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INFLATION IN SRI LANKA 1971-87: A PRELIMINARY STUDY

By
H.V.B. Nicholas

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CONTENTS

I. INTRODUCTION 1
II AGGREGATE PRICE LEVEL: INDICATORS AND TRENDS 4
II.1 Indicators: A Comparison 4
II.2 Trends and Fluctuations 6
III INFLATION AND MONETARY IMPULSES 8
III.1 The Monetarist Theoretical Framework 8
III.1.1 The Closed Economy Framework 8
III.1.2 The International Dimension 9
III.1.3 The Determinants of Money Supply 10
III.1.4 Monetarism and Less Developed Countries 12
III.2 Testing Monetarist Propositions 13
III.2.1 Velocity of Circulation 13
III.2.2 Contemporaneous and Lagged Money Stock Changes 16
III.2.3 Monetary Shocks 17
III.2.4 The Standard Monetarist Model 20
III.2.4.1 Opportunity Costs 20
III.2.4.2 Permanent Income 21
III.2.5 Extensions of the Standard Monetarist Model to the Open Economy 23
III.2.5.1 The Law of One Price 23
III.2.5.2 The Short-run Trade-off Between Inflation and Current Account Imbalances 24
III.2.6 Money Supply Expansion in Sri Lanka 27
III.2.6.1 The Composition and Determinants of Money Stock Changes 27
III.2.6.2 The Money Multiplier 28
III.2.6.3 The Nature and Sources of Expansion in the Reserve Money Base 31
III.3 Summary of Findings 33
IV THE STRUCTURAL DETERMINANTS OF INFLATION 34
IV.1 The Structuralist/Post-Keynesian Theoretical Framework 34
IV.1.1 Sources of Inflation 34
IV.1.2 Propagating Factors 35
IV.1.3 The Role of Monetary Factors 36
IV.2 Exploring Structuralist/Post-Keynesian Propositions 37
IV.2.1 Causal Factors 37
IV.2.1.1 Internationally Traded Commodity Prices 37
Traded Commodity Prices and the Cost of Living 39
Traded Commodity Prices and Costs of Production 40
Traded Commodity Prices and the Aggregate Price Level 41
IV.2.1.2 Food Prices 44
IV.2.1.3 Administered or Controlled Prices 46
IV.2.1.4 Supply Rigidities/Problems 47
IV.2.2 Propagating Factors 49
IV.2.2.1 Budget Deficit and Bank Financing of the Deficit 49
IV.2.2.2 Government Expenditure 50

IV.2.2.3 Government Revenue 51
IV.2.2.4 The Overall Deficit 52
IV.2.2.5 Bank Financing of the Deficit: the Monetary Propagation of Inflationary Impulses 53
IV.2.2.6 Credit to the Private Sector 55
IV.3 Summary of Findings 60
V. CONCLUSIONS AND POLICY IMPLICATIONS 61
V.1 Conclusions 61
V.2 Policy Issues 62
Appendix I 65
References 66

Inflation in Sri Lanka 1971-87: A Preliminary Study

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"If all economists were laid end to end they would not reach a conclusion"

George Bernard Shaw

I. INTRODUCTION[1]

Inflation in Sri Lanka from Independence to the late 1970s has been low by international standards. During the 1950s, 1960s and 1970s the average annual rate of increase in retail prices in Sri Lanka was very much lower than in other developing countries, and even lower than in the industrialised countries (see Table 1.1 below).[2] Towards the end of the 1970s, however, there were signs of a reversal of this pattern. Between 1980 and 1987 Sri Lanka's average annual rate of inflation was more than double that of the industrialised countries. Moreover, although this rate was still very much lower than the average for other developing countries, and even lower than the world average, it warrants bearing in mind that the average rates for these two groupings are considerably distorted by the exceptionally high rates of certain Latin American countries. Therefore, a better indicator of Sri Lanka's relative international performance during this period is perhaps obtained from a comparison with a developing country grouping, such as Asia, which excludes these outliers. Sri Lanka's annual rate of inflation between 1980 and 1987 was, in fact, nearly double that of the Asian bloc of countries (see Table 1.1).

1 I would like to acknowledge with gratitude the considerable help I received from Professor W.D.Lakshman in the preparation of this study. He painstakingly read through several earlier drafts and gave me many useful and detailed suggestions for their improvement.

2 The classification here is that given in the International Monetary Fund's International Financial Statisitcs

Table I.1
Sri Lankan and World Rates of Inflation (Retail Prices)

Percentage changes

	1951-60	1961-69	1970-79	1980-87
Sri Lanka	0.7	2.9	8.2	17.6
World	3.7	5.1	15.7	20.0
Developing countries	7.9	16.6	43.4	129.9
Ind. countries	3.1	3.4	11.6	7.5
Asia	4.4	3.5	22.0	9.9

Source: International Financial Statistics

This relative acceleration in Sri Lanka's rate of inflation, which began in the early 1980s, is continuing. Current levels of inflation, while nowhere near those of countries like Argentina or Brazil, are displaying worrying early warning signs of a qualitative upward shift. Between 1985 and 1987 inflation rates fell to single digit levels, but since then have moved firmly into double digits. The deleterious economic, social and political consequences of inflation, coupled with the propensity of inflationary tendencies, if unchecked, to develop an uncontrollable dynamic of their own, make these recent trends of concern to all. It is this concern which is the motivation for the present study of inflation in Sri Lanka.

This study of inflation in Sri Lanka it needs to be stressed is a preliminary one. Its purpose is to identify the factors which appear to best explain the movement of the aggregate price level in Sri Lanka with a view to providing, in a future work, a more detailed and structured account of the inflation process. The approach chosen with this purpose in mind is to analyse the Sri Lankan data in the context of the now long-standing debate between Monetarists and Structuralists/Post-Keynesians (SPKs). Monetarists, as is well known, hold that the fundamental causes of inflation (and balance of payments disequilibria) in any money-based free market economy, whether developed or less developed, are domestically or externally generated monetary impulses. SPKs place greater store on differences between developed and less developed economies, and argue that the major causes of inflation in the latter are structurally induced changes in costs, relative prices and aggregate demand.

The comparative approach is considered a particularly useful one in realising the objectives of the study, for a number of reasons. Firstly, it makes use of a large body of existing knowledge on the subject. Secondly, it avoids partialising the analysis of inflation by locating the latter in the context of more general views on how capitalist developing economies work. Thirdly, and relatedly, because it helps avoid a taxonomic treatment of the subject in which explanatory variables are

arbitrarily introduced into the analysis and accepted or rejected on the basis of equally arbitrarily chosen statistical techniques.[3]

In fact the statistical techniques adopted in the present study are largely dictated by the particular propositions being explored or hypotheses being tested. OLS techniques have been adopted in the analysis of Monetarist type explanations of inflation because the nature of the theoretical propositions advanced by this school readily lend themselves to confirmatory-type statistical techniques of the OLS genus. Indeed many, if not most, empirical studies of inflation from the Monetarist perspective have adopted these techniques. One important deviation of the present study in respect of much of this empirical work is the use of percentage changes rather than absolute values or simple first differences. The justification for this is that it avoids the type of spurious results which invariably result from use of monetary data in the latter form. Monetary variables all tend to move together in the same direction with a strong trend. Percentages, graphs and simple correlation coefficients have been used in the analysis of SPK propositions because the resulting functional forms do not conform to OLS requirements. One obvious problem in this regard is the interdependence of causal and propagating factors. Further, the embryonic state of the SPK approach necessitates more of an exploratory type of approach.

The remainder of the paper is organised into four sections. Section II is devoted to a study of general price level trends and various indicators of these trends. Section III presents and examines empirically Monetarist-type explanations of aggregate price level movements in the Sri Lankan context between 1971 and 1987. Section IV does likewise for SPK explanations. Finally, Section V attempts to distill the analytical and policy conclusions arising out of the study.

Throughout the study a fundamental distinction will be drawn between the pre- and post-1977 sub-periods. This is because the change in government in 1977 was accompanied by fundamental shifts in economic policy which in turn gave rise to marked changes in the mechanism of resource allocation. In the 1971-77 sub-period many key commodity prices were administered, production and consumption were heavily subsidised, and in some cases commodities were even distributed free of charge. Subsidies were given to items such as rice, flour and fertilizer, and the official market prices of these commodities were controlled. The extent of the coverage of subsidies meant that transfers under this heading came to account for 22 to 23 per cent of total government current expenditure. Added to this, public corporations often produced at or below cost, ostensibly in the public interest. Prices of goods produced by public enterprises were, for the most part, left unadjusted or insufficiently adjusted when the prices of imported raw materials and other basic items rose. The effects of these "distortions" were compounded by a

3 All of this does not mean, however, that the only valid explanations of inflation are those which strictly conform to one or the other of these paradigms, or that elements of each of the two paradigms cannot be legitimately combined in such an explanation. Rather, it means that some care needs to be exercised when doing so to safeguard the rigour of the underlying argument.

rigid system of tariffs and quotas, adherence to a dual exchange rate system, and a reluctance to devalue the currency in the face of relative international price movements. The 1978-87 sub-period, by contrast, witnessed a relative liberalisation of the economy. Price controls and subsidies were gradually, although certainly not entirely, dispensed with, and public corporations moved towards a policy of full-cost pricing. The exchange rate was unified and regularly devalued. Tariffs and quotas were reduced and, in some cases, even abolished. There were attempts to orient tax revenues towards a more domestic base founded on incomes and profits taxes, and supplemented by indirect taxes on non-traded goods.

The general conclusion which emerges from the present study is that structurally induced cost-push, relative price and demand-pull factors emanating from predominantly external impulses, have had a greater bearing on movements in the aggregate level of prices than autonomous monetary impulses. In terms of policy the implication is that demand management, including currency depreciation and credit restraint, is, by itself, unlikely to be effective in significantly dampening inflationary tendencies, and may in certain circumstances even exacerbate them. What is required is a longer term rolling structural adjustment programme designed, on the one hand, to make the economy progressively more resistent to external shocks and, on the other, to take cognisance of, and constantly adapt to, ongoing changes in the general domestic and external environments.

II AGGREGATE PRICE LEVEL: INDICATORS AND TRENDS

II.1 Indicators: A Comparison

The direction and magnitude of aggregate price level changes in Sri Lanka can be gauged from two regularly published price indices, the Colombo Consumers' Price Index (CCPI) and the Wholesale Price Index (WPI)[4], and the Gross Domestic Product price deflator (GDPD) implied in the national product estimates of the Central Bank and the Department of Census and Statistics[5]. The annual rates of change of these three indices over the period 1971-87 are presented in Table II.1.

The CCPI is the most widely used and quoted index of the three. Its coverage is restricted to **household consumption** items such as food and drink, housing, fuel and light, clothing, and a number of other consumer items. The major drawback of this index is that its coverage and weighting are based on the expenditure patterns of the Colombo city working classes in 1951. On the one hand, the basket of basic items is likely to be now very much more diverse. On the other hand, as Table II.2 indicates, the distribution of household expenditure across major categories of consumer items has also changed quite appreciably. Food, drink, and

4 There are also several other unpublished price indices of the Laspeyres (CCPI and WPI) type. The Central Bank's cost of living index and the special consumer price index reported in Sanderatne (1985) are two such indices.

5 Throughout the study the GDP deflator used will be that derived from Central Bank data.

clothing, now account for a smaller slice of the household budget than in 1951, while rent, fuel and light, and miscellaneous items, including consumer durables, account for much larger slices. Moreover, a retail price index computed on the basis of weights derived from consumption expenditure patterns of the working classes living in the capital city is unlikely to be representative of the entire country given that the bulk of the population is rural and a large number is still outside the wage labour nexus.

Table II.1

Annual Rates of Change in the Aggregate Level of Price, 1971-87

	Percentage change		
YEAR	CCPI	GDPD	WPI
1971	2.7	4.0	--
1972	6.3	3.9	--
1973	9.7	17.6	--
1974	12.3	26.0	--
1975	6.7	8.1	3.0
1976	1.2	5.8	8.2
1977	1.2	18.0	21.0
1978	12.1	7.9	15.8
1979	10.8	15.5	9.5
1980	26.1	18.2	33.8
1981	18.0	20.4	17.0
1982	10.8	13.6	5.5
1983	14.0	14.7	25.0
1984	16.6	16.8	25.6
1985	1.5	0.9	-15.2
1986	8.0	5.8	-2.9
1987	7.8	7.0	13.4

CCPI = Colombo Consumers' Price Index
GDPD = Central Bank GDP Implicit Price Deflator
WPI = Wholesale Price Index

Source: Central Bank

The commodity coverage of the WPI is wider than that of the CCPI. It includes, in addition to consumer goods, intermediate and investment goods. The weights used for the compilation of the index are based on product shares in the total value of domestic production plus imports during 1974. Internationally traded goods receive a higher weightage than in the CCPI. Imports (27.17 per cent) and exports (22.52 per cent) having a combined weightage of 50 per cent in the WPI as against 40 per cent in the CCPI. The weight assigned to food in the WPI, at 68 per cent, is also quite high. The failure to revise the weights used in the compilation of the WPI weakens its reliability as an indicator of underlying inflationary pressures since there have undoubtedly been considerable changes in the patterns of production and trade since 1974. Nevertheless, the commodity coverage of the index, the prices it uses, and the weights it assigns to different categories of

commodities, make it, as compared to the CCPI, a more accurate and sensitive reflector of underlying inflationary pressures emanating from a build-up of demand pressures, supply rigidities, international price movements, and the like. The WPI is especially good as an indicator of **underlying cost pressures**. It is perhaps best described as the nearest approximation to a tradeable goods index. One of the major drawbacks in using the index for the purposes of the present study is that it only goes as far back as 1974.

Table II.2

Percentage Distribution of Household Expenditure by Major Expenditure Groups for 1985/86 as Compared with Relative Weights Assigned to them in the CCPI

Expenditure Group	CCPI	1985/6 LF&SE[a/]
Food & Drink	61.9	53.9
Housing	5.7	6.5
Clothing	9.4	5.0
Fuel and light	4.3	7.3
Miscellaneous[b/]	18.7	27.3

a/ Labour Force and Socio-economic Survey

b/ Personal care & health, consumer durables, transport & communication in the 1985/86 proportion.

Sources: Central Bank Reports
Labour Force and Socio-economic Survey 1985/6.

The coverage of the GDPD is the widest of the three indices. It includes all goods and services of domestic origin weighted by their respective contributions to total value added. Conceptually, therefore, it is arguably the best indicator of **general inflationary forces** operating in the economy, from whatever source they may emerge. However, unlike the CCPI and the WPI it does not directly reflect changes in import prices. This is a distinction worth bearing in mind in any empirical study of inflation in Sri Lanka since it suggests that the response of the GDPD to external price changes is likely to be less immediate and less pronounced than those of the CCPI and the WPI. One of the major drawbacks of the GDPD is that it is difficult to ascertain its quality as an indicator of general inflationary forces. The quality of any economy-wide deflator like the GDPD, as is well known, depends heavily on the quality of the price indices used to derive the constant price estimates of value added in various sectors of the economy. Neither the Central Bank nor the Department of Census and Statistics provides adequately detailed information about the primary price indices used in the computation of these statistics (see Shouri, 1974).

