | |
| Equation | $(\Delta M_1/M_1)_t$ | $(\Delta M_2/M_2)_t$ | (Δ PM ₃ /PM ₃) _t | $(\Delta W/W)_{t-1}$ | (I ₁ /Y) _t | (I ₂ /Y) _t | (I ₃ /Y) _t | \overline{R}^2 | D.W. |
| | | 8 |) Clothing | | | | , | | |
| 1 | 0.2853 ^{**} (0.1026) | | 0.2059 ^{**} (0.0815) | 0.2021* (0.1011) | -0.3629** (0.1651) | | | 0.6526 | 0.87 |
| 2 | | 0.3081 ^{**} (0.1400) | 0.2080 ^{**} (0.0911) | 0 .1778* (0.0840) | -0.3724** (0.1516) | | | 0.7172 | 1.08 |
| | | Ľ |) Fuel and L | ight | | | | | |
| 3 | 0.4016 ^{**} (0.1609) | | 0.5134*** (0.1682) | 0.2017* (0.1009) | | -0.6228** (0.2801) | | 0.7812 | 0.96 |
| j t | ` | 0.3527** (0.1614) | 0.5015 ^{***} (0.1722) | 0.1829 [*] (0.0915 <u>)</u> | | -0.6025 ^{**} (0.2814) | | 0.7883 | 1.21 |
| 7 | | c |) Miscellane | ous Products | | | | | |
| ,5 , | 0.4356 ^{***} (0.1327) | F | 0.3829 ^{**} (0.1614) | 0.2256 [*] (0.1129) | - | | -0.4617* (0.2309) | ď .6 827 | 1.55 |
| 6 | | 0.5138 ^{***} (0.1416) | 0.3398 ^{**} (0.1514) | 0.2381 [*] (0.1192) | , | | -0.5283* (0.2643) | 0.6610 | 1.43 |
| | | See footno | otes at the b | ottom of Tab | le 3. | | | | |

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Conclusions

The analysis presented in this chapter suffers from several weaknesses. First and foremost, it is important to point out the data limitations. As mentioned in the text, the Consumer Price Index has some serious limitations. The data on some of the independent variables such as wage rates are also very crude. A second limitation lies in the use of annual data. Perhaps, a study based on quarterly data may come out with different results. Thirdly, the commodity groups covered by the Consumer Price Index are too broad to warrant strong conclusions about their price behaviour. Finally, we may have left out other important variables affecting prices in Ceylon.

Subject to the above limitations, our study points to the following tentative conclusions. First, the monetary element in the Ceylonese inflation seems to have been quite strong. Regardless of how it is defined, money supply has exerted a significant influence on the general price level. Second, the influence of monetary expansion on the components of the Consumer Price Index seems to depend on the degree of import restrictions. Commodities which were subject to tight import restrictions also appear to have been the most susceptible to increases in the money supply. This must be the reason why the prices of all commodity groups except food have been quite responsive to changes in money supply. Third, our study suggests that imports have influenced prices in two

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ways. The direct effect of a reduction in the volume of imports has been inflationary at least for some components of the Consumer Price Index. The other effect is that, due to the country's heavy dependence on imported industrial inputs, the prices of imported materials and to a lesser extent, the prices of imported capital equipment have become important sources of inflation. Finally, our study has nothing definite to say about the influence of wages on inflation. It is very likely that the poor performance of the wage variable was due to the lack of a strong trade union movement in Ceylon. However, the data on wages are too crude to warrant any strong conclusions about the presence or absence of a wage-push element in the Ceylonese inflation.

CHAPTER SIX

DEVELOPMENTS IN THE BALANCE OF TRADE (1959 - 1971)

This chapter deals with the balance of payments situation in Geylon during the period, 1959 - 1971. As a very large proportion of capital flows during this period consisted of foreign aid (Table 1), the present discussion is confined to the balance of trade only.

The hypothesis tested here is that the deficit in the balance of trade has increased due to an expansion in domestic demand or nominal income. This hypothesis involves an examination of two sub-hypotheses. First, the increase in the domestic price level has had an adverse effect on the foreign demand for Ceylonese exports. Second, the increase "" real income or output has led to an increase in the demand for those imports which are not subject to tight restrictions."

As mentioned in chapter one, Ceylon has experienced a continuous increase in her trade deficit in the 1960's and 1970's. Except for 1965, the balance of trade was always in

^{1.} Another hypothesis is that the increase in domestic demand has reduced the availability of commodities for export. See, for example, Ball (11) for a test of this hypothesis for Britain. In this chapter we have not examined this hypothesis because we feel it is not very important. According to published statistics, the domestic consumption of rúbber in 1971 was only 3 percent of total production. For tea, domestic consumption was about 4 percent of total production. No figures are available to show the trends in domestic consumption for these and other export goods. But we feel that the increase in domestic consumption has been minor.

FOREIGN LOANS AND GRANTS (1959 - 1971)*

(as a percentage of total net capital flows)

| 1959 | 86 |
|--------|-------------|
| 1960 | 84 |
| 1961 | 82 |
| 1962 | 90 |
| 1963 , | 94 |
| 1964 | 97 . |
| 1965 | 99 |
| 1966 | 98 |
| 1967 | 80 |
| 1968 | 98 |
| 1969 | 72 |
| -1970 | 89 |
| 1971 | 90 |
| | · · · |

* include loans and grants from foreign countries and international agencies but exclude private capital flows. The main items in the category of loans and grants are project aid, commodity aid, grants and short-term credits.

Source: <u>Annual Reports of the Central Bank of Ceylon</u> (1970 - 71) deficit. As a direct consequence of the enforcement of stringent restrictions, imports of many commodities were reduced drastically. However, the failure of exports to expand sufficiently resulted in recurring deficits in the balance of trade.

Exports

Ceylon's exports are mainly primary products - tea, rubber, and coconut. Of these, tea is by far the most important, accounting for about 75 percent of total export earnings. Rubber comes second, with approximately 12 percent. 'The rest consists of coconut² (about 6 percent) and some mineral³ and industrial products.⁴

a) <u>Tea</u>

The most striking feature of Ceylon's exports in the 1960's and 1970's is the marked decline in the export prices of tea and rubber. The export price of tea, for example, declined by about 40 percent between 1959 and 1971 (Table 2). The volume of tea exports, of course, was subject to considerable fluctuations. The decline in export earnings from tea is clearly reflected in British imports of Ceylonese

^{2.} The three important coconut products are copra, dessicated coconut and coconut oil.

^{3.} These are mainly graphite, ilmenite and naptha.

^{4.} These industrial products consist of jewellery, shirts and footwear.

tea (Table 3). During the period, 1959 - 1971, Britain was the principal buyer of Ceylonese tea, accounting for about 40 to 45 percent of total tea exports. Both the price and the volume of tea exported to Britain from Ceylon have recorded a sharp decline.

To explain the decline in tea exports, one has to look at the factors influencing the foreign demand for tea.⁵ The supply side of the tea market is not considered here primarily because domestic production has remained relatively constant (Table 4). Three factors seem to influence the foreign demand for tea:

- 1. Income of the importing countries.
- The price of tea relative to the prices of its close substitutes.

3. Competition from other tea exporting countries.

The inclusion of an income variable is self-explanatory. An increase in income is expected to raise the demand for tea. Conversely, an increase in the price of tea relative to the prices of its close substitutes is likely to reduce the demand for tea. In this study, coffee is treated as a close substitute for tea. Finally, competition from • other tea producing countries is a factor reducing the demand for Ceylonese tea. Two countries were selected as being in competition with Ceylon for the world tea market.

^{5.} In doing this study, we have been heavily influenced by Ball (12) and Houthakker (49).

CEYLONESE TEA EXPORTS (1967 = 100)

| , | Price | Volume |
|-------|-------------------|--------|
| 1959 | 122 | 80 |
| 1960 | 120 | 86 |
| 1961 | 117 | 90 |
| 1962 | 114 | 95 |
| 1963 | , 112 | 96 |
| 1964 | ' 103 | . 95 |
| 1965 | 102 | 92 |
| 1966 | ⁵⁴ 101 | 90 |
| 1967 | 100 | 100 |
| 1968 | 108 | 96 |
| 1969 | 105 | 90 |
| 1970. | 96 | 73 |
| 1971 | · 88 | 70 |

Source: <u>Annual Reports of the Central Bank of Ceylon</u> (1970 - 71)

BRITISH IMPORTS OF CEYLONESE TEA

| | | Volume | | London auction price per | | |
|---|--------|-----------------|----------|--------------------------|--------|---|
| | | (in millions of | of lbs.) | Sh | d | |
| | 1959 | 158 | | 5 | 1.21 | |
| | 1960 | 152 | | 5 | 1.20 | |
| 8 | , 1961 | 163 | | 4 | 7.81 | |
| e | 1962 | 159 | | 4 | 7.93 | |
| | 1963 | 151 | | · 4 | 4.33 | |
| | 1964 | 143 | | 4 | 5.89 | |
| | 1965 | 125 | | - 4 | 3.15 - | |
| | 1966 | 108 | σ | 4 | 2.88 | |
| | 1967 | 105 | | 4 | 1.84 | |
| | 1968 | 102 | | 4 | 1.30 | ۲ |
| | 1969 | 88 | | 4 | 0.51 | |
| | 1970 | . 96 | | 4 | 0.23 | |
| · | 1971 | . 84 | • | 4 | 0.02 | |

Source: <u>Bulletins of the London Tea Brokers' Association</u> (1960 - 71)

PRODUCTION OF TEA 1 (in millions of lbs)

| 1959 | Y | | , | 448 | |
|------|---|---|---|--------------|---|
| 1960 | | | | 435 | |
| 1961 | | | | 455 | |
| 1962 | | | Ø | 467 | |
| 1963 | | ı | | 485 | |
| 1964 | | | | 482 | |
| 1965 | | | | 485 | |
| 1966 | | | | 490 | |
| 1967 | | | | 487 | |
| 1968 | | | | 466 | |
| 1969 | ¢ | | | X 484 | |
| 1970 | • | | | 468 | * |
| 1971 | • | | Ł | 460 | |

Source: Annual Reports of the Central Bank of Ceylon (1965 - 71)

One is India. The other is Africa. The leading tea producers in Africa are Kenya, Uganda and Tanzania.⁶