II.2 Trends and Fluctuations

Comparative data on inflationary trends for the period 1971-87 and the sub-periods 1971-77 and 1978-87 using the three indices discussed above are given in Table II.3. There is a significant difference in the average annual rates of inflation

as shown by the CCPI (9.75 per cent) and the GDPD (12.01 per cent) for the period 1971-87. This difference, it may be observed, is largely attributable to divergences between the two series during the former 1971-77 sub-period. The means and standard deviations for the two series are remarkably close over the latter 1978-87 sub-period as can be seen from rows 3 and 6 of Table II.3. The major reason for the divergence between the CCPI and GDPD during the former sub-period is that the CCPI accords a particularly large weight to products which were heavily subsidised or whose prices were controlled during that period. There was thus a downward bias in the CCPI between 1971 and 1977.

Table II.3
Averages for Changes in the Aggregate Level of Prices

Averages	CCPI	WPI	GDPD
1971-87	9.75	12.30[a/]	12.01
1971-77	5.74	-	11.88
1978-87	12.56	12.74	12.10
Standard deviations			
1971-87	6.65	13.07[a/]	7.11
1971-77	4.29	-	8.58
1978-87	6.71	14.43	6.39

a/ 1975-87
CCPI = Colombo Consumers' Price Index
WPI = Wholesale Price Index
GDPD = Gross Domestic Product Deflator

Source: Central Bank

Although annual rates of change of the CCPI and GDPD are broadly similar for the sub-period 1978-87 as a whole, there are notable divergences in individual years (see Table II.1) which again serve to underscore basic differences in the nature of the two indices. Thus in 1978 the GDPD registered a lower rate of increase than the CCPI (and the WPI), while in the ensuing year the reverse pattern manifested itself. Similar divergences in the pattern of behaviour of these indices can also be seen in the years 1980-82. At least part of the explanation for these phenomena would appear to be that inflationary impulses generated by the economic reforms introduced in 1977/78 were transmitted more slowly to the economy as a whole than to the consumer goods sector, thus producing a lagged effect on the GDPD. The same pattern manifested itself over the years 1980/81. In 1980 the GDPD registered a very much lower rate of increase than the CCPI (and the WPI), while in the following year (and in 1982) the reverse situation prevailed. The major source of the upward movement of prices in these years was undoubtedly the 1979 hike in world oil prices. This obviously had a more direct and immediate impact on the CCPI (and WPI) than on the GDPD because, as noted above, the CCPI unlike the GDPD has an import price component.

The WPI appears to have been very much more volatile than the CCPI and GDPD over the 1978-87 sub-period. This greater volatility is explainable for the most part by the fact that the WPI accords a heavier weight to changes in the prices of internationally traded commodities. Thus, in 1980, when export prices rose steeply, the WPI registered a much sharper increase than the other two indices. Again, in 1985/86, when export prices fell dramatically, the WPI registered a decline while the other two indices both registered increases.

There are two particularly important implications to be drawn from the analysis of this section for the following study on inflation in Sri Lanka. Firstly, considerable caution and some circumspection need to be exercised in the choice of an appropriate price index in the analysis of inflationary trends. Injudicious use of the available indices can lead to biased and, as a consequence, spurious and misleading conclusions. One obvious case in point is the frequent use of the CCPI to test the impact of demand pressures emanating from increases in the money supply between 1971 and 1977. During this sub-period many prices of commodities with a heavy weight in the CCPI were subject to controls. A positive relation between money supply and the CCPI cannot, therefore, be taken automatically to imply a causal relation between the two. Secondly, it is apparent that a careful scrutiny of the indices and differences between the trends in inflation indicated by them has much to offer in terms of shedding light on underlying inflationary forces.

III INFLATION AND MONETARY IMPULSES

III.1 The Monetarist Theoretical Framework[6]

There are undoubtedly differences among Monetarist writers regarding the determinants of, and mechanisms underlying, inflationary phenomena. Yet it is possible to identify a number of key propositions around which there is general agreement and which, therefore, provides a basis for an empirical examination of the validity of this school's views on inflation in relation to the Sri Lankan experience.

III.1.1 The Closed Economy Framework

To begin with, Monetarists see inflation as fundamentally demand inflation. It is argued that **changes in the stock of money**, and therefore money expenditures, are the predominant cause of changes in nominal income, although there may be something of a lag in the full response of the latter to the former. Because of its emphasis on money stock changes, Monetarism is regarded as having its roots in **the traditional quantity theory of money**. The quantity theory approach to the analysis of inflation was expressed in the form of the familiar identity $MV = PT$ or $MV = Py$ where M was taken to be either the volume of money in circulation or the stock of money held by individuals, V the transactions or income

6 Useful expositions of the general Monetarist approach are to be found in Vane and Thompson (1979), Laidler (1983), and Rajapakse (1989).

velocity of circulation, P the level of prices, T the volume of transactions and y the level of real income. The causal relation between money and prices was then established by assuming that (a) the volume of transactions/output and the transactions/income velocity of circulation are constant (or at least determined by non-monetary factors), (b) changes in money in circulation or money stock are exogenous, and (c) money is primarily to facilitate transactions - as a medium of exchange.

The Monetarist approach to the analysis of inflation is expressed in the first instance as a theory of the demand for money. It is argued that there exists a stable functional relationship between the demand for real money balances and "a limited number of variables". The demand for nominal balances is transformed into a demand for real money balances by assuming that the demand for nominal balances is proportional to prices.[7] The variables deemed to influence the demand for real balances are real income[8] or wealth, the yield on money in relation to the yield on other assets in which wealth can be held (which is proxied by the real rate of interest and the expected rate of inflation), and the asset holder's tastes and preferences. These variables are argued to be determined in the long-run by real factors and, partly because of this, to change relatively slowly. Theoretically, and on the basis of empirical evidence, Monetarists contend that the demand for money is most sensitive to changes in income. Therefore, **a stable demand for money** is seen as implying a stable income velocity of circulation and visa versa.

Income velocity, it must be stressed, is not assumed to be a numerical constant. Monetarists accept that for a number of reasons velocity is likely to fluctuate in the short-run. However, such fluctuations will normally be of a relatively small magnitude and very much less than changes in money stock (see Vane and Thompson, 1979:47). To the extent that there are likely to be velocity changes in the short-run, these will generally reinforce rather than offset changes in the money stock. Monetarists also accept that velocity can at times fluctuate quite violently. For example, unusually large monetary shocks (or even relative price changes) may significantly affect velocity if, as is likely, individuals take time in adjusting their portfolios to the shocks. Further, if the demand for money is more closely related to permanent income (Y_p) or wealth (W) than current income (Y) as Friedman and his followers claim, the ratio of Y/M is likely to fluctuate more than the ratios of Y_p/M, although still by less than changes in the supply of money.

III.1.2 The International Dimension

The above Monetarist explanation of inflationary phenomena is that which applies, strictly speaking, to a closed economy context. When extended to an

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7 Mathematically this amounts to assuming that the demand for money is linearly homogeneous with respect to price.

8 In Friedman's original formulation the appropriate income variable is argued to be permanent and not current income.

open economy setting it requires some modification and elaboration. There are two major points to be noted in this connection.

Firstly, over the long-run, domestic prices are argued to be strongly influenced by the world-market price level (the so-called "law of one price"). The extent to which individual countries are actually influenced by world market pressures will depend on factors such as the extent of market penetration and the degree of substitutability between traded and non-traded goods. The world market level of prices is in turn determined by the world money supply.

Secondly, over the short-run, in a fixed exchange rate environment, domestic inflationary pressures will be partially offset by increased import expenditures (and demand for foreign assets) and resulting current account imbalances. In the absence of continued domestic credit expansion, the depletion of reserves will result in a contraction of the money stock, a fall in prices, and a restoration of individual portfolio balances. The dissipation of domestic inflationary pressures by current account imbalances will last only as long as the fall in reserves can be sustained or payments imbalances supported by foreign capital inflows. If the exchange rate is flexible, then domestic credit expansion is argued to feed relatively more into domestic price rises. The implicit assumption here is, again, that there is substitutability between imported goods and domestically produced goods.

III.1.3 The Determinants of Money Supply

To make predictions about changes in nominal income and the current account balance on the basis of an alleged stable demand for money function and derive policy implications thereof, Monetarists additionally assume that **changes in the stock of money are exogenously given** in the sense that the factors determining these are unrelated to those which influence the demand for money. Once exogeneity is granted, it can be argued that changes in the aggregate price level are the result of prior changes in the money supply. Control of the former implies control of the latter.

What control of the money supply actually implies has been approached by Monetarists from two different but in many ways complementary standpoints, namely the flow-of-funds approach, which looks at the assets/liabilities sheet of the entire banking system, and the monetary base approach, which focuses on the assets/liabilities sheet of the central bank.

From the point of view of the entire banking system it is argued that the major component of increases in money stock is net credit to government.[9]

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9 Formally, money stock changes (the liabilities side) are equal to domestic credit expansion (DCE) and changes in the net foreign reserve position (NFA),

$$M' = DCE' + NFA'$$

Domestic credit expansion comprises net credit to government (NCG), gross credit to the private sector (GCP) and net other assets/liabilities (NOA),

$$DCE' = NCG' + GCP' + NOA'$$

Hence control of inflation necessitates stricter budgetary control. Moreover, even if it could be shown that the major component of money supply expansion is credit to the private sector, Monetarists would argue that the latter is facilitated, if not actively induced, by a prior expansion in the monetary base as a result of central bank financing of budgetary deficits. The monetary base approach logically follows from this.

The monetary base approach holds that there exists a stable and predictable relation between the liabilities of the central bank (base money) and the money stock. Hence control of the money base will enable control of the money stock. The existence of a stable and predictable relation between high-powered money and money stock is itself premised on the assumed existence of two further stable and predictable relationships, namely, between the quantity of reserve assets available to banks (R) and the level of their deposits (D), and between the volume of bank deposits and the volume of currency held by the public (C). The former ratio is referred to as the reserve ratio (R/D) and the latter the currency ratio (C/D).[10] Changes in either ratio can offset changes in high-powered money. Thus, reductions in high-powered money to achieve targeted contractions in money stock can, in principle, be frustrated by falls in either the deposit or currency ratios. For Monetarists, however, these offsetting changes are likely to be both small and relatively short-term, in addition to being brought about by factors under the control of the authorities. Specifically, it is assumed that one of the major factors affecting both the currency and reserve ratios is the rate of interest. When interest rates rise, banks will be encouraged to economise on zero interest bearing excess reserve holdings, and individuals on their holdings of cash balances. In other words, money supply is expected to be positively related to the rate of interest. Another factor affecting the reserve ratio, which is also under the control of the monetary authorities, is changes in reserve requirements. If reserve requirements fall then the reserve ratio will also fall.

The ability of the authorities to control the monetary base itself depends on their ability to influence its various components. The monetary base can be decomposed into three major components; net foreign assets of the central bank (FA), net claims on the government by the central bank (NCG), and net other assets (NOA) - which mostly comprise net claims on commercial banks. A frequent contention of Monetarists is that the major source of expansion of the reserve base is financing of government budget deficits. Control of this component alone gives the authorities a considerable degree of control over money stock. The authorities, and specifically the monetary authorities, are also able, if they so desired, to exercise a considerable degree of control over the extension of credit to the private sector. In fact, they are able in principle to compensate for unavoidable changes in the budget deficit by appropriate changes in the extension of credit to the private sector (through, for example, selective refinancing policies). Lastly, although the authorities

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[10] More formally, if M is money stock and H high-powered money,
$M = H (1 + C/D)/(R/D + C/D)$

have no direct control over changes in foreign reserves, they are seen as being able to compensate for unwanted changes in this component (and indeed unwanted changes in any of the other components) through open market operations and other monetary policy instruments.

Although, for all these reasons, Monetarists believe the authorities are generally able to control money stock, it is accepted that there are certain situations when money supply (i.e., supply of reserve money) may become endogenous. One such situation is under a fixed exchange rate regime, when the monetary authorities are prepared to buy and sell the domestic currency in exchange for foreign currencies upon demand. Secondly, money supply becomes endogenous when the monetary authorities pursue a policy of stabilising interest rates. In this case they have to be prepared to buy and sell bills and bonds, i.e., vary the volume of high-powered money, upon demand.

III.1.4 Monetarism and Less Developed Countries

A number of additional factors need to be taken into consideration when Monetarist analyses are applied to developing countries. Firstly, since output in LDCs is arguably more inflexible than in developed countries, Monetarists would contend that prices and payments imbalances are responsive to money stock changes even in the short-run. In situations where prices are for one reason or another "sticky", an expansion in money stock will result in shortages in the formal commodities markets. Secondly, the financial systems in many LDCs such as Sri Lanka tend to be relatively underdeveloped in the sense that the non-bank financial sector is extremely small and there is a relative dearth of alternative financial assets to money. This means that in the face of any significant expansion in the size of the public sector borrowing requirement, the authorities are left with little feasible alternative to domestic bank borrowings. It also means that when an LDC is faced with a large net inflow of foreign funds it finds it difficult to sterilise their inflationary impact through such devices as open market operations. The only recourse for monetary authorities is the more cumbersome one of changing reserve requirements or calling for special deposits from the banking system, both of which may have major disintermediation consequences. Thirdly, and relatedly, the relative dearth of financial assets in LDCs means that substitution for wealth holders is primarily between money and physical assets. Thus, the appropriate opportunity cost of holding money balances is the return on physical assets - which is usually taken to be the degree of inflationary expectations.[11] Fourthly, high levels of protection and exchange rate manipulation may serve to insulate certain sectors of the economy from changes in world market prices. Lastly, sustained balance of payments support by international monetary institutions and aid donors for many developing countries implies that payments imbalances may mitigate domestic inflationary pressures over fairly long periods.

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[11] This, coupled with the general uncertainty in LDCs may also be interpreted as suggesting that Monetarists tend to regard money in LDCs as being held primarily for transactions purposes and, therefore, that the relevant definition of money is a relatively narrow one.

III.2 Testing Monetarist Propositions

III.2.1 Velocity of Circulation

It was noted above that, whilst Monetarists do not believe velocity to be constant, they do believe it to be relatively stable, and certainly more stable than changes in money stock. Moreover, such changes in velocity as do occur are expected to reinforce rather than offset the impact of changes in money stock. Figure III.1 is a plot of percentage changes in income velocity for two definitions of money stock, namely, narrow money supply, M1, and broad money supply, M2,[12]. Clearly, velocity has been far from stable whichever definition of money is chosen.

Standard deviation computations given in Table III.1 show further that velocity was as unstable as corresponding money stock changes, and in the case of M1 even more unstable. Moreover, there appears to be a strong negative correlation between velocity and money stock changes, suggesting that movements in the former systematically offset rather than reinforced movements in the latter.

There are certain exceptions to the above conclusions for the 1978-87 sub-period. During this sub-period the income velocity of circulation of M2 was considerably more stable, and the range of variation smaller, than for changes in M2 itself. One interpretation of these results is that changes in broad money stock had a more systematic and direct impact on income and prices between 1978 and 1987. Another, diametrically opposite, interpretation is that credit was more responsive to changes in demand during this sub-period. This point will be taken up later.