Taking the above factors into account, we can write the estimating equations as follows:

| 1. | $\mathbf{X}_{\mathbf{TC}} =$ | ≪0 + % ¹ Ab | d_2 PT/PC + | ∝ ₃ ptc/pti |
|----|------------------------------|------------------------------------------------------------|------------------------|------------------------|
| 2. | $x_{TC} =$ | 𝕵0 + 𝐾¹ λŀ + | ≪ ₂ PT/PC + | K₄ PTC/PTA |
| 3. | $X_{TC} =$ | 𝕵 0 + 𝔩 YF + | ∝ ₂ PT/PC + | K5 PTC/PTO |

where XTC = an index of the volume of tea exports from Ceylon

YF = real income of the importing country

- PT/PC = ratio of the price of tea to the price of coffee
- PTC/PTI = ratio of the price of Ceylonese tea to the price of Indian tea
- PTC/PTA = ratio of the price of Ceylonese tea to the price of African tea



(1970)

PTC/PTO = ratio of the price of Ceylonese tea to a weighted average⁷ of the prices of tea from India and Africa.

As the data on the above variables are scarce, it is not possible to do a complete analysis of Ceylonese tea

6. The proportions of British imports of tea from these countries were as follows.

| | <u>1967</u> | <u>1970</u> | ' |
|-------------------------|------------------|------------------|----------------|
| | (as a percent | age of total Br: | itish imports) |
| India Africa | 36 | 42 30 | ı |
| Source: <u>Bullet</u> : | in of the London | Tea Brokers As | ssociation |

7. The weights used are the shares of the countries mentioned earlier in total British imports of tea. exports to all the countries. Instead, what is attempted here is an analysis of British imports of Ceylonese tea. Therefore, Y_F refers to British GNP in real terms. PTC, PTI and PTA refer to London auction prices of tea from Ceylon, India and Africa respectively. No data are available on London prices of coffee. As a rough estimate, we have used the prices of Nestle's coffee sold in Britain. On the surface, it appears that there could be multi-collinearity among the relative price variables because PT which is the London price of tea from all sources also includes PTC, PTI and PTA. However, our results indicate that multi-collinearity is not a serious problem.

The sources of data are the following:

 $Y_F = I.M.F.$, International Financial Statistics (1963 - 71) XTC, PTA, PTI, PTC = Annual Bulletins of the London Tea Brokers' Association (1960 - 71)

PC = <u>Annual Reports of Nestle's (Britain)</u>

Table 5 gives the results of our statistical analysis based on annual data. Although the $\overline{\mathbb{R}}^2$ is not very high, all the regression coefficients are statistically significant and have the expected signs. What interests us most is the degree of competition from other tea producing countries, as reflected in their export prices. According to our analysis, Ceylonese tea faced stiff competition from Indian and African tea during the period of this study. The substitution

BRITISH IMPORTS OF CEYLONESE TEA (1959 - 1971)

| Equation Number | Constant Term | $\frac{Y_{F}}{F}$. | PT/PC | PTC/PTI | PTC/PTA | PTC/PTO | $\overline{\mathbb{R}^2}$ | <u>D.W.</u> |
|--------------------|------------------|-------------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|---------------------------|-------------|
| 1 | - 28.1481 | 0.5419*** | *-Ò.1873 (0.0704) | - 0.2464 ^{**} (0.1015) | | | 0.51 | 1.27 |
| 2 | - 20.1538 | 0.5236 ^{**} (0.07 39) | *-0.1678 ^{**} (0.0714) | | - 0.3235 ^{**} (0.1248) | | 0.53 | 0.99 |
| 3 °, | - 24.1637 | 0.4617 ^{**} (0.1655) | *-0.1629 ^{**} (0.0713) | , , | | - 0.2973 ^{**} (0.1126) | 0.50 | 1.64 |
| *,** 2 8 | ignificant a | t the l pe | rcent level | L | | | • | |

= significant at the 5 percent level = coefficient of determination adjusted for degrees of freedom $\overline{\mathbb{R}}^2$

D.W. = Durbin-Watson statistic

**

of coffee for tea was also a significant factor reducing the demand for tea.

We might also compare our findings with those of previous writers. Of the studies listed in Table 6, da Costa's (25) is the simplest. To analyse British imports of Indian tea, he fitted a regression equation with only two independent variables - real income in Britain and the export price of Indian tea. The export price variable does not refer to the price of Indian tea shipped to Britain. It is simply the average price of Indian tea exported to all the countries. da Costa found both independent variables to be significant at the 1 percent level. The main weakness of his analysis is the omission of several important variables. Specifically, his export demand equation does not contain variables representing the substitution of coffee for tea and the competition from other tea producing countries. The same comment also applies to Cohen's work (24). Cohen assumed income elasticities for Indian and Ceylonese tea to be the same and completely ignored the substitution of coffee for tea.