The observed short-run instability in velocity also implies that the simple version of the demand for money function, $M^d = kPy$[13], is unstable and, consequently, that contemporaneous money stock changes by themselves do not accurately predict short-run changes in aggregate money income or the price level. A comparison of the rate of change in the aggregate level of prices and excess changes in money stock (defined as changes in money stock less changes in output) confirms this. The GDPD has been used here since its coverage, as was noted earlier, is wider than either the CCPI or the WPI. Monetarists contend that money is a substitute for all assets. Therefore, the wider the coverage of the price index the better it will be as a reflector of demand pressures emanating from disequilibrium changes in individual portfolios.

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12 Narrow money supply, or M1, comprises currency plus demand deposits held by the public. Broad money supply, or M2, comprises M1 plus time and savings deposits held by the public.

13 Where M^d stands for the demand for money, P for the general price level, y for the level of real income, and k the share of money income kept in the form of money balances.

Figure III.1
Income Velocity of Money Circulation 1971-87

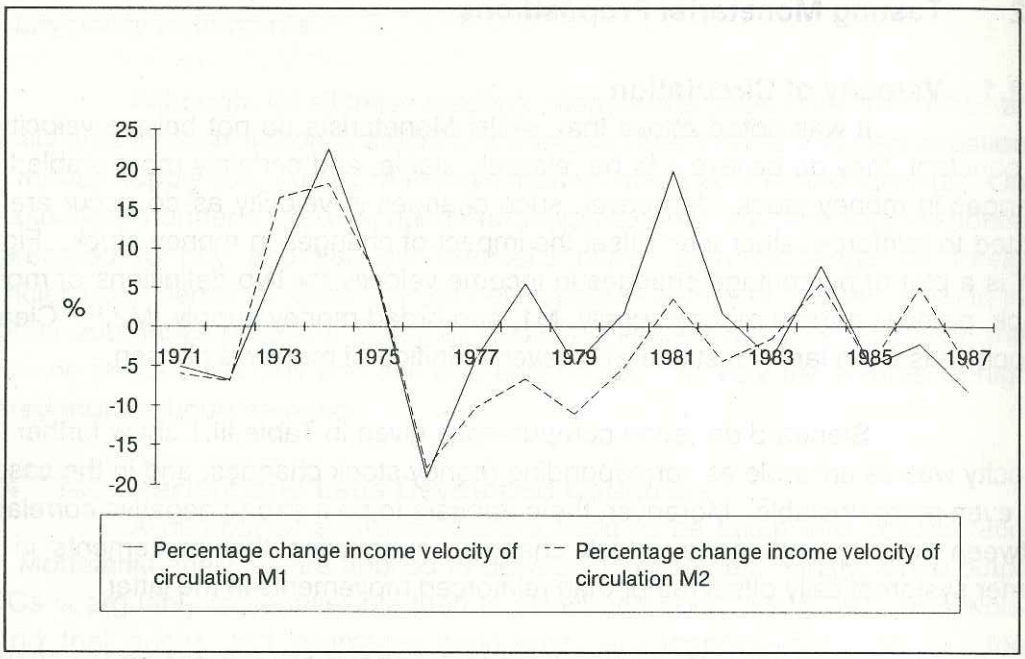


Table III.1
Variability of, and Simple Correlations Between, Changes in Money Stock and Velocity of Circulation (1971-87)

	SD	MAX	MIN	R^2
	1971-87			
M1	8.9	34.9	4.8	-0.69
Income velocity	10.3	22.6	-19.1	
M2	11.3	38.2	4.1	-0.70
Income velocity	9.5	18.2	-17.9	
	1971-77			
M1	11.6	34.9	4.8	-0.74
Income velocity	13.3	22.6	-19.1	
M2	13.6	37.9	4.1	-0.76
Income velocity	13.8	18.2	-17.9	
	1978-87			
M1	7.2	29.2	6.3	-0.61
Income velocity	8.3	19.9	-8.3	
M2	9.3	38.2	-5.1	-0.62
Income Velocity	5.5	5.5	-11.0	

Source: Central Bank

Table III.2 shows that excess money stock changes and, in particular, excess M1 changes, did a reasonable job of 'predicting' the average rates of inflation for the 1971-87 period and the 1971-77 and 1978-87 sub-periods.. The untoward growth of M2, incidentally, is possibly indicative of an increase in savings accompanying the process of growth and financial development. On an **annual basis**, however, the predictive performance of excess money stock changes is extremely poor. This is reflected in the very high *residual mean square percentage errors* for both excess M1 and M2 changes with respect to changes in the aggregate price level. Interestingly, large annual prediction errors are frequently associated with unusually large changes in the price level, as for example in 1973, 1974, 1979 and 1981.

Table III.2
Excess Changes in Money Stock and the Rate of Inflation in Sri Lanka 1971-87

Year	Inflation[a/]	Excess money stock (M1)[b/]	Excess money stock (M2)[b/]	Prediction error M1[c/]	Prediction error M2[c/]
1971	4.0	9.1	10.1	5.1	6.1
1972	3.9	12.2	12.5	8.4	8.7
1973	17.6	8.3	0.8	-9.3	-16.8
1974	26.0	2.9	6.8	-23.1	-19.2
1975	8.1	2.1	1.4	-6.1	-6.7
1976	5.8	32.0	29.9	26.2	24.1
1977	18.0	24.6	33.7	6.1	5.7
1978	7.9	2.4	16.7	-5.5	8.9
1979	15.5	22.9	31.9	7.4	16.5
1980	18.2	17.1	26.1	-1.1	7.9
1981	20.4	0.5	17.3	-19.9	-3.1
1982	13.6	12.3	19.7	-1.3	6.2
1983	14.7	20.4	17.1	5.7	2.4
1984	16.8	9.0	11.5	-7.9	-5.4
1985	0.9	6.5	6.5	5.7	5.6
1986	5.6	8.6	0.6	3.0	-4.8
1987	7.0	18.4	14.7	11.4	7.7
			Averages		
1971-87	12.0	12.3	15.2	0.3	3.2
1971-77	11.9	13.0	13.6	1.1	1.7
1978-87	12.1	11.8	16.2	-0.2	4.2
RMSE 1971-87				**213%**	**189%**

a/ Percentage change in the GDP deflator
b/ Percentage change in money supply minus percentage change in real income.
c/ Excess money supply minus the rate of inflation
RMSE = Residual Mean Square Error

Source: Central Bank

III.2.2 Contemporaneous and Lagged Money Stock Changes

Most studies of the impact of money stock changes on prices in developed countries find that lagged money stock changes are significantly different from zero, and that the full impact of monetary impulses on prices can take as long as two years to work themselves out. Since output in developing countries is less flexible and the financial sector generally less developed than in the advanced countries, the lag effect can be expected to be relatively shorter. Indeed, for those studies using annual data it would be reasonable to suppose that adjustment is instantaneous. However, a number of such studies have found the lag effect to be significant[14]. One explanation offered for these findings is that the substitution between money and physical assets, such as land, housing, cars, etc., is generally a longer process in developing countries than in developed countries because of relatively greater rigidities, imperfections and low levels of monetisation.

Allowing for the effect of both contemporaneous and lagged changes in money stock on the aggregate price level in the simple quantity theory framework, gives rise to the following stochastic form of the simple price equation:

$$P_t = a_0 + a_1 M^*_t + a_2 M^*_{t-1} + u_t \quad [15] \qquad [III.1]$$

$$a_1, a_2 > 0$$

where

P = inflation rate

M^* = percentage change in money stock minus the percentage change in real income

u = a stochastic error term

The results obtained from Ordinary Least Squares (OLS) estimation of [III.1] for the period 1971-87 and the sub-periods 1971-77 and 1978-87 are given in Table III.3 below. Multicollinearity between contemporaneous and lagged changes in the independent variable meant that one of the two variables had to be dropped in each estimate.[16] Generally the results are poor and indicative of errors in model specification. Only two parameter estimates are found to be significantly different

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14 Some of these studies have been looking at the demand for money.

15 The more usual form of this equation is

$P = a_0 + a_1 M + a_2 y + u$

where

y = the percentage change in real income.

Replacing the two regressors M and y with the composite regressor M^* to simplify matters (and overcome the problem of strong multicollinearity between money stock and real income changes over the 1978-87 sub-period) makes the implicit assumption that the elasticity of money demand with respect to real income changes is unity. Since Monetarists generally predict that the elasticity of money demand with respect to real income changes is unity this assumption is considered justified.

16 Results from use of estimation techniques such as ridge regression which take account of the influence of multicollinearity on parameter estimates have not been presented since they do little to enhance the Monertarist argument.

from zero at or below the 10% level, and most correlation coefficients (R2s) are below 0.10. One of the two significant parameter estimates is that of contemporaneous changes in M2* over the sub-period 1978-87. Although the R2 for this variable, at 0.41, is relatively higher than all the other R2s for the estimation of [III.1], it is still suggestive of model mis-specification. There is also more than a hint that some of the explained variation in the aggregate price level attributed to contemporaneous changes in M2* over this sub-period is due to the influence of lagged changes in M2*. This would strengthen, but by no means prove, the quantity theory argument. The other significant parameter estimate is that of lagged narrow money stock changes over the entire 1971-87 period. In this case the corresponding R2 is very low and application of the Chow test indicates parameter instability.

It is perhaps worth noting in passing that when the outlier year 1974 is excluded the parameter estimates of both lagged money stock variables become significant, at least for the 1971-87 period as a whole, and the overall fit of the estimating equations improves. The justification for this exclusion could be the severity of the external price shock. However, given that there are other years in which such shocks have been experienced, viz., 1978 and 1981, there must be serious doubts as to the legitimacy of this omission.[17]

III.2.3 Monetary Shocks

Precipitous changes in money stock in certain years could be interpreted as pointing to the need to look at the possible impact of monetary shocks on movements in the aggregate price level. Khan (1980), following Pastore (1975) and Carr and Darby (1978), suggests testing for the impact of monetary shocks by decomposing the growth of money stock into its expected or trend component (MT) and its **unexpected** or shock component (MS). The expected growth in money stock is seen as having an instantaneous and equiproportionate impact on inflation while unexpected changes act with some delay. "The delayed response of inflation to unexpected changes, or shocks in the rate of monetary growth, however, results from prices being 'sticky' in the short-run and thus not reacting immediately." (Khan, 1980:259). Accordingly, the simple quantity theory equation [III.1] can be modified as follows:

$$P_t = a_0 + a_1 MT^*_t + a_2 MS^*_{t-1} + u_t \qquad [III.2]$$

$$a_1, a_2 > 0$$

MT* = the expected growth of excess money supply
MS* = the unexpected growth of excess money supply

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17 The introduction of parametric and multiplicative dummies does not improve the overall fit of III.1. The results have therefore been omitted.

Table III.3

OLS estimation results for the impact of contemporaneous and lagged money stock changes on the aggregate price level

	I	II	III	IV	V[a/]	VI	VII[b/]	VIII	IX	X[a/]	XI[a/]	XII
Dependent Variable	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**	**GDPD**
Constant	12.37	9.5	13.85	12.30	9.86	4.81	8.44	8.57	7.71	9.86	9.75	6.35
	(3.98)	(3.08)	(2.47)	(2.27)	(0.15)	(1.38)	(3.23)	(3.00)	(1.83)	(1.95)	(2.36)	(1.68)
M1*t	-0.03		-0.15		0.15							
	(-0.14)		-(0.44)		(0.56)							
M1*t-1							0.32		0.44		0.17	
							(1.76)		(1.44)		(0.62)	
M2*t		0.17		-0.03		0.45						
		(0.98)		-(0.10)		(2.36)						
M2*t-1								0.24		0.21		
								(1.49)		(0.56)		
R2	0.00	0.06	0.04	0.00	0.13	0.41	0.17	0.07	0.29	0.06	0.00	0.27
D.W.	1.59	1.61	1.63	1.66	1.85	2.02	1.58	1.84	1.61	1.68	1.76	1.84
SER	7.40	7.18	9.43	9.59	6.72	5.16	6.74	6.91	8.08	9.31	6.68	5.73
Obs	7	17	7	7	10	10	17	17	7	7	10	10
Period	1971-87	1971-87	1971-77	1971-77	1978-87	1978-87	1971-87	1971-87	1971-77	1971-77	1978-87	1978-87

a/ Correcting for auto-correlation using Cochrane-Orcutt estimation techniques

b/ Chow test indicates the parameter estimates may be unstable

The results of OLS estimation of [III.2] are presented in Table III.4. They are again generally poor. In the only instance when the parameter estimate of the shock variable is significantly different from zero, the estimate is of the wrong sign (see equation IV).

Table III.4
OLS Results for the Estimation of the Impact of Monetary Shocks

Equation Dependent variable	I GDPD	II GDPD	III GDPD	IV[a/] GDPD	V GDPD	VI GDPD
Constant	7.59	6.35	-3.48	-32.84	-20.09	-3.73
	(1.88)	(1.58)	(-0.32)	(-1.27)	(-0.56)	(-0.51)
M1T*	0.40		1.14		2.40	
	(1.10)		(1.34)		(0.90)	
M1S(t-1)*	0.23		0.08		-0.07	
	(1.36)		(0.84)		(-0.19)	
M2T*		0.33		3.67		0.67
		(1.61)		(3.07)		(2.36)
M2S(t-1)*		-0.04		-1.70		-0.30
		(-0.24)		-(2.51)		(-1.09)
R2	0.06	0.04	0.17	0.53	0.00	0.31
D.W.	1.58	1.86	1.67	1.72	1.41	2.01
SER	6.96	7.02	8.00	6.04	6.60	5.29
Obs	17	17	7	7	10	10
Period	1971-87	1971-87	1971-77	1971-77	1978-87	1978-87

a/ Correcting for auto-correlation using Cochrane-Orcutt estimation techniques

One reason for the exceedingly poor results obtained from the estimation of [III.2] could be the mis-specification of the shock variable. This is computed as the deviation of actual changes in excess money stock from trend, with the trend estimated by double exponential smoothing of actual changes. If one takes as a rough and ready measure of money shocks **a 10% change** in the rate of growth of excess money stock in either direction, it may be observed that the money shocks of 1976, 1979, 1981 and 1984 (for M1* alone) are followed a year later by corresponding changes in the rate of inflation (see Table III.2 above)[18]. There are perversities, however, as with the dramatic fall in the rate of growth of excess money stock in 1973 which was actually followed by a rise in the rate of inflation. Moreover, it cannot be concluded that the observed relation between money shocks and inflation unambiguously implies causality. It could be argued that in several of these instances there are other factors at work which influence both variables causing them to move in the sequence observed. For example, it could be argued that the inflation of 1981 as well as the money shock of the preceding year were, in the

18 Using the same yardstick it may be observed that the monetary shock of 1987 has been followed by a jump in the rate of inflation in 1988.

context of a flexible credit policy, both induced by world market developments, viz. the massive hike in oil prices in 1979/80. In a somewhat similar vein it could be plausibly argued that the observed inflation in 1977 had more to do with policies of price liberalisation and rupee depreciation in that year than the money shock of the preceding year. This point is further elaborated below.

III.2.4 The Standard Monetarist Model

The standard Monetarist model builds on the traditional quantity theory approach by taking into consideration **opportunity costs** and **permanent income**.