In Dutta's study (29), three relative price variables appear in the regression analysis:

1. Tea price in India divided by tea price in U.K.

2. Tea price in India divided by tea price in Ceylon

3. Tea price in London divided by coffee price in New York.

Dutta used the first relative price variable to measure the competition from other tea producing countries. But he erred

TABLE 6,

SUMMARY OF PREVIOUS STUDIES ON BRITISH IMPORTS OF INDIAN TEA

(honed on onnual data)

| | (ba | sed on annua | al data) | | | ` |
|--------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| PTI | YF | PTI/PTUK | PTI/PTC | PT/PC | T | $\overline{\mathbb{R}^2}$ |
| -0.22 ^{***} (0.03) | 0.53 ^{***} (0.04) | - | | · | | 0.73 |
| | 0`0035 (0.0026) | -0.0038 (0.0090) | -0.0096 (0.0053) | -0.0026 (0.0016) | -0.0664 ^{**} (0.0281) | 0.69 |
| | 0.003 (1.42) | | -0.01 ^{***} (2.10) | -0.003 ^{***} (1.96) | 0.07 ^{***} (2.57) | 0.43 |
| | | | -1.057 [*] (0.550) | | | 0.56 |
| | <u>PTI</u> -0.22 ^{***} (0.03) | $\begin{array}{c} \underline{PTI} & \underline{YF} \\ \hline -0.22^{***} & 0.53^{***} \\ (0.03) & (0.04) \\ & 0.0035 \\ (0.0026) \\ & 0.003 \\ (1.42) \end{array}$ | $\begin{array}{c cccc} \underline{PTI} & \underline{YF} & \underline{PTI/PTUK} \\ \hline -0.22^{***} & 0.53^{***} \\ (0.03) & (0.04) \\ & & & \\ 0.0035 & -0.0038 \\ (0.0026) & (0.0090) \\ & & & \\ 0.003 \\ (1.42) \end{array}$ | $\begin{array}{c ccccc} \underline{PTI} & \underline{YF} & \underline{PTI/PTUK} & \underline{PTI/PTC} \\ \hline -0.22^{***} & 0.53^{***} \\ (0.03) & (0.04) \\ & & & & \\ 0.0035 & -0.0038 & -0.0096 \\ (0.0026) & (0.0090) & (0.0053) \\ & & & & & \\ 0.003 & & & & & \\ 0.003 & & & & & \\ 1.42) & & & & & \\ 1.42) & & & & & \\ 1.057^{*} \\ (0.550) \end{array}$ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |

NOTES

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In Cohen's study, the dependent variable is the ratio of the volume of British imports of Indian tea to the volume of British imports of Ceylonese tea. In the other studies, the dependent variable is the volume of British imports of tea from India.

PTI/PTUK = Price of tea in India divided by the price of tea in U.K. T = Time trend.

All other symbols are explained in the text.

In all the equations except Peera's, standard errors are given within brackets. In Peera's equation, t-ratios appear within brackets.

* = significant at the 10 percent level. ** = significant at the 5 percent level. *** = significant at the 1 percent level.

by comparing tea prices in two different countries. What he should have done is to compare the London price of Indian tea with the London prices of tea from other countries. The same comment also applies to the other two price variables because they refer to prices in different countries. The misspecification of the relative price variables may be one reason for their poor performance. Another reason, as mentioned by Peera (101) is the presence of multi-collinearity.⁸ This can be seen from Peera's equation which was fitted to the same data used The price variables now become significant at the by Dutta. 1 percent level. Finally, both Dutta and Peera found that the real income variable was not significant in the export This also appears to be due to multi-coldemand equation. linearity because the income and time trend variables are highly correlated (r = 0.96).

To conclude, we feel that our work is a significant improvement on the previous studies for the following reasons. First, we have selected a fairly complete list of the important variables influencing the demand for tea exports. Second, our data also appear to be superior to those used by previous researchers. This can best be seen from our price data.⁹ Finally, all the regression coefficients in our equations are statistically significant.

8. This point is mentioned in Peera's article. 9. With the possible exception of coffee prices.

b) Rubber

Like tea, rubber also experienced a sharp decline in price throughout the 1960's (Table 7). Between 1959 and 1967, the export price of rubber declined by more than 50 percent. The volume of exports also declined during most of these years.

A major difficulty encountered in doing a statistical analysis of rubber exports is the almost complete lack of data on the People's Republic of China which is the principal buyer of Ceylonese rubber. Since 1964 the People's Republic has been buying about 45 to 50 percent of total rubber exports from Ceylon.

Due to the data problems, our analysis of foreign demand for Ceylonese rubber is restricted to two countries the United States and Britain. Roughly 30 to 35 percent of Ceylon's rubber has been exported to these two countries.

The following regression equation was fitted to British and United States data:

4. XRC = 40 + 41 QR + 42 PN/PS + 3 PNC/PNO

- where XRC = volume of shipments of natural rubber from Ceylon to Britain (United States)
 - QR = Index of industrial production of rubber goods in Britain (United States)
 - PN = London (New York) price of natural rubber from all countries
 - PS = British (United States) price of synthetic rubber
 - PNC = London (New York) price of natural rubber from Ceylon

| CEYLONESE | RUBBER | EXPORTS | (1967 = | 100) | |
|-------------------|--------|---------|------------|-----------------|---|
| | | Price | | Volume | - |
| 1959 | | 151, | T | 71 | |
| 1960 | | 149 | -Ja | 70 | |
| 1961 | | 136 | | 68 . | |
| 1962 | | 135 | | · 77 | |
| 1963 | | 127 | D | 72 | |
| 1964 | | 119 | , • | 70 | 4 |
| 1965 | | 118 | | 73 [′] | |
| 1966 | 2 | 116 | | 78 | |
| 1967 [°] | • | 100 | | 100 | |
| 1968 | t | 104 | | 113 | |
| 1969 | ٣ | 101 | | 108 | |
| 1970 | | 128 | , | 107 | |
| 1971 | | 117 | | 122 | |
| | | | | | |

Source: Annual Reports of the Central Bank of Ceylon

(1970 - 71) Ŷ

PNO = London (New York) price of natural rubber from other countries.

QR appears in the above equation because of the direct link between the manufacture of rubber goods and the demand for rubber. An increase in the production of rubber goods is expected to raise the demand for natural rubber. other things remaining constant. Two relative price variables are included. PN/PS measures the competition between natural and synthetic rubber. PNC/PNO measures the competition between Ceylonese producers and foreign producers of natural rubber. Two countries are treated as being in competition with Ceylon for the world rubber market - Indonesia and Malaysia. Both these countries are leading producers of natural rubber. As much as 60 percent of Malaysian and 45 percent of Indonesian foreign exchange have come from exports of natural rubber.

The sources of data are given below:

XRC = Customs Returns of Ceylon

QR = I.M.F., <u>International Financial Statistics</u> PNO = United Nations, <u>Rubber Statistical Bulletin</u>

10. The volume of rubber exports from these countries for 1966 and 1968 was as follows:

1966

(in millions of lbs.)

1968

| Malaysia Indonesia | ų | | • • • • | 9 8 3 704 | 4 | - | 1090 740 | • |
|-----------------------|---|---|---------|---------------------|----|---|-------------|---|
| World Total | | • | ف | 2398 | 'n | ۲ | 2595 | , |

Source: Rubber Statistical Bulletin

PN = United Nations, <u>Rubber Statistical Bulletin</u>.
PNC = United Nations, <u>Rubber Statistical Bulletin</u>.
PS = United States, <u>Survey of Current Business</u>.

No data are available on prices of synthetic rubber in Britain. As a crude approximation, we have used the United States list price of general purpose synthetic rubber, expressed in British currency.

The statistical evidence based on annual data is summarised in Tables 8 and 9. In each of the equations appearing in these tables, PNO has a different meaning. In equations (1) and (2), PNO refers to the price of Malaysian and Indonesian rubber respectively. In equation (3), PNO refers to a weighted average of the prices of natural rubber from Malaysia and Indonesia. The weights used are the proportions of rubber imported from each of those countries to total imports of natural rubber to Britain (United States).

QR is significant in all the equations. PN/PS is also highly significant. But PNC/PNO is not significant at all. One reason for the poor performance of PNC/PNO may be multi-collinearity with PN/PS. After all, PN includes PNC and PNO. To check on multi-collinearity, we ran the same equations a second time, omitting PN/PS. However, PNC/PNO is still not significant (Tables 10 and 11). Moreover, the \overline{R}^2 of each of the new equations is much lower than the \overline{R}^2 of the previous equations.

To sum up, two factors appear to be significant in
| • | y BRI | TISH IMPORTS | OF CEYLONESE | RUBBER (1959 | 9 - 1971) | |
|--------------------|--------------------|------------------------------------------------|-------------------------------------------------|---------------------|---------------------------|------|
| Equation Number | - Constant Term | QR | PN/PS | PNC/PNO | $\overline{\mathbb{R}}^2$ | D.W. |
| 1 | -18.1507 - | 0.2814 ^{***} (0.0762) | -0.5618 ^{*****} (0.1227) | -0.1233 (0.7846) | 0.74 | 1.38 |
| 2 [°] , | -23.6221 | 0.2712 ^{***} (0.0900) | -0.5534 ^{***} (0.1683) | -0.0644 (0.1628) | 0.74 | 1.40 |
| 3° | -14.2893 | [*] 0.2778 ^{***} (0.0815) | [°] -0.5267 ^{***} (0.1064) | -0.1529 (0.5382) | 0.72 | 1.42 |

TABLE 8

For notes on PNC/PNO, see the text.
** = significant at the 5 percent level
*** = significant at the 1 percent level
R² = coefficient of determination adjusted for degrees of freedom
D.W. = Durbin-Watson statistic

9:

Standard errors are given within brackets.

| TABLE | 9 |
|-------|---|
|-------|---|

U.S. IMPORTS OF CEYLONESE RUBBER (1959 - 1971)

| Equation . Number | Constant Term | QR | PN/PS | PNC/PNO | $\overline{\mathbb{R}}^2$ | D.W. |
|----------------------|------------------|----------------------------------|------------------------------------|--------------------|---------------------------|---------------|
| 1 _ | 4.8925 | 0.4623 ^{**} (0.2241) | -0.6557 ^{***} (0.2052) | 0.2878 (0.7359) | 0.5912 | 1.52 |
| 2 | 3.5773 | 0.4872 ^{**} (0.2305) | 0.6389 ^{***} (0.2124) | 0.1615 (0.5286) | 0.6324 | 1.78 |
| 3 | 8.4186 | 0.4675 ^{**} (0.2034) | 0.6458 ^{***} (0.2125) | 0.0028 (0.3446) | 0.6028 | 1.92 ' |