III.2.4.1 Opportunity Costs

In most Monetarist studies of the demand for money and inflationary processes in developed countries, the opportunity cost of holding money is represented by both the rate of interest on one or more financial assets and inflationary expectations - the implicit return on holding physical assets.[19] In studies of developing countries, however, the relevant opportunity cost variable is argued to be **the expected rate of inflation** alone. This is because developing countries are seen as having relatively small organised financial markets, few financial alternatives to holding money, and pursuing economic strategies involving the pegging of interest rates. Moreover, because of the paucity of financial assets the substitution between money and physical assets becomes qualitatively more important than between money and financial assets. Thus, the standard stochastic form of the Monetarist price equation as applied to developing economies is,

$$P_t = a_0 + a_1 M^*_t + a_2 M^*_{t-1} + a_3 P^e_t + u_t \qquad [III.3]$$

$$a_1, a_2, a_3 > 1$$

where

P^e = inflationary expectations $(P_{t-1}-P_{t-2})$[20]

The results obtained from the estimation of this equation are presented in Table III.5.

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19 Monetarists disagree amongst themselves as to which rate of interest is the most appropriate. According to Goodhart the basis for the disagreement revolves around the definition of money and the functions it is seen as performing. Thus, those Monetarists who see money as being held primarily for transactions purposes utilise short-term rates on treasury bills or commercial paper. Those who see money as a unique asset, which is one of a spectrum of assets in an individual's asset portfolio, argue that the rate of return on longer-term financial assets is equally valid as the representative of opportunity cost.

20 This approximation of inflationary expectations has been used in many Monetarist studies of inflationary phenomena following the work of Harberger (1963).

Table III.5
The Results from OLS Testing of the Standard Monetarist Model

Equation Dependent variable	I[a/] GDPD	II GDPD	III GDPD	IV GDPD
Constant	3.32	6.94	7.62	4.63
	(0.83)	(1.18)	(1.55)	(1.08)
$M1^*_t$	0.73			
	(2.23)			
$M1^*_{(t-1)}$			0.35	
			(1.37)	
$M2^*_t$		0.35		
		(0.99)		
$M2^*_{(t-1)}$				0.41
				(1.93)
PEXP	0.91	0.74	-0.31	-0.22
	(1.96)	(1.58)	(1.47)	(-0.88)
R2	0.56	0.08	0.00	0.16
D.W	1.90	1.93	1.77	1.71
SER	5.76	8.41	6.38	5.81
Obs.	6	7	10	10
Period	1972-77	1971-77	1978-87	1978-87

a/ Correcting for auto-correlation using Cochrane-Orcutt estimation techniques

The results indicate, in short, that making allowance for inflationary expectations adds nothing to the explanatory power of the basic quantity theory model. For both the M1* and M2* versions of [III.3], in the two sub-periods, the parameter estimate of the expectations variable is insignificant (see Appendix I).[21]

III.2.4.2 Permanent Income

A variation of the standard Monetarist model allows for the choice of **an appropriate scale variable**. Monetarists argue that an important explanation of the observed variability in income velocity of circulation and associated instability in the demand for money and price relationships is the use of current (real) income as the scale variable. Following Friedman, Monetarists argue that the demand for money, and therefore price, is empirically more closely related to expected or permanent income (or wealth) than current income. Use of current income as the scale variable will obviously tend to exaggerate the extent of the velocity of fluctuations since current income fluctuates by more than permanent income.[22] In

21 It warrants emphasising in this context, however, that the approximation of inflationary expectations used is fairly crude and that a reduced form approach using a Koyck lag to simulate adaptive expectation formation may provide a more significant result.

22 When current income is substituted by permanent income both the standard deviations and coefficients of variation of velocity changes fall, with the standard deviation falling by as much as 30%.

other words, a more satisfactory form of the standard Monetarist price relationship would be:

$$P_t = a_0 + a_1 M^e_t + a_2 M^e_{t-1} + a_3 P^e_t + u_t \qquad [III.4]$$

$$a_1, a_2, \text{ and } a_3 > 0$$

where

M^e = Percentage change in money stock minus percentage change in permanent or expected income

Those studies which have adopted structural estimation approaches have approximated permanent income with simple moving averages of the form $(y_{t-1} - y_{t-2})/2$ and/or $(y + y_{t-1} + y_{t-2})/3$. Some have even seen fit to simply use lagged current income (see Khan 1980). In the estimation of [III.4] it is the two period simple moving average proxy of permanent income which is used.

Table III.6
The Results from OLS Testing of the Standard Monetarist Model Allowing for Permanent Income

Equation Dependent variable	I[a/] GDPD	II GDPD	III GDPD	IV GDPD
Constant	4.37	5.59	7.95	8.20
	(1.90)	(1.59)	(3.24)	(3.03)
$M1^e(t-1)$	0.96		0.37	
	(3.36)		(2.16)	
$M2^e(t)$		0.41		
		(2.12)		
$M2^e(t-1)$				0.26
				(1.77)
PEXP	0.62			
	(3.53)			
R2	0.43	0.36	0.24	0.17
D.W	1.99	1.81	1.56	1.86
SER	6.57	5.38	6.47	6.74
Obs.	6	10	17	17
Period	1972-77	1978-87	1971-87	1971-87

a/ Correcting for auto-correlation using Cochrane-Orcutt estimation techniques

The results from OLS estimation of [III.4] are given in Table III.6. They indicate that changing the scale variable from current to permanent income does improve the general explanatory power of excess money stock changes, but that this improvement is fairly modest. The parameter estimates of lagged $M1^e$ and $M2^e$ are significantly different from zero at the 1% and 10% levels, respectively, but R2s for the two equations remain very low (see equation IV and V) and Chow tests indicate

parameter instability. More noteworthy is the fact that the parameter estimates of both lagged $M1^e$ and inflationary expectations become significantly different from zero and R2 rises appreciably (as compared with the current income version) when equation [III.4] is estimated using data from the 1971-77 sub-period (see equation III.1). Even in this case, however, the resulting low R2 together with the relatively high standard error for the regression are indicative of model specification error.[23]

III.2.5 Extensions of the Standard Monetarist Model to the Open Economy

III.2.5.1 The Law of One Price

It was noted in the theoretical introduction to this section that an important extension of the standard Monetarist model in the context of a small open economy is the law of one price. The essence of this law, it was also noted, is that the world market price level exerts a considerable influence on the domestic price level in an open economy context. This contention stems from the belief that the world economy can be assumed to function as if a single integrated market exists for all commodities and capital, such that relative price deviations are quickly eliminated. If there is no excess supply of real money balances, if all commodities are traded commodities, and if the exchange rate is at its purchasing power parity, the domestic rate of inflation is determined by the world rate. Differences between the short-run individual country rates of inflation and the world market rate will then be due to such factors as market imperfections and the existence of significant non-traded goods sectors. These notwithstanding, it can be shown that given an initial equilibrium situation, if the supply of real money balances increases and induces a corresponding rise in the domestic price level there will be both a downward pressure on the exchange rate as well as, in the interim, a downward pressure on the domestic price level (which is, in the first instance, on the traded goods component). The more the exchange rate adjusts to compensate for the rise in the domestic price level the less will be the downward pressure on the latter.

Assuming that Sri Lanka's equilibrium exchange rate is not changing secularly,[24] the influence of the law of one price on the domestic price level can be captured by the deviation of the domestic price level from its **equilibrium purchasing power parity**. This suggests the following variation of equation [III.4];

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23 It needs adding here that even if it could be argued that the estimation results obtained from the inclusion of a permanent income scale variable are unambiguously better, some caution needs to be exercised in the significance attached to these results. This is because the introduction of the permanent income variable is effectively a smoothing of the data.

24 The equilibrium real exchange rate is assumed to be determined by factors such as relative technologies, productivities, and tastes, all of which can be assumed to be constant in the long-run.

$$P_t = a_0 + a_1 M^*_t + a_2 M^*_{t-1} + a_3 P^e + a_4 P^* + u_t \qquad [III.5]$$

$$a_1, a_2, a_3 > 0 \text{ and } a_4 < 0$$

where

$P^* = P_{t-1} - e_{t-1}.P^f_{t-1}$

e = exchange rate

P^f = Foreign price level

Table III.7
OLS Estimation Results for the Impact of the World Market Price Level on Movements in Sri Lanka's Aggregate Price Level

Equation Dependent variable	I GDPD	II GDPD[a/]
Constant	7.97 (1.78)	-20.92 (-4.24)
$M1^*_{t-1}$	0.55 (1.52)	
$M2^*_t$		0.44 (7.17)
P*	0.21 (0.67)	2.16 (5.34)
R^2	0.05	0.79
D.W.	1.99	2.11
SER	8.56	3.03
Obs.	7	9
Period	1971-77	1979-87

The results from OLS estimation of III.5 for the sub-periods 1971-77 and 1978-87 taking changes in lagged M1* and contemporaneous changes in M2* as the relevant money stock variables, are presented in Table III.7. The parameter estimates for the relative world market price variable are of incorrect sign. The results are broadly similar if permanent instead of current income is used.

III.2.5.2 The Short-run Trade-off Between Inflation and Current Account Imbalances

It was also noted in the theoretical introduction that some Monetarists seek to explain the observed short-run discrepancy between changes in excess money stock and changes in the aggregate price level (and therefore, also the short-run variations in the income velocity of circulation) in terms of changes in expenditures on imports. Tables III.8 and III.9 provide us with some relevant data to assess the merits of this view in the Sri Lankan context.

Table III.8
Changes in Excess Money Supply, Inflation, and Import Expenditures 1971-87

Year	GDP deflator	Excess M1[a/]	Excess M2[a/]	Import expenditure	Import prices
1971	3.5	9.1	10.1	-4.3	6.3
1972	4.3	12.2	12.5	-2.5	5.9
1973	17.4	8.3	0.8	29.1	33.3
1974	26.0	2.9	6.8	71.3	75.0
1975	7.3	2.1	1.4	15.3	16.7
1976	6.0	31.9	29.9	2.0	-10.2
1977	18.8	24.6	33.7	15.8	22.7
1978	7.8	2.4	16.7	53.7	85.2
1979	15.7	22.9	31.9	42.1	52.0
1980	18.2	17.1	26.1	52.1	26.5
1981	20.5	0.5	17.3	8.5	16.3
1982	13.6	12.2	19.7	16.0	4.0
1983	14.6	20.4	17.2	9.8	4.8
1984	17.1	9.0	11.5	6.0	4.6
1985	0.9	6.6	6.5	15.4	7.9
1986	5.8	8.6	0.8	2.9	-7.3
1987	7.0	17.0	13.2	10.7	13.2
			Averages		
1971-87	12.3	12.3	15.2	20.2	21.0
1971-77	11.9	13.0	13.6	18.1	21.4
1978-87	12.7	11.8	16.2	21.7	20.7

a/ Percentage change in money supply minus percentage change in GDP

Source: Central Bank

It would appear that excessive increases in money stock have been accompanied by corresponding increases in import expenditures only over the sub-period 1978-87 and only for contemporaneous and lagged changes in excess broad money stock. In the earlier 1971-77 sub-period the relation between excess money stock and import expenditures is actually perverse, especially as far as contemporaneous changes are concerned. It could be argued that the differences between the two sub-periods are due to the greater controls and restrictions placed on imports in the earlier period and, therefore, that the data are consistent with, and supportive of, Monetarist type explanations of inflation and payments imbalances in an open economy context.

Further inspection of the data in Tables III.8 and III.9, however, is suggestive of an alternative, possibly more plausible, explanation. It is evident that most changes in import expenditures are attributable to changes in import prices both inclusive and exclusive of changes in the exchange rate. This would seem to imply that changes in money stock associated with changes in import expenditures are themselves induced by the latter. Import expenditures are in this sense the autonomous variable.

The fundamental difference between the two periods in this context is not so much the existence or non-existence of physical controls on imports as the availability or non-availability of reserves. In the pre-1977 sub-period foreign assistance, including balance of payments support, was limited and domestic credit under fairly tight control. This meant that increases in import prices translated directly into a run down of reserves and, therefore, in the absence of compensating increases in domestic credit, into a contraction of money stock. Reserves, and therefore money stock, only expanded in this period when the terms of trade improved significantly, as in 1976 and 1977. Moreover, in 1976 neither domestic inflation nor expenditure on imports increased correspondingly, and in 1977 the increases in these variables are attributable to other factors. In the ensuing 1978-87 period foreign assistance, including balance of payments support, was more readily available and, partly as a consequence of this, domestic credit more flexible. Accordingly, increases in import prices, while translating into expansions in import expenditures, did not diminish reserves sufficiently to curtail money supply expansion. Hence import expenditures came to move roughly in line with changes in money stock over this sub-period, without there being a causal relation between the two variables.

Table III.9
Simple Correlation Coefficients for the Relation Between Import Expenditures and Excess Money Supply

	1971-87	1971-77	1978-87
Import expenditures -vs-			
M1[a/]	-0.48	-0.85	0.03
M1t-1[a/]	0.00	-0.18	0.23
M2[a/]	-0.24	-0.75	0.66
M2t-1[a/]	0.08	-0.34	0.67
Import prices (Rs)[b/]	0.88	0.96	0.85
Import prices (SDR)[c/]	0.72	0.91	0.54
Money stock (M2) -vs-			
Import expenditure	0.18	-0.28	0.72
Import prices (Rs)[b/]	0.12	-0.37	0.60
Import prices (SDR)[c/]	0.11	-0.37	0.86

a/ Percentage change in money supply minus percentage change in GDP
b/ Percentage change import prices rupee value terms
c/ Percentage change in import prices minus percentage change in the Rupee/SDR exchange rate

Source: Central Bank

III.2.6 Money Supply Expansion in Sri Lanka

III.2.6.1 The Composition and Determinants of Money Stock Changes

Between 1971 and 1987 total credit expanded by Rs.80,405m, from around 29 per cent of GDP at current market prices in 1971 to a staggering 43 percent of GDP in 1987. The major component of this expansion was domestic credit. Between 1971 and 1987 domestic credit rose by Rs 71,390 or 89 per cent of the total increase in credit, while net foreign assets of the banking system rose by Rs 9,015m, or 11 per cent of the total increase. Most of the increase in domestic credit comprised **credit to the private sector**. Between 1971 and 1987 credit to the government, excluding government corporations, accounted for 34.3 per cent of the increase in domestic credit, while credit to the private sector accounted for a significantly greater 65.7 per cent. Even if credit to the government is taken to include credit to government corporations, the proportion of the increase in domestic credit accounted for by credit to government was, at 44.2 per cent, much less than the share of the private sector excluding government corporations (55.8 per cent).

Table III.10
The Sources of Changes in Money Stock 1971-87

	1971-87	1971-77	1978-87
Absolute increases			Rs m
Total credit	80,408	8,984	71,501
Domestic credit	71,390	4,599	66,791
Net foreign assets	9,015	4,305	4,710
Net credit to government (excl.)[a/]	24,489	430	24,049
Credit to private sector (incl.)[b/]	46,901	4,169	42,732
Net credit to government (incl.)[b/]	31,558	1,803	29,755
Credit to private sector (excl.)[a/]	39,832	2,796	37,036
As a percentage of increases in total credit			
Domestic credit	88.8	51.2	93.4
Net foreign assets	11.2	47.8	6.6
As a percentage of increases in domestic credit			
Net credit to government (excl.)[a/]	40.06	50.14	32.18
Credit to private sector (incl.)[b/]	59.94	49.86	67.82
Net credit to government (incl.)[b/]	52.84	63.08	45.41
Credit to private sector (excl.)[a/]	47.16	36.92	54.59

a/ Including public corporations
b/ Excluding public corporations

Source: Central Bank

A comparison of 1971-77 with 1978-87 is revealing. To begin with it would appear that changes in net foreign assets accounted for a relatively greater proportion of the increase in total credit in the former period, although the figure is

distorted by windfall export earnings in 1976 and 1977. Secondly, it appears that credit to the private sector represented a declining, although still greater, proportion of the increase in domestic credit in the latter period as compared with the former. Moreover, as a percentage of GDP, credit to the private sector (including and excluding government corporations) expanded, while credit to government (excluding and including government corporations) contracted.

III.2.6.2 The Money Multiplier

Monetarists would, however, contend that although the major component of money stock expansion was credit extended by the banking system to the private sector, this must have been facilitated, if not actively induced, by a corresponding expansion of **the reserve money base** as a result of (central) bank financing of budgetary deficits. However, for there to have been a causal relation between changes in the money base and the money stock it has to be shown that there is, in the first place, a stable and predictable relation between the reserve base and money supply, and secondly, that changes in the reserve money base were independent of changes in the demand for reserve money. Moreover, for this to have a policy significance it has to be shown further that the reserve base was or is potentially under the control of the authorities.

Using the conventional definition of reserve money, as currency held by the public plus cash reserves of the banking sector[25], there appears to be a fairly close long-run relation between changes in the reserve base and changes in money supply. The average rate of change in the reserve base for the 1971-87 period is 17.6 per cent while that of M1 and M2 is 16.5 per cent and 19.3 per cent, respectively. The picture over the short-run is, however, anything but stability in the money multiplier (see fig. III.2). In fact the coefficient of variation of the money multiplier (1.70) is greater than that of money supply (1.60). Moreover, it would appear that changes in reserve money, although somewhat reinforced by movements in the currency ratio, were systematically offset by those of the reserve ratio (see table III.11).

The crucial question for Monetarists then is whether the reserve ratio is, or can be, influenced by changes in policy variables under the control of the authorities, namely by changes in interest rates and reserve requirements.

25 Cash reserves of the banking sector comprise vault cash plus commercial bank deposits with the central bank.

Figure III.2
Money Multipliers 1971-87

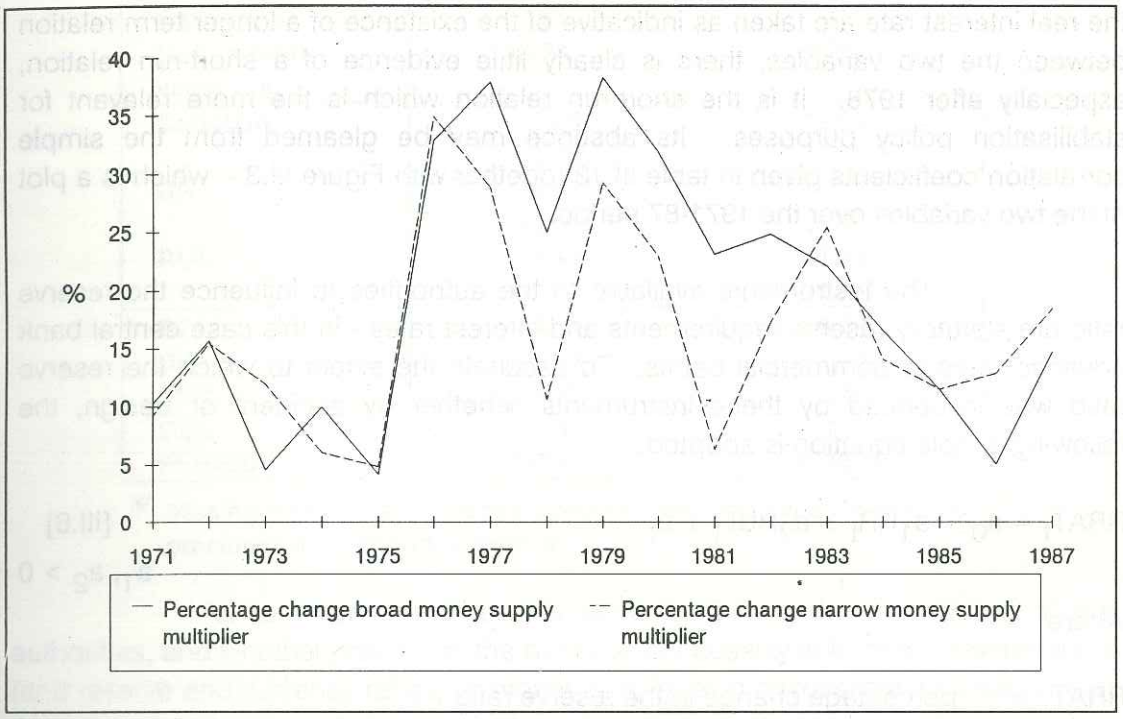


Table III.11
Simple Correlation Coefficients for the Relation Between the Reserve Money Base and the Deposit and Currency ratios

	1971-87	1978-87
	Correlation coefficients	
Reserve money -vs-		
Reserve ratio	0.67[a/]	0.71
Currency ratio	-0.11	-0.25

a/ The period of coverage is 1974-87 because a strike of bank employees in 1973 made data for that year unavailable

The major instrument which the authorities are able to use to effect changes in the currency ratio is interest rates. Sub-period averages for the currency ratio and the real rate of interest on commercial bank fixed deposits suggest that there could quite possibly be a long-run relation between the two variables. Thus, the relatively higher (lower) real rate of interest in the 1978-87 (1971-77) sub-period is associated with a lower (higher) currency ratio (see table III.12). There are, however, strong grounds for believing that this apparent (long-run) relation is a spurious one. To begin with there is a substantial body of evidence which suggests that the demand for currency, especially in developing countries like Sri Lanka, is fairly insensitive to changes in the (real) interest rates. Further, one could plausibly argue that the fall in the currency ratio between the two sub-periods was mostly due to the

greater availability of credit in the latter period, such that the demand for money was more as a means of payment and store of value (held in bank deposits) and less as a medium of circulation. Even if the sub-period averages for the currency ratio and the real interest rate are taken as indicative of the existence of a longer term relation between the two variables, there is clearly little evidence of a short-run relation, especially after 1978. It is the short-run relation which is the more relevant for stabilisation policy purposes. Its absence may be gleamed from the simple correlation coefficients given in table III.13 together with Figure III.3 - which is a plot of the two variables over the 1971-87 period.

The instruments available to the authorities to influence the reserve ratio are statutory reserve requirements and interest rates - in this case central bank advance rates to commercial banks. To ascertain the extent to which the reserve ratio was influenced by these instruments, whether by accident or design, the following simple equation is adopted,

$$RRAT_t = a_0 + a_1 RR_t + a_2 RUL_t + u_t \qquad [III.6]$$

$$a_1, a_2 > 0$$

where

RRAT = percentage change in the reserve ratio
RR = percentage change in required reserves
RUL = the opportunity cost of holding reserve assets, which is measured by the rate of interest on unsecured loans minus the central bank advance rate.

The results from OLS estimation of [III.6] are presented in table III.13. Parameter estimates are of the correct sign and significantly different from zero, and R2s are high. This suggests that the authorities could have effected changes in the reserve ratio if they so desired, although there were, and are, clearly limits to the ability and willingness of the authorities to effect changes in required reserves and differentials between unsecured loan and central bank advance rates.

Table III.13
Currency Ratio and Interest Rates: Averages and Correlation Coefficients

	1971-77	1978-87
	Averages	
Currency ratio (CR)	0.49	0.28
Real interest rate (r)[a/]	-5.11	4.33
	Correlation coefficients	
CR/r	-0.52	-0.05

a/ The real rate of interest here is taken to be the nominal rate given by commercial banks on fixed deposits of 12 months minus the rate of inflation

Table III.14
OLS Results from Estimation of the Determinants of Reserve Ratios

Equations Dependent variables	I[a/] RRAT	II RRAT
Constant	-12.26	-12.65
	-(3.68)	-(2.97)
RR	0.65	0.71
	(8.01)	(5.75)
RUL	-1.45	-1.45
	(-2.22)	(-1.98)
R2	0.84	0.78
DW	2.04	1.99
SER	8.15	8.40
OBS	13	10
PERIOD	1975-87	1978-87

a/ Missing data for 1973 due to a strike by bank employees in that year precludes a full period estimation

As to whether the reserve base itself is under the control of the authorities, and whether, therefore, the direction of causality is from the reserve base (and reserve and currency ratios) to money supply, also necessitate a closer look at the sources and nature of changes in the reserve base.

III.2.6.3 The Nature and Sources of Expansion in the Reserve Money Base

Table III.15 provides data on the proximate sources of reserve base expansion. These data show that net credit to government is responsible for most of the expansion in reserve money over the 1971-87 period as a whole, although the contributions of net foreign assets and credit refinancing are also fairly substantial. The extent to which the authorities were able, if they so desired, to control the reserve base depended crucially on the extent to which they were able to either directly control or compensate for (in the sense of sterilising) changes in these three components. One of the biggest problems facing the authorities in this latter respect has been the absence of a market in government treasury bills and securities.

There was no systematic attempt by the authorities in either the 1971-77 or the 1978-87 sub-periods to control credit through control of the reserve base. In the 1971-77 sub-period there was some attempt at controlling credit but it was through direct controls on lending to the private sector by commercial banks and limits on bank financing of the budget deficit. In spite of the attempted financial restraint on the part of the authorities, the 1971-77 sub-period can be characterised as one in which commercial banks held a comfortable excess of reserves (see Table III.16). Leaving aside the absence of recourse to open market operations on the part of the authorities, it is a moot question whether, and to what extent, the authorities were able to control net credit to government and credit refinancing during this period. It could be argued that, given the inelasticity of both revenue and non-bank

sources of deficit financing, the authorities had little choice but to borrow from the banking system in order to maintain real capital and welfare expenditure levels in the face of unanticipated increases in costs.

Table III.15
The Sources of Reserve Money Expansion

	As a percentage of the change in reserve money		
	1971-87	1971-77	1978-87
Central Bank			
Net foreign assets	40.4	129.5	25.8
Net domestic assets	59.5	-29.8	74.2
Net credit to government	125.3	31.8	140.7
Net other assets	-84.6	-90.8	-83.6
Gross credit to commercial banks	18.8	29.2	17.1

NDA = Net domestic assets of the central bank
NFA = Net foreign assets of the central bank
NCG = Net credit to government by the central bank
GCP = Gross credit to commercial banks
NOA = Net other assets

Source: Central Bank

Table III.16
Credit Refinancing and Excess Reserve Holdings of Commercial Banks

	1971-87	1971-77	1978-87
As a % of deposit liabilities			
Credit refinancing	9.5	23.6	8.2
Excess reserves	0.3	0.6	0.3

Source: Central Bank

For much of the 1978-87 sub-period credit policy was more relaxed, because of the greater availability of external resource flows, and credit control more indirect, being effected through changes in reserve requirements and the cost of funds. The extent to which the authorities were able to control the reserve base during this sub-period was possibly even more limited than in the earlier 1971-77 sub-period. To begin with, although the authorities had a greater access to foreign funds to meet expanded deficit financing requirements, the pressure on bank sources was not correspondingly diminished. A sizeable proportion of foreign funding during the 1978-87 sub-period was project specific, requiring for its utilisation counterpart (rupee) funding. Further, although a market in treasury bills was begun in 1980, it was not until 1987 that a significant volume of treasury bills was actually taken up by the commercial banks. Finally, and possibly most important of all, has

been the establishment of so-called Foreign Currency Banking Units (FCBUs) by, amongst others, the commercial banks themselves. Since these FCBUs were from their inception exempt from reserve requirements, they quickly proved to be sources of unlimited reserves for the commercial banks. Banks could now reduce their holdings of excess reserves to a bare minimum by depositing unutilised funds with the FCBUs with the knowledge that they could draw on these when needed. It is perhaps this more than any other development which accounts for the very much lower ratio of excess reserves to deposit liabilities held by the commercial banks during this period (see Table III.16).

The preceding then, at the very least, throws into question the extent to which the reserve base has been, and is, under the control of the authorities, and, relatedly, the extent to which the long-run relation between the reserve base and the money supply is that postulated by Monetarists. Indeed, the causal relation between the reserve base and money supply appears to be actually the reverse of that postulated by Monetarists; the reserve base being independent of the control of the authorities and largely, but not entirely, demand determined.

III.3 Summary of Findings

The principal findings of this section are as follows. Firstly, taking at face value the published data, the latter does not appear to provide much support for the existence of a behavioural relation between money stock changes and the aggregate price level in the Sri Lankan economy over the period 1971-87 as a whole or either of the sub-periods 1971-77 and 1978-87, even if allowance is made for the mitigating influences of a number of factors including external deficits. Moreover, even if it could be argued that the data is suggestive of the existence of a relation between the two variables over the 1978-87 sub-period, the implication this has for support of the causality argument is at least partly nullified by the contemporaneous nature of the relation. That is to say, this evidence could equally well be enlisted in support of a reverse causality argument, from prices to money stock changes. Secondly, the data appears to contradict the view that the major component of money stock expansion has been credit to the public sector. Or to put it another way, the Sri Lankan experience does not appear to lend support to the view that inflationary pressures are systematically brought about by excessive public sector borrowing. Thirdly, there is reason to doubt the existence of a relation between the reserve base and the money stock, as well as the extent of control the authorities were able, even if they so desired, to exert over the reserve base, particularly in the post 1978 period when the financial system was more liberalised.

It needs stressing, however, that these conclusions should not be construed as denying the importance of demand-pull factors per se. Rather, what they would seem to suggest is that there is reason to doubt the validity of an explanation of inflation, and policy conclusions derived therefrom, which places stress on autonomous changes in the liabilities side of the financial system.

IV THE STRUCTURAL DETERMINANTS OF INFLATION

IV.1 The Structuralist/Post-Keynesian Theoretical Framework

Structuralist/Post-Keynesians (SPKs) contend that changes in the aggregate price level emanate from **autonomous or structurally induced** changes in costs of production and relative prices[26], and structurally induced changes in the level of aggregate demand. These changes in the aggregate price level are **propagated** by distributional conflicts and a passive monetary policy.

IV.1.1 Sources of Inflation

Most SPK analyses have tended to cite two sources of inflation as being particularly important in the case of developing economies, namely, changes in the **prices of internationally traded commodities**, especially imported items, and changes in the **prices of basic necessities**, especially basic food items.

Changes in the prices of imported commodities may be either *autonomous* or *structural* in nature. They are autonomous if they arise from changes in the foreign currency value of imported goods. They are structural if they arise from either a depreciation of the currency or an increase in the prices of import-competing goods, both of which are the direct consequences of a foreign exchange bottleneck stemming from a number of trade and production constraints. Specifically, most developing economies are characterised as having poor resource bases, rigid production structures, and/or low levels of technology. This means that the elasticity of developing countries' demand for imports to feed their development processes is relatively low, as is the elasticity of their supply of (primary) exports. Given further that world demand for exports of developing countries is argued to be also relatively inelastic, the net result is that attempts at development continuously flounder on the rocks of foreign exchange shortages. It is in response to these problems that developing countries resort to either currency depreciation or the imposition of tariffs and various quantitative restrictions on imports - or, more usually, some combination of these. As a result, the prices of imports, import-competing commodities and, eventually, all commodities, rise.