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See footnotes at the bottom of Table 8

BRITISH IMPORTS OF CEYLONESE RUBBER (1959 - 1971)

| Equation Number | Constant Term | QR | PNC/PNO | \mathbb{R}^2 | D.W. |
|--------------------|------------------|--------------------------------------------|---------------------|----------------|------|
| 1 | -23.5691 | 0.3952 ^{***} (0.1136) | -0.1353 (0.7618) | 0.4581 | 1.38 |
| 2 | -28.7235 | 0.45 8 6 ^{***} (0.1037) | -0.0895 (0.6456) | 0.4134 | 1.41 |
| 3 | -15.6444 | 0.4091 ^{***} (0.1136) | -0.0938 (0.5516) | 0.4068 | 1.52 |

See footnotes at the bottom of Table 8

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| Equation Number | Constant Term | QR . | PNC/PNO | $\overline{\mathbb{R}}^2$ | D.W. |
|--------------------|------------------|-----------------------------------|---------------------|---------------------------|------|
| 1 | 5.1480 | 0.3627 ^{**} (0.1,780) | -0,0087 (0,1614) | 0.4132 | 0.92 |
| . 2 | 17.9279 | 0.3435 ^{**} (0.1639) | -0.2119 (0.5856) | 0.4280 | 1.56 |
| 3 🔪 | 10.3263 | 0.4130 ^{**} (0.2016) | -0.3754 (0.6229) | 0.4054 | 1,73 |

U.S. IMPORTS OF CEYLONESE RUBBER (1959 - 1971)

See footnotes at the bottom of Table 8

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the foreign demand for Ceylonese rubber. The first is the manufacture of rubber goods in the importing countries. The second is the competition from synthetic rubber. Competition from other natural rubber producing countries has not been an important factor in the decline of Ceylonese rubber exports. Our findings are similar to those of Swan (113). He found only two factors as being significant in the export demand for natural rubber - the production of rubber goods in the importing countries and the substitution of synthetic for natural rubber. But he did not find the competition among natural rubber producing countries to be a significant factor. It may be argued that competition among natural rubber producing countries was not important because of the enforcement of international price agreements. But this was not the case during the period under examination. Although natural rubber producing countries had discussions with a view to a chieving closer integration among the rubber markets of South East Asia, no price agreement was reached during this time.

c) Coconut and Minor Export Products

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It would be interesting to examine the foreign demand for coconut and minor export products in order to complete our analysis of Ceylonese exports. However, data on these products are extremely scarce to permit such an analysis.

Imports

During the period 1959 - 1971, most of Ceylon's imports were subject to tight restrictions. Restrictions were particularly tight in the category of consumer goods. The only items in this category which were exempted from import restrictions were basic foodstuffs. In the categories of intermediate and investment goods, restrictions were somewhat loose and were abolished in 1968. Owing to the enforcement of import restrictions, it would be highly misleading to fit demand equations for all imports or even for the three broad categories mentioned above. As an alternative solution, we have tried to analyse the demand for particular commodities which were not subject to import restrictions. The imports selected for analysis are the following:

1. Rice

1.

2. Flour

3. Dhal

4. Fertilisers

5. Agricultural implements (excluding machine tools)

6. Machinery and equipment

7. Wire and cable

8. Textile yarn and thread

The first three items are consumer goods. The rest can be classified as either intermediate or investment goods.

Three factors are important in the demand for imports: 1. Real income or output of the importing country

- 2. The ratio of the prices of imports to their domestic prices
- 3. The prices of goods imported from country i relative to the prices of goods from its competitors.

Due to data problems, it is not possible to consider the influence of all the above factors on Ceylon's demand for imports. Most of the imported goods are not produced domestically. This is particularly true of intermediate and investment goods. Even for those commodities produced domestically, their prices are not known. It is also not possible to obtain information on the ratio of the prices of imports from one country to the prices of the same goods from other countries. Some commodities may be imported under tied foreign aid programmes. Unfortunately, published statistics on the volume and prices of goods imported under such arrangements are not available.

Table 12 gives estimates of income elasticities of demand for various imports. For the three consumer goods, GNP in constant (1959) prices was used as the relevant income variable. For fertilisers and agricultural implements, the independent variable used was agricultural production. The index of manufacturing production was used in the equation for imports of machinery and equipment. For textile yarn and thread, it was clothing production; finally, for wire and cable, it was the output of electrical appliances. In all cases, the output variable was expressed in real terms by deflating by the GNP price deflator. The dependent variable

TABLE 12

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INCOME ELASTICITIES OF DEMAND FOR SELECTED IMPORTS (1959 - 1971)

(based on annual data)

| | Income Elasticity |
|-------------------------|-------------------|
| Rice | 0.29 |
| Flour | 0.28 |
| Dhal . | 0.31 |
| Fertilisers | 0,68 |
| Agricultural Implements | 0.72 |
| Machinery and Equipment | 0.78 |
| Wire and Cable | 0.69 |
| Textile Yarm and Thread | 0.63 |

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 $\gamma = \Delta$

is the volume of imports. Data on the volume of imports were obtained from the <u>Customs Returns of Ceylon</u>. All other data are taken from the <u>Annual Reports of the Central Bank of</u> <u>Ceylon (1960 - 71)</u>.