A related source of inflationary pressure in developing countries is arguably an increase in the value of exports, whether as a result of price or volume changes. An increase in the value of exports will expand exporter incomes which will have a series of multiplier effects on the economy and raise the demand for labour

26 There is an important distinction to be made between cost-push and relative price changes. Cost-push factors refer to changes in underlying costs of production and typically affect most commodity prices. Changes in relative prices refer to changes in the final selling price of certain commodities in relation to other commodities. The impact of changes in relative prices on the aggregate price level will depend on the importance of the goods concerned and their relative substitutability. Of course, changes in costs of production can be induced by prior changes in relative prices, where these prices have a direct bearing on the costs, eg, food prices and labour.

and other non-traded factor inputs, thereby putting pressure on the domestic price level. If the increase in export incomes is due mainly to an increase in export prices there may also be strong substitution effects which draw factors of production to the export sector and induce corresponding increases in the prices of non-traded goods.

Changes in the prices of foodstuffs have in the past been seen by SPK theorists as brought about by increases in demand, stemming from either a rising urban population and/or rising money incomes in the context of a poor domestic agriculture supply response. These **supply rigidities** in the agriculture sector are attributed to certain structural constraints within the sector. In the Latin American context, where this source of inflation is considered to be so important, the structural constraint inhibiting an expansion of food production is argued to be the non-profit maximising tendencies of latifundia and small peasant farmers.

Apart from these major sources of inflation, the SPK approach admits to a number of other factors which may at different times influence the aggregate price level. These include changes in administered or controlled prices, changes in sales taxes and subsidies, changes in the costs of finance, and supply rigidities in a number of key sectors such as power, road and rail transport, telecommunications and construction.

IV.1.2 Propagating Factors

The propagating factors are basically **distributional conflicts** between classes and groups over income shares and between the government and the private sector over productive resources. These conflicts are manifested in rising money wages and budget deficits, and an accommodating monetary/credit policy. Wages rise in response to increases in the cost of living as workers attempt to protect real living standards.[27] The budget deficit grows as the government attempts to maintain real expenditure levels in the face of relatively inelastic revenue. A large part of government revenue in developing countries is derived from (primary) exports for which, it is argued, world demand tends to be relatively income inelastic. Given the limited size of developing country capital markets and the paucity of alternative financial instruments, these growing deficits in turn mean increasing bank borrowing - inflationary financing. The problem of growing deficits and bank borrowing to finance these deficits has been compounded in recent times by pressures on developing countries to lower, if not eliminate, international trade based taxes, especially import taxes. Finally, and relatedly, it is argued that loose credit policies adopted by many developing country governments to appease certain domestic business and financial interests in the face of rising costs also propagate inflationary tendencies arising from one or another of the above sources.

SPK adherents accept that at times these propagating factors themselves constitute structurally induced and autonomous sources of inflation.

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[27] They may also rise in response to increases in incomes of workers in other sectors.

Thus, wages could increase without any significant increase in the cost of living, say, because of increasing trade union militancy or a particular political conjuncture. The increase in wages could then trigger an inflationary wage-price spiral propagated by a passive monetary policy. Alternatively, there may be severe pressures on government to satisfy social needs (including wage demands by public sector employees) and to undertake large-scale development programmes. In the face of inelastic revenues this invariably results in a rapid growth in the size of fiscal deficits and bank financing of these deficits.[28]

IV.1.3 The Role of Monetary Factors

From the preceding it should already be apparent that the SPK approach sees monetary factors as fundamentally propagating. For SPKs, money supply in a capitalist or semi-capitalist economy, which uses as its medium of exchange and means of payment credit money, is of necessity largely endogenous. Even if money supply could be defined unambigously, and most SPKs argue that it cannot, its direct control is difficult. This is because banks are rarely constrained in their lending practices by the shortage of reserves, especially in developing countries where there are a number of ways in which reserves can be augmented without recourse to the Central Bank. In any case, ultimately, if more liquidity is required by the financial system, this has to be made available by the Central Bank.[29] Accordingly, SPKs would expect to see changes in money stock responding to changes in costs, especially where there are no external resource constraints forcing the authorities to impose direct credit rationing, and changes in the reserve base responding to changes in the money stock.

For SPKs money is in fact in the nature of a by-product. It is a by-product of debt creation or credit expansion. Hence it is credit creation, the assets side of the banking system, that SPKs focus their attention on. It is, if anything, the volume of credit and not the volume of money supply that determines the level of activity in an economy. However, for SPKs there is no mechanical link between credit creation and the aggregate level of prices. Much depends on the structure and flexibility of production and the use to which credit is put. Generally, credit expansion is likely to have a greater impact in developing economies, because of capacity constraints and rigid production structures, than in developed market economies. Further, consumption-oriented credit will tend to be more inflationary than production-oriented credit, although much will depend on the nature of the latter. Credit expansion to finance investments with a long gestation period will be more inflationary than those used to finance investments with a short gestation period. Also, the inflationary consequences may be greater if the credit is used to finance speculative stock-building and/or increases in operating costs.

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28 It is at this point that SPK theory meets Monetarism.

29 Failure to do so by the central bank could result in widespread financial disruption.

IV.2 Exploring Structuralist/Post-Keynesian Propositions

The following empirical exploration of the SPK approach is necessarily selective. Not all the elements referred to above will be analysed, and some will receive more attention than others. In the analysis of the underlying causes of inflation particular attention will be devoted to assessing the impact of world market prices, while in the propagation of inflation the focus will be on the budget deficit and credit to the private sector. These choices and emphases are partly governed by a priori considerations regarding the nature of the Sri Lankan economy and partly by the availability and reliability of data. Data problems, for example, preclude anything sensible being said about the role played by wages.

IV.2.1 Causal Factors

IV.2.1.1 Internationally Traded Commodity Prices

One of the outstanding structural characteristics of the Sri Lankan economy is that it is heavily dependent on trade, more so than most other developing countries. At Independence the value of external trade was 55 per cent of GDP. Exports and imports amounted to 28 per cent and 27 per cent of GDP, respectively. This level of dependence was greatly reduced in the ensuing period up to 1977 as a direct consequence of successive government attempts at import substitution and export diversification. By 1977 the value of external trade was down to 37 per cent of GDP, exports contracting relatively more than imports. Thereafter, with the move towards liberalisation of the economy and its external sector, trade dependence once again increased. By 1987, at 57 per cent of GDP, the level of trade dependence was back to its early 1950s' levels. The significant difference between the early 1950s and 1987 is that by 1987 imports had come to outweigh exports. In 1987 imports were 37 per cent of the value of GDP while exports were a relatively meagre 23 per cent (see Table IV.1).

With these changes in trade dependency have come a change in composition. For most of the post- independence period export earnings were heavily dependent on the export of a relatively small number of agricultural products, viz., tea, rubber and coconut products. From the early 1970s onwards there has been a marked change in this pattern. The process of export diversification, begun in the early 1970s and much accelerated after 1977, considerably expanded the proportion of industrial products in total exports. In 1977 the share of industrial products in the total was 14 per cent, whereas by 1987 the figure had risen to 49 per cent. Table IV.1 also indicates, however, that much of the increase is attributable to the increase in production for exports of one commodity, garments. The problem is that garments are subject to a weak global demand and heavily dependent for their production on imported intermediate goods.

The post-Independence strategies of export diversification and import substitution also engendered a shift towards intermediate and investment imports. This trend continued and even accelerated as a result of the relative liberalisation of the economy after 1977. Consumer goods imports, from comprising 50 per cent of

total imports in 1950, fell to 40 per cent by 1977, and then to 23 per cent in 1987, with the fall in rice and flour imports being particularly marked. Correspondingly, intermediate and investment goods imports, as a percentage of total imports, rose from 47 per cent and 12 per cent, respectively, in 1977 to 57 per cent and 19 per cent, respectively, in 1987.

Table IV.1
Commodity Trade and External Payments

	1949	1977	1987
	As a percentage of GDP		
External trade			
Exports	27.7	18.9	23.1
Imports	26.8	17.3	33.9
	As a percentage of total exports		
Traditional Exports	88.4	75.0	38.2
Tea	61.1	53.3	25.9
Industrial	a/	14.0	48.6
Garments	a/	2.2	31.4
	As a percentage of total imports		
Consumer Exports	50.4	39.7	22.9
Rice	a/	15.3	1.1
Flour	a/	15.4	0.2
Intermediate	a/	46.6	57.0
Textl.& cloth	a/	2.5	13.4
Investment	a/	12.4	18.8
Unclassified	a/	1.3	1.3
	1949	1977	1987
External Payments			
Current account balance	0.0	-2.7	-13.1
Exchange rate (RS/US$)	4.8	15.5[b/]	30.8
Debt service ratio [c/]	a/	16.0	27.5
Gross external reserves[d/]	11.6	10.6	3.7

a/ Not available
b/ November figure
c/ Debt service/Exports of goods and services
d/ Gross external reserves in months of merchandise exports

Sources:
Central Bank
Snodgrass 1966

Input/output data given in Table IV.2 provide more detail on the extent of Sri Lanka's import dependence in production. It indicates that most sectors of the economy depend both directly and indirectly on imported inputs. The level of dependence appears to be generally highest in industrial activities, particularly when taken in its broadest sense as inclusive of electricity, construction activities, etc. In fact, import usage coefficients for some manufacturing activities are over 0.5.

Table IV.2
Import Content of Input Usage in Different Sectors of the Economy, 1981

Sector	Direct	Indirect	Total
	Percentages		
Tea	9.58	8.23	17.81
Rubber	5.84	2.69	8.53
Coconut	3.80	3.06	6.86
Paddy	7.58	8.02	15.60
Other Agriculture	3.05	3.39	6.44
Mining and Quarrying	3.38	0.74	4.12
Electricity	3.73	27.17	30.90
Rice Milling	0.11	15.13	15.24
Flour Milling	83.38	2.22	85.60
Textiles	27.49	9.00	36.49
Garments	48.77	6.78	55.55
Transport Equipment	32.29	5.53	37.82
Electrical Equipment	36.48	6.85	43.33
Other Machinery	11.94	20.92	32.86
Light Engineering Products	29.47	12.62	42.09
Food Processing	11.26	14.64	25.90
Chemical Products & Fertilizers	1.95	99.26	101.21
Petroleum Products	93.73	0.67	94.40
Structural Clay Products	3.00	21.54	24.54
Basic Metal Products	51.79	5.48	57.27
Other Manufacturing	25.93	12.69	38.62
Construction	12.52	10.70	23.22
Trade and Transport	4.70	7.50	12.20
Other Services	6.38	4.83	11.21

Source: Ministry of Planning, 'Input Output Table for 1981', Unpublished

Traded Commodity Prices and the Cost of Living

The influence of movements in the external components of the CCPI on the aggregate index is striking (see Tables IV.3, IV.4, and IV.5, and Figure IV.1). From Table IV.3 it may be seen that the average contributions of the external components of the CCPI comfortably exceed their weights in the overall index, while that of the domestic component is well below its index weight. Looking at overall trends reinforces the point. Table IV.4 indicates that movements in the aggregate CCPI index are most closely correlated with those of its import component. In certain years the contribution of the export component to the overall index is particularly marked, viz, 1973, 1974, 1975, 1983, 1984, 1985 and 1987. The import and export components taken together appear to explain most of the variation in the overall index. The coefficients of variation for the two external components are far in excess of that of the domestic component (see Table IV.5).

Table IV.3
Contributions of Components of the CCPI to Overall Changes 1971-87

		1971-87	1971-77	1978-87
	Weight	Contribution to actual change		
Domestic	60.0	54.3	50.5	55.4
Import	35.0	38.6	38.6	38.6
Export	5.0	7.1	10.9	6.0

Source: Central Bank and Census and Statistics

Table IV.4
Correlations Between the Overall CCPI and its Components 1971-87

	1971-87	1971-77	1978-87
	Correlation coefficients		
Domestic	0.79	0.36	0.80
Import	0.86	0.97	0.82
Export	0.35	0.25	0.43

Table IV.5
Coefficients of Variation for Components of CCPI a/

	1971-87	1971-77	1978-87
	Coefficients of variation		
Domestic	53.0	45.2	31.6
Import	110.3	159.6	90.1
Export	189.0	196.9	191.3

a/ Coefficient of Variation = (standard dev./mean)*100

Traded Commodity Prices and Costs of Production

The WPI appears to be even more sensitive to fluctuations in traded commodity prices than the CCPI. In fact the simple correlation coefficient for the degree of association between movements in the WPI and its external components is remarkably high at 0.77 (see Table IV.5). In part this is because the internationally traded goods component has a greater weight in the WPI than it does in the CCPI. However, for the most part it is because the contributions of the external components to movements in the WPI exceed their combined weight in the index by considerably more than in the case of the CCPI. By contrast with the CCPI, the greatest relative contribution to changes in the WPI comes from its export component (see Table IV.6). Interestingly, however, it is the import component which is most highly correlated with the domestic component of the WPI - as in the case of the CCPI.

The importance of external elements on the WPI can also be seen by looking at years when changes in the WPI were particularly pronounced. In 1980

the WPI rose steeply because of the rise in import prices, particularly those of intermediate goods, following the second hike in world oil prices. The index again rose steeply in 1983 because of the hike in petroleum re-export prices. It fell sharply in 1985 because of the fall in agricultural export prices, most notably tea prices. Finally, it again rose quite steeply in 1987 because of the increase in prices of traditional exports such as tea, rubber and coconut products.

Table IV.6
Contribution of Components of the WPI to Overall Change in the Index (1978-87)

	Weight	Actual Contrib.
Domestic	50.31	41.01
Import	27.17	28.06
Export	22.52	30.93

Source: Central Bank

Table IV.7
Correlations Between the WPI and its Components (1976-87)

	1976-87	1978-87
	Correlation coefficient	
Domestic	0.46	0.42
Import	0.53	0.46
Export	0.85	0.85

Table IV.8
Coefficients of Variation for Components of the WPI

	1976-87	1978-87
	Coefficient of variation	
Domestic	65.5	56.2
Import	138.7	117.4
Export	185.4	214.5

Traded Commodity Prices and the Aggregate Price Level

Figure IV.1 and row one of Table IV.9 suggest that there has been a general tendency for the Sri Lankan GDPD to move in line with the composite implicit GDPD for industrialised countries. This is only to be expected since trade accounts for a high proportion of GDP in Sri Lanka, and much of it is with the industrialised countries. Figure IV.1 also indicates that there have been exceptional years, such as 1977, 1981, and 1985, when the paths of the two deflators deviated markedly. The excessive increase in the Sri Lankan deflator during 1977 was due to a combination

of factors; demand pressures arising from the pre-election spending spree by the out-going United Front Government adding to the demand pressures generated by bumper tea revenues, and the cost push effects of the upheavals following the assumption of power by the new government. The excessive rise in the Sri Lankan deflator in 1981 was primarily the result of a massive expansion of foreign funded government expenditure coupled with a major liberalisation of many controlled prices and a significant hike in nominal wage levels. The relative fall in the GDPD in 1985 had much to do with the collapse of traditional export prices in that year.