As is to be expected, the income elasticities for the three food items are low and are in the neighbourhood of 0.30. For the other imports, the income elasticities are much higher, thus indicating Ceylon's heavy dependence on the outside world for these commodities. The highest elasticity is for machinery and equipment (0.78).

<u>Conclusions</u>

On the basis of our statistical analysis, we reach the following conclusions. First, the increase in domestic prices has not exerted a significant impact on the volume of rubber exports.¹¹ However, the international competitiveness of Ceylonese tea has deteriorated as a consequence of the rise in domestic prices. Since tea accounts for the bulk of Ceylon's exports, domestic inflation appears to have been a retarding factor in Ceylon's exports. This conclusion, of course, is based on our analysis of Ceylon's tea exports to Britain only. Regarding imports, our conclusions are less precise due to data limitations. It is not possible to make

^{11.} This statement should be accepted with some reservations because we have not analysed the export of rubber to the People's Republic of China.

any long-term forecasts on imports for the following reasons. Due to factors such as increasing urbanization and import substitution, the total volume of imports as well as the proportions of various goods imported will change. However, taking only the next few years into consideration, one can safely predict that imports are likely to increase mainly due to the increased efforts of the Government to promote the growth of domestic industry.

With imports expanding and most exports falling, the deficit in Ceylon's balance of trade is likely to increase at the prevailing exchange rate in the near future. The Government has recognized the fact that the persistent deterioration in the balance of trade is partly due to an overvalued domestic currency. This is why it devalued the rupee in 1967 and introduced a multiple exchange rate system (FEECS) in the following year. But the foreign exchange market is still not in equilibrium, as can be seen from the soaring black market prices of foreign exchange. In fact, the recent I L O mission to Ceylon commented on the foreign exchange situation as follows:

> The present rate representing a surcharge of 55 percent (raising the official exchange rate from Rs. 5.95 per U.S. dollar to Rs. 9.12) is not enough, and its value as an incentive is falling because of the rising black-market rate . . . this is currently at least Rs. 18 to the dollar. While the illegal market is very artificial, so that this level may not be a true measure of what the rate would be in a completely free market, a rate of Rs. 9 must substantially understate the real cost of foreign

exchange . . . The FEECS surcharge might well be such that the resulting exchange rate was about double the basic rate, which would give about Rs. 12 to the dollar.¹²

12. <u>Matching Employment Opportunities and Expectations: A</u> <u>Programme of Action for Ceylon</u> (International Labour Office, Geneva, 1971), page 203.

SUMMARY AND CONCLUSIONS

The main findings of our study may be summarised by reproducing some of the estimated equations of the model. Only the equation relating to the demand for money,¹ the supply of money and the price level are given in Table 1. The export and import demand equations which were discussed in considerable detail in chapter six are not reproduced here.

We are primarily interested in the extent to which government borrowing from the banking system increases the money supply and the impact of monetary expansion on nominal income and the price level. Table 2 provides answers to these questions. According to the estimates given in Table 2, a 1 percent increase in government borrowing from the banking system contributes to a 0.4 percent increase in M_1 , which in turn leads to a 0.3 percent increase in nominal income and a In other words. 0.2% increase in the Consumer Price Index. whenever M₁ increases by 1 percent, nominal income and the price level increase by 0.7 percent and 0.4 percent respec-The magnitude of the impact of an increase in M_2 is tively. similar to that of M_1 . For a 1 percent increase in M_2 , nominal income and the price level increase by 0.8 percent and 0.4 percent respectively.

Thus, an increase in money supply, regardless of how it is defined, has a definite impact on nominal income and the

1. The demand equations for M₁ and M₂ are given here in nominal terms and in first difference form. But the income elasticities are roughly the same as those reported in chapter four and both G and BG are significant at the 1 percent level.

price level. Exports and imports are also affected by the r increase in nominal income and the price level. We have found mixed evidence of the influence of domestic prices on the foreign demand for Ceylonese exports. Domestic prices appear to have exerted a significant influence on the foreign demand for tea. But we could not find similar evidence of a domestic price effect on the demand for rubber. The increase in domestic demand has affected imports in two ways. First, it has increased the demand for consumer goods which are not subject to import restrictions. Our study finds that this was not a major factor increasing the trade deficit partly because few consumer goods were exempted from import restrictions and partly because the exempted items were basic necessities having very low income elasticities. The second way in which imports have increased is through the country's heavy dependence on abroad for its supplies of investment goods and raw Judging by the income elasticities, the second materials. factor seems to have been the more dominant influence on the increase in imports.