Figure IV.1
Percentage Changes in Implicit Price Deflators for Sri Lanka and Industrialised Countries 1971-87

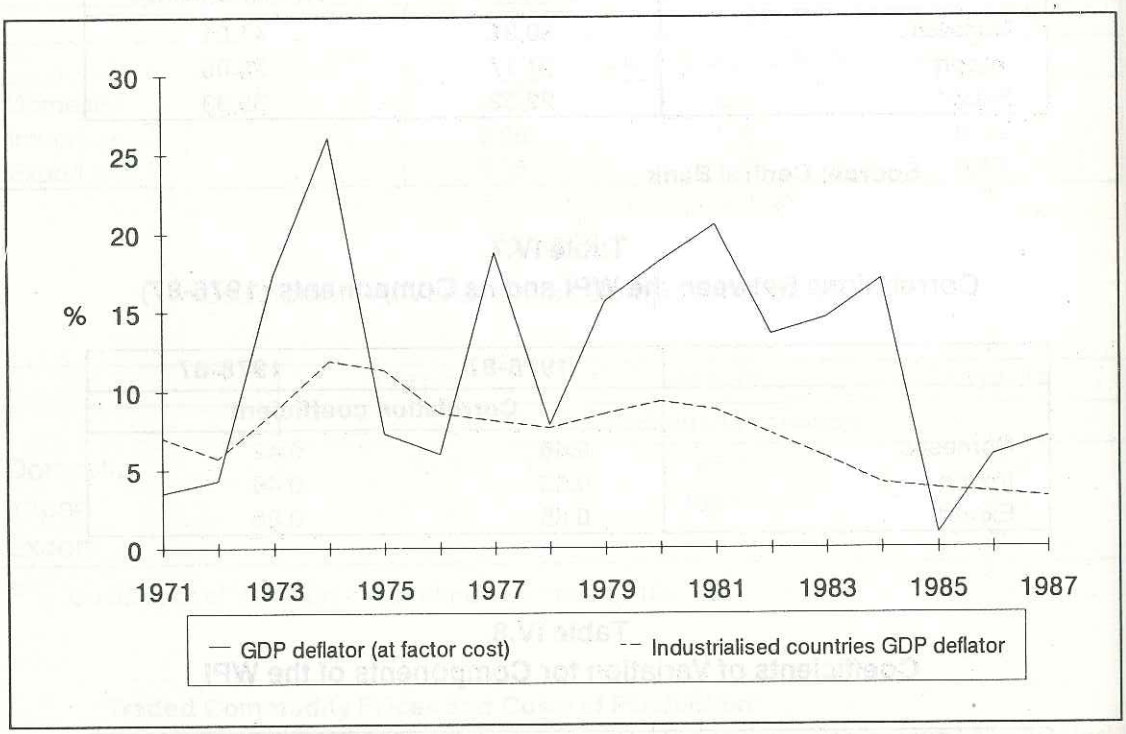
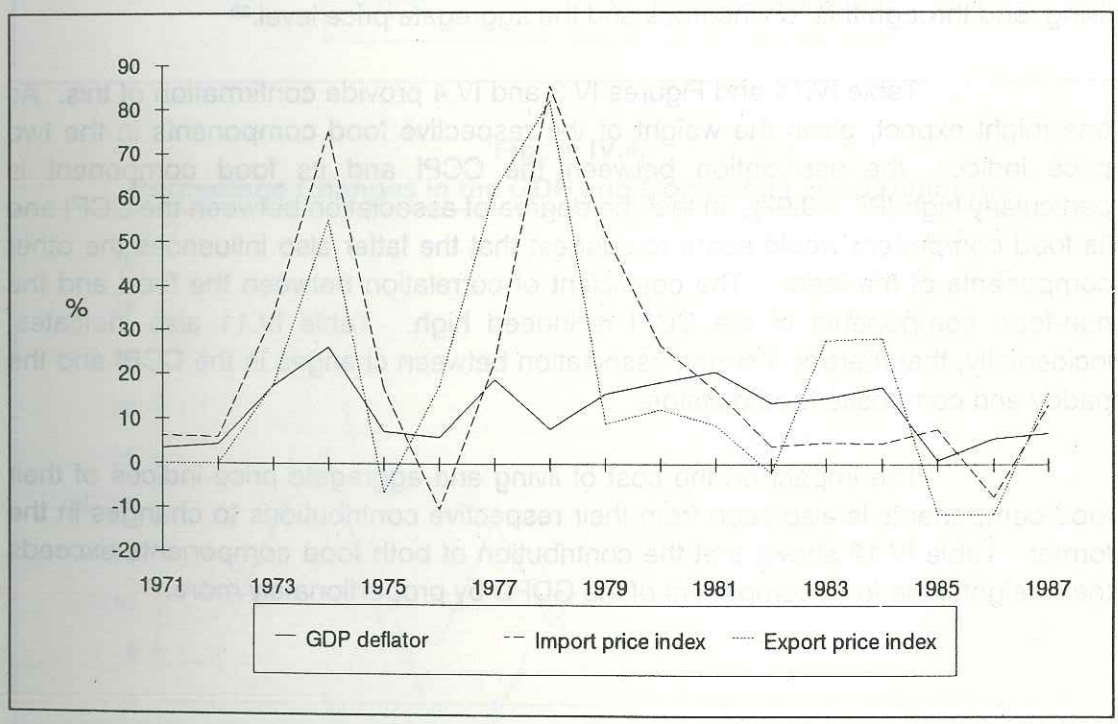


Figure IV.2 and the remainder of Table IV.9 provide further detail on the nature of the impact of world market prices on the GDPD. It would appear that import prices had a strong contemporaneous impact on the GDPD over the 1971-77 sub-period but, if anything, only a weak lagged impact in the ensuing 1978-87 sub-period. Interestingly, however, it would seem that over this latter sub-period contemporaneous and lagged changes in import prices were highly correlated with broad money stock and domestic credit expansion, and unlagged changes in import prices with import expenditures. In other words, it would seem that credit acted as a propagator and, together with current account imbalances, simultaneously, as a dissipator of external inflationary impulses during the 1978-87 sub-period - a point which will be elaborated upon later.

Table IV.9
Correlations Between the Implicit GDP Deflator for Sri Lanka and Other Price Indices

	1971-87	1971-77	1978-87
	Correlation coefficients		
Implicit GDP deflator-vs			
Industrialised countries deflator	0.53	0.53	0.67
Import price index (Rs)	0.43	0.89	0.03
Import price index (SDR)	0.67	0.83	0.50
Lagged import price index (Rs)	0.17	0.00	0.47
Lagged import price index (SDR)	0.01	-0.30	0.44

Figure IV.2
Aggregate Price Level Indices 1971-87



The major contributor to the overall variation in the import price index during the entire 1971-87 period is the category of intermediate goods (see Table IV.10). In large part this can be attributed to the massive hikes in oil prices; first in 1973/74 and then in 1979/80. In fact, the contribution of intermediate goods to changes in the overall index exceeds its weight by some ten percentage points. The

contributions of the consumer and investment goods components are, by contrast, each some five percentage points down on their respective weights.

Table IV.10
Contribution of Components of the Import Price Index to its Change

		1971-87	1971-77	1978-87
	Weight	Percentage contribution		
Consumer	39.2	34.0	41.5	30.0
Intermediate	37.1	47.5	48.5	46.8
Investment	23.7	18.2	11.0	23.2

IV.2.1.2 Food Prices

Recent survey data (e.g., the 1985/86 Labour Force and Socio-Economic Survey) show that expenditure on food and drink accounts for over 50 per cent of the average household budget in Sri Lanka, with rice accounting for over 25 per cent of this expenditure on food and drink. This implies that changes in the prices of basic foodstuffs, especially rice, have a significant impact on the cost of living, and through this, on incomes and the aggregate price level.[30]

Table IV.11 and Figures IV.3 and IV.4 provide confirmation of this. As one might expect, given the weight of the respective food components in the two price indices, the association between the CCPI and its food component is particularly high ($R^2 = 0.97$). In fact the degree of association between the CCPI and its food component would seem to suggest that the latter also influences the other components of the index. The coefficient of correlation between the food and the non-food components of the CCPI is indeed high. Table IV.11 also indicates, incidentally, that there is a strong association between changes in the CCPI and the paddy and composite food deflators.

The impact on the cost of living and aggregate price indices of their food components is also seen from their respective contributions to changes in the former. Table IV.12 shows that the contribution of both food components exceeds their weights; the food component of the GDPD by proportionately more.[31]

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30 This would be true even if a more realistic index than the CCPI were used to measure the cost of living.

31 Interestingly, the correlation between the cost of living index and its food component (as well as the food components of the GDPD) is higher for the 1971-77 period than the ensuing 1978-87 period, while the contribution of the food component to the change in the cost of living index is greater for the latter period than the former. One reason for the higher correlation between the cost of living index and its food component in the pre-1978 period could be that the food component had a greater impact on the non-food components of the cost of living index because of the relatively closed nature of the economy in the earlier period. The greater contribution of the food component to the overall change in the cost of living index in the later period has possibly much to do with the relative liberalisation of many of the prices of items comprising the food component in this period.

Figure IV.3
Percentage Changes in the Colombo Consumers' Price Index and its Food Component 1971-87

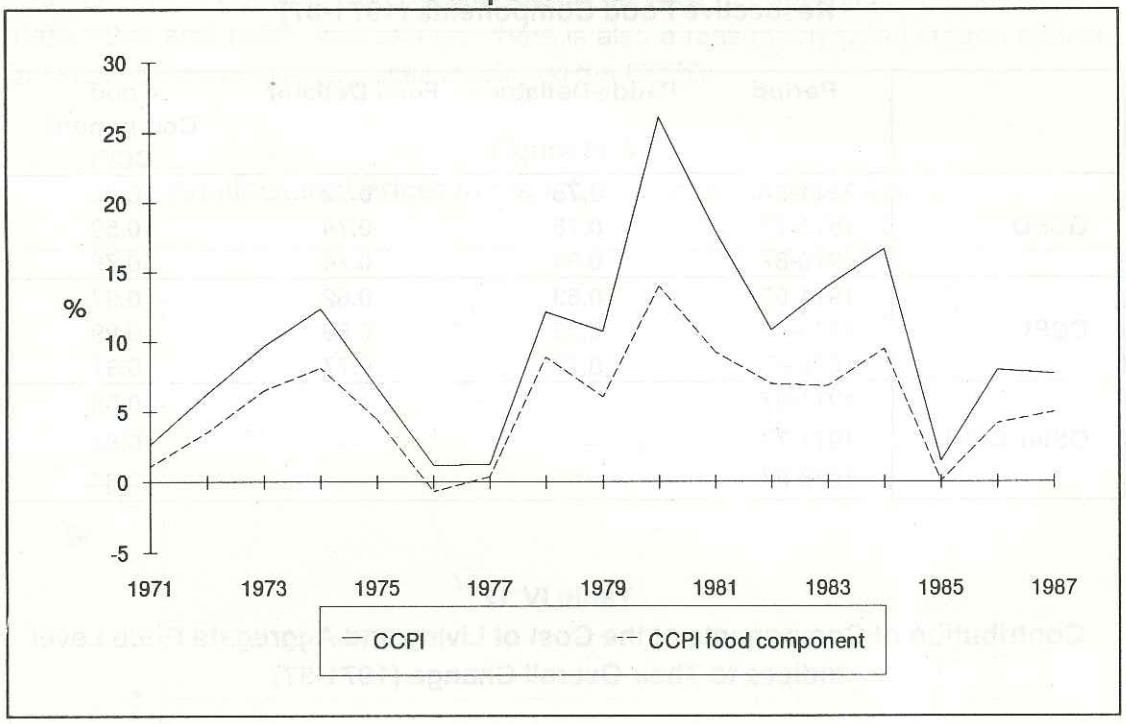


Figure IV.4
Percentage Changes in the GDP and Composite Food Deflators

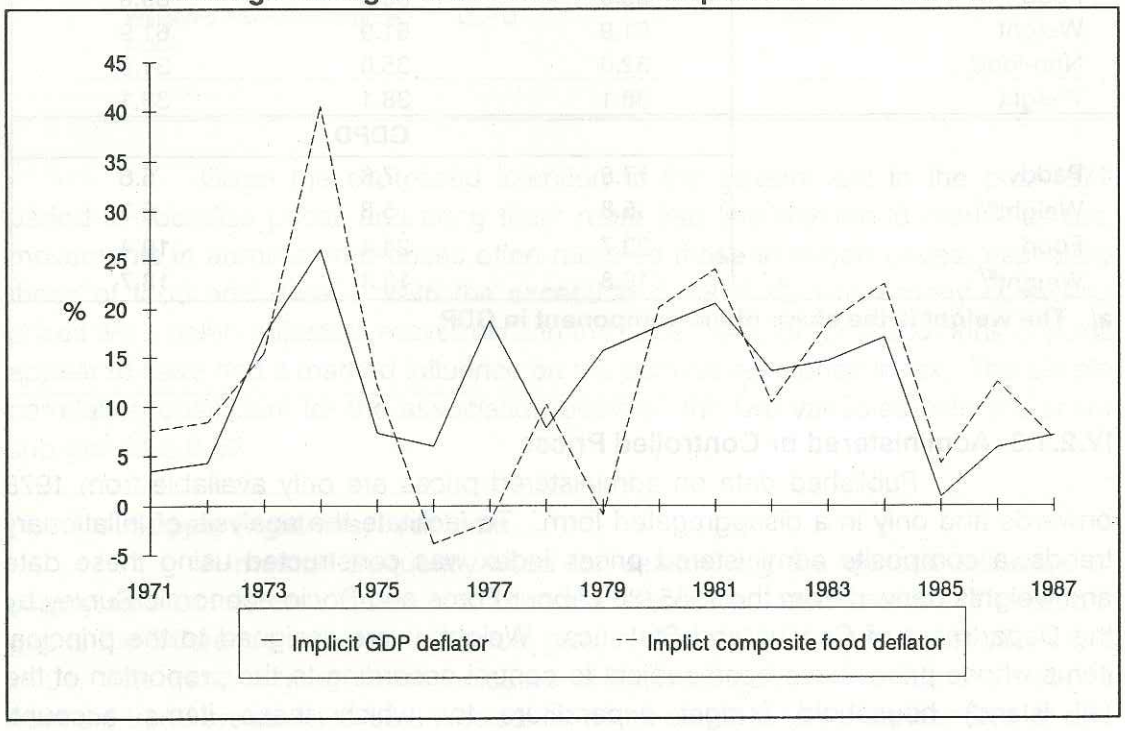


Table IV.11
The Correlation Between the Cost of Living and General Price Indices and Their Respective Food Components (1971-87)

	Period	Paddy Deflator	Food Deflator	Food Component CCPI
GDPD	1971-87	0.78	0.72	0.60
	1971-77	0.78	0.74	0.59
	1978-87	0.84	0.74	0.79
CCPI	1971-87	0.63	0.62	0.97
	1971-77	0.93	0.89	0.99
	1978-87	0.77	0.77	0.97
Other CCPI	1971-87	----	----	0.85
	1971-77	----	----	0.90
	1978-87	----	----	0.84

Table IV.12
Contribution of Components of the Cost of Living and Aggregate Price Level Indices to Their Overall Change (1971-87)

	1971-87	1971-77	1978-87
	CCPI		
Food	68.0	65.0	69.0
Weight	61.9	61.9	61.9
Non-food	32.0	35.0	31.0
Weight	38.1	38.1	38.1
	GDPD		
Paddy	7.6	7.6	5.6
Weight[a/]	5.8	5.8	5.7
Food	23.7	24.4	19.4
Weight[a/]	18.8	19.3	18.7