The main conclusion which emerges from our analysis is that the deficit in the balance of payments and inflation have been mainly due to the monetary expansion experienced during the period of study. Of course, one should not overlook other factors which also may have contributed to these problems. For example, one reason for the recurring balance of payments deficit has been the decline in world demand for Ceylonese exports. Similarly, factors such as the increase

TABLE 1

SOME ESTIMATES OF THE MODEL

$$\Delta M_{1} = 101.8319 + 0.8426 \Delta G_{t} - 0.1036 \Delta R_{t}$$

$$\Delta M_{1} = 43.5687 + 0.1453 \Delta Y_{t} + 0.5346 \Delta BG_{t}$$

$$\Delta P/p = 10.8648 + 0.405 (\Delta M_{1}/M_{1}) + 0.640 (\Delta PM_{3}/PM_{3})_{t} + 0.329 (\Delta W/W)_{t-1}$$

$$\Delta M_{2} = 93.7435 + 0.8057 \Delta G_{t} - 0.0124 \Delta R_{t}$$

$$\Delta M_{2} = 85.2946 + 0.1483 \Delta Y_{t} + 0.5326 \Delta BG_{t}$$

$$\Delta P/p = 12.4627 + 0.419 (\Delta M_{2}/M_{2})_{t} + 0.622 (\Delta PM_{3}/PM_{3})_{t}$$

$$0.301 (\Delta W/W)_{t-1}$$

The symbols are explained in previous chapters.

TABLE 2

IMPACT OF BUDGET DEFICITS AND MONEY SUPPLY ON NOMINAL IMCOME AND THE PRICE LEVEL

| | Ľ | | Increase in | Increaše ` in | Increase in | Inc | rease , in |
|---|--------------------|-----------------------------|----------------|------------------|----------------|-----|---------------|
| - | | • | Ml | м ₂ | Y | | P . |
| | | | •• | (expres | sed in %) | | |
| 4 | Due to a crease | 1% in- in G | 0.4 | 0.2 | 0.3 | • | 0.2 |
| | Due to a crease | 1% in- in M _l | , | | 0.7 | | 0.4 |
| | Due to a crease | l% in- in M ₂ | | | Oʻ . 8 | | 0.4 |

in import prices of intermediate and investment goods have exerted an important influence on the domestic price level and hence cannot be ignored in the analysis of inflation in Ceylon.

A major policy implication which emerges from our study is that, since monetary expansion is largely due to the financing of the budget deficit, the Government must accept the main responsibility for increases in the money Faced with the problem of avoiding large increases supply. in the money supply, the Government has two alternatives open to it. It could either reduce the size of the budget deficit or find non-inflationary methods of financing the deficit. Regarding the first alternative, a large reduction in the budget deficit is very unlikely. Almost all sources of revenue have been utilized to their maximum and, therefore, it would not be possible to obtain further large increases in revenue. It is also unlikely that the Government would be able to make a substantial reduction in its spending mainly because a large proportion of expenditure goes into social services and transfer payments² and reductions in such expenditure.often tend to be politically unpopular. Given the difficulty of reducing the budget deficit, the other alternative available to the Government is to find noninflationary means of financing the deficit. In the past the

^{2.} Between 1967 and 1971, for example, approximately 70 percent of government expenditure went into social services and transfer payments. Subsidies alone accounted for about 25 percent of total expenditure of the Government.

Government has borrowed considerable amounts from non-bank sources such as the Employees' Provident Fund and the Insurance Corporation. But is would be too much to expect these agencies to lend to the Government for an indefinite period because their financial resources are not inexhaustible. Therefore, since neither of the two alternatives described above is really feasible, the Government would have no choice except to increase its reliance on the banking system. In other words, both monetary expansion and inflation are likely to increase in the next few years.

Another policy implication of this study is that the balance of payments deficit is likely to increase at the prevailing exchange rate and that import restrictions will .not be able to correct the deficit. With the growing emphasis on industrialization and modernization of agriculture, the demand for raw materials and capital equipment will tend to increase. Since these products are not produced in Ceylon in sufficient quantities, there will be an increase in their Moreover, even if all raw material and capital imports. equipment requirements can be met through domestic production, import restrictions would still be unable to cope with the balance of payments problem due to the effect of domestic inflation on exports. The foreign demand for some exports such as tea has already declined due to the increase in domestic prices relative to foreign prices. The increase in the rate of inflation is likely to lead to a further decline in the foreign demand for exports. The Government of Ceylon

has already recognized the failure of import restrictions to correct the balance of payments deficit and has experimented with other measures such as subsidies for minor export products, limited import liberalization for raw materials and investment goods, and multiple exchange rates! Despite these measures, the balance of payments deficit has continued to increase at the prevailing fixed exchange rate and every attempt to adjust the exchange rate has resulted in an in- " crease in the black market price of foreign exchange. 0f course, the ideal solution to Ceylon's balance of payments Under a problem is a system of flexible, exchange rates. flexible exchange rate there will not be either a deficit or surplus in the balance of payments. Nor will there be a black marked for foreign exchange. In other words, it will no longer be recessary for the Government to make periodic adjustments in the actual exchange rate to its equilibrium level. However, it is most unlikely that Ceylon would adopt a flexible rate. After all, if the Government wanted to free the rupee, it would not have waited so long to do so. Given the commitment to a fixed exchange rate, one would have at least expected the Government to encourage capital flows into the economy. 'But the flow of private foreign capital has declined drastically during the recent years probably due to the threat of nationalization, tax increases and other socialistic measures of the governing political party. Consequently, distress loans and other forms of

short-term borrowing from abroad have become a regular method of financing the deficit in the balance of payments.³ See, for example, the <u>Annual Report of the Central Bank</u> of Ceylon (1970), page 17. 3.

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