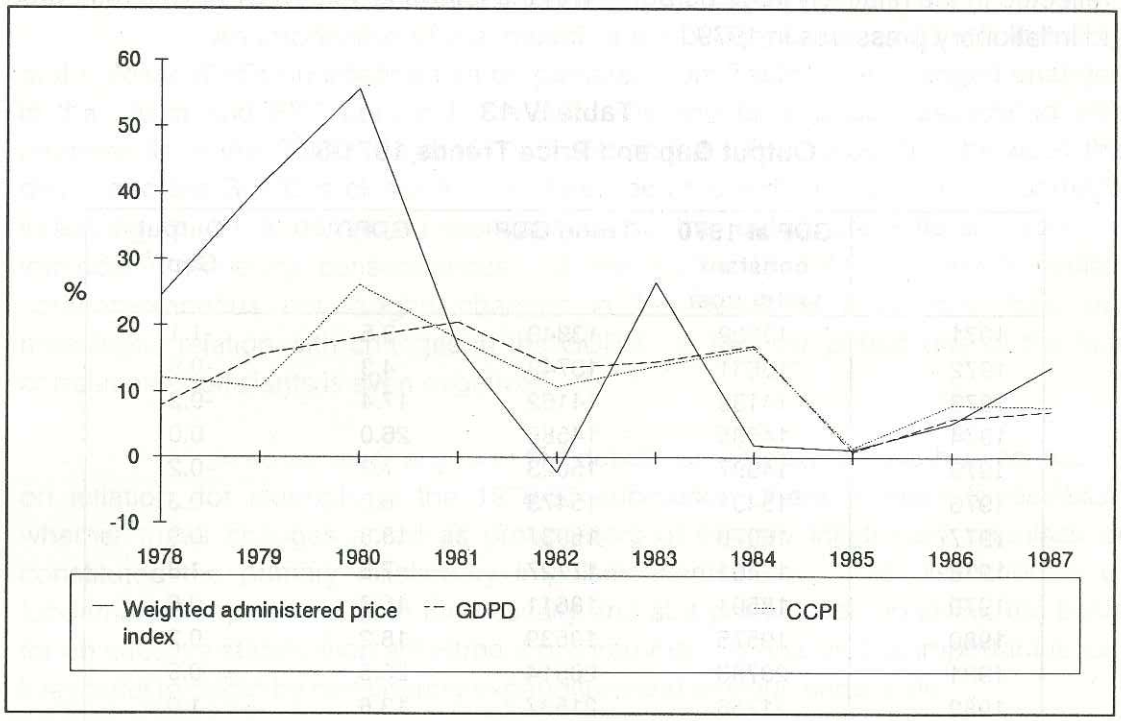
a/ The weight is the share of the component in GDP

IV.2.1.3 Administered or Controlled Prices

Published data on administered prices are only available from 1978 onwards and only in a disaggregated form. To facilitate the analysis of inflationary trends, a composite administered prices index was constructed using these data and weights derived from the 1985/86 Labour Force and Socio-economic Survey by the Department of Census and Statistics. Weights were assigned to the principal items whose prices have been subject to control according to the proportion of the (all island) household budget expenditure for which these items account. Percentage changes in the resulting composite index of administered prices over the period 1978-87 are shown in Figure IV.5, along with those of the CCPI and GDPD. The closest contemporaneous relationship is between the administered price index

and the CCPI. This is as one might expect since a relatively high proportion of the goods, subject to some price control, is represented in the CCPI. The impact of changes in the administered price index on the CCPI is particularly pronounced in 1980, 1983 and 1987. Interestingly, there is also a reasonably good lagged relation between the administered prices index and the GDPD.

Figure IV.5
Administered Prices Index, CCPI, and the GDPD, 1978-87



Given the expressed intention of the government in the post-1977 period to liberalise prices and bring them more into line with world market prices, movements in administered prices often mirrored those in import prices, especially those of food and drink. With the exception of 1978-79, when many controlled prices were being adjusted, movements in the price index for food and drink imports appear to have had a marked influence on the administered price index. The simple correlation coefficient for the association between the two variables over the entire sub-period is 0.62.

IV.2.1.4 Supply Rigidities/Problems

A method frequently used for determining the general influence of supply side factors on inflation is to compute a so-called "output gap". The output gap is the difference between the actual growth of real GDP and its computed trend value. The trend is taken to be indicative of potential output. Therefore deviations from the trend are taken to be an indication of the extent to which bottlenecks of one kind or another hamper normal production and contribute to inflationary pressures.

Computing the trend real growth rate for each sub-period using exponential smoothing techniques, it would appear from Table IV.13 that supply problems have not been an important factor in generating inflationary pressures for the period as a whole, although they may have had a (lagged) impact in certain years. Thus, the supply problems resulting from civil disturbances and drought in 1971/72 and 1987 may have contributed to inflationary pressures in 1973 and 1987/88,[32] respectively. Similarly, the dislocation and general upheaval emanating from the change in regime and the accompanying policy framework in 1977, reflected in the relatively large output gap in the following year, may have contributed to inflationary pressures in 1979.

Table IV.13
Output Gap and Price Trends 1971-87

	GDP at 1970 constant factor cost	Trend GDP	GDPD	Output Gap[a/]
1971	13209	13349	3.5	-1.1
1972	13631	13749	4.3	-0.9
1973	14138	14162	17.4	-0.2
1974	14585	14586	26.0	0.0
1975	14987	15023	7.3	-0.2
1976	15431	15473	6.0	-0.3
1977	16078	15937	18.8	0.9
1978	17401	17727	7.8	-1.8
1979	18501	18611	15.7	-0.6
1980	19575	19539	18.2	0.2
1981	20706	20514	20.5	0.9
1982	21756	21537	13.6	1.0
1983	22835	22611	14.6	1.0
1984	23989	23739	17.1	1.1
1985	25178	24923	0.9	1.0
1986	26256	26166	5.8	0.3
1987	26637	27471	7.0	-3.0

a/ Output gap = Real GDP minus trend GDP as a percentage of trend GDP.

Source: Central Bank

It warrants adding here that some qualification is called for with respect to the above data and their interpretation. To begin with, there are some question marks over the reliability of national accounts data. Secondly, there appears to be no objective basis for deciding between alternative methods for computing GDP trend. Some researchers prefer to use average growth rates for a given period during which the structure of the economy is argued to be static. The problem is that the results obtained vary quite considerably with the computational method used. Lastly, the output gap approach implicitly assumes that those factors

32 The rate of inflation for 1988 is 11.5%.

affecting real output are of domestic and not external origin[33], and that these factors are independent of demand conditions and monetary factors. This contradicts on both counts the very essence of the modern Post-Keynesian version of structuralism being tested here.

IV.2.2 Propagating Factors

IV.2.2.1 Budget Deficit and Bank Financing of the Deficit

An impression of the impact of the budget deficit and bank financing of the deficit (BFD) on inflation can be gathered from Table IV.14. Lagged changes in the deficit and BFD appear to be positively and fairly closely associated with movements in the GDPD in the 1978-87 sub-period. The association between the deficit and the GDPD is closer than that between the BFD and the GDPD, perhaps indicating that the demand consequences of the deficit are different from its immediate monetary consequences. In the earlier 1971-77 sub-period, neither contemporaneous nor lagged changes in the deficit or BFD have had any meaningful relation with changes in the GDPD. In this sub-period one of the four correlation coefficients is even negative.

In so far as changes in the deficit can be said to have had an impact on inflation, for example in the 1978-87 sub-period, there is need to establish whether these changes acted as propagators of primary inflationary impulses or constituted the primary inflationary impulses themselves. This distinction is of fundamental importance both theoretically and at a policy level - in laying the basis for an effective stabilisation adjustment programme. To resolve this important issue, it is useful to begin by considering expenditure and revenue separately.

Table IV.14
Correlation Coefficients for the Association Between Inflation and Contemporaneous and Lagged Changes in the Budget Deficit and Bank Financing of the Deficit

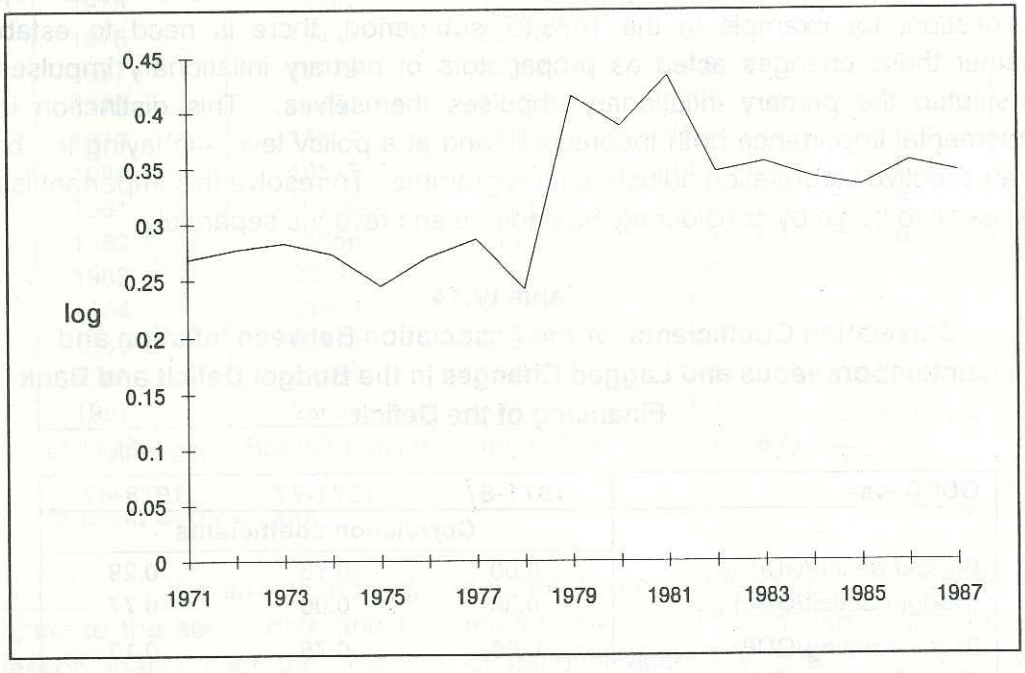
GDPD -vs-	1971-87	1971-77	1978-87
	Correlation coefficients		
Budget deficit/GDP	0.00	-0.78	0.29
(Budget deficit/GDP) $_{t-1}$	0.36	0.00	0.77
Bank financing/GDP	0.00	-0.76	0.19
(Bank financing/GDP) $_{t-1}$	0.29	-0.19	0.52

33 One way of allowing for at least the direct impact of external factors is to work with the concept of Real National Disposable Income as opposed to GDP.

IV.2.2.2 Government Expenditure

During each of the 1971-77 and 1978-87 sub-periods, the incumbent regime appears to have attempted to at least maintain real rexpenditure levels (see Figure IV.6). In the post-1978 period, largely because of the availability of considerably higher levels of foreign funding, expenditure levels were both higher and biased towards import intensive capital expenditures. One important consequence of this has been that government expenditure has moved fairly closely with changes in import prices, especially in the latter sub-period. Between 1971 and 1977 this relation appears to have been somewhat looser and lagged. The reasons for the differences between the two periods are not hard to discern. In the earlier 1971-77 sub-period, government expenditure was more circumscribed by its revenue base than in the later period. In the later period, not only was there considerably more foreign funding, but the authorities have also been far more willing and, as a result of external support, able to resort to bank financing.[34] Increased foreign funding of the deficit has, incidentally, also made it more resistant to shocks resulting from rising import prices.

Figure IV.6
Government Expenditure as a Proportion of GDP 1971-87



Relating the capital component of government expenditure to intermediate and investment import prices, provides both a confirmation and an elaboration of the above point (see Table IV.16).

Table IV.15
Government Expenditure

	1971-87	1971-77	1978-87
	As a % of GDP		
Current expenditure	32.6	26.8	36.6
Capital expenditure	1.2	20.3	21.8
Total expenditure	11.3	6.5	14.7
	As a % of total government expenditure		
Current expenditure	66.2	75.7	59.6
Capital expenditure	33.8	24.3	40.4

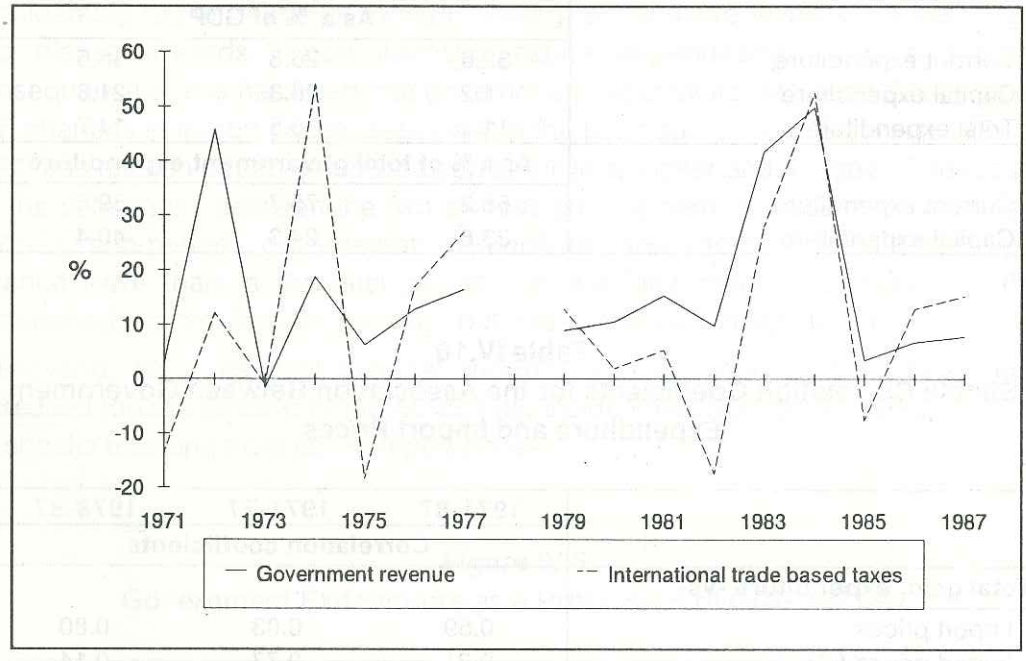
Table IV.16
Simple Correlation Coefficients for the Association Between Government Expenditure and Import Prices

	1971-87	1971-77	1978-87
	Correlation coefficients		
Total govt. expenditure -vs-			
Import prices	0.59	0.03	0.80
Import prices (-1)	0.21	0.77	0.14
Capital expenditure - vs -			
Inv & int. import prices	0.34	-0.39	0.80
Inv & int. import prices (-1)	0.44	0.80	0.27

IV.2.2.3 Government Revenue

Although government revenue from taxes on international trade has been falling dramatically since independence, it remained sizeable between 1971 and 1987, averaging around 30 per cent of total tax revenue. In fact international trade based tax revenue as a proportion of total tax revenue even increased between the sub-periods 1971-77 and 1978-87. This increase came from both export and import tax receipts, although the latter rose by proportionately more (particularly after 1985). Of importance to note in the context of the line of argument being developed here is the influential role of export based taxes on revenue, especially in the post 1978 sub-period (see Figure IV.7).

Figure IV.7
Percentage Change in Total Government Expenditure and Government Revenue Derived from International Trade 1971-87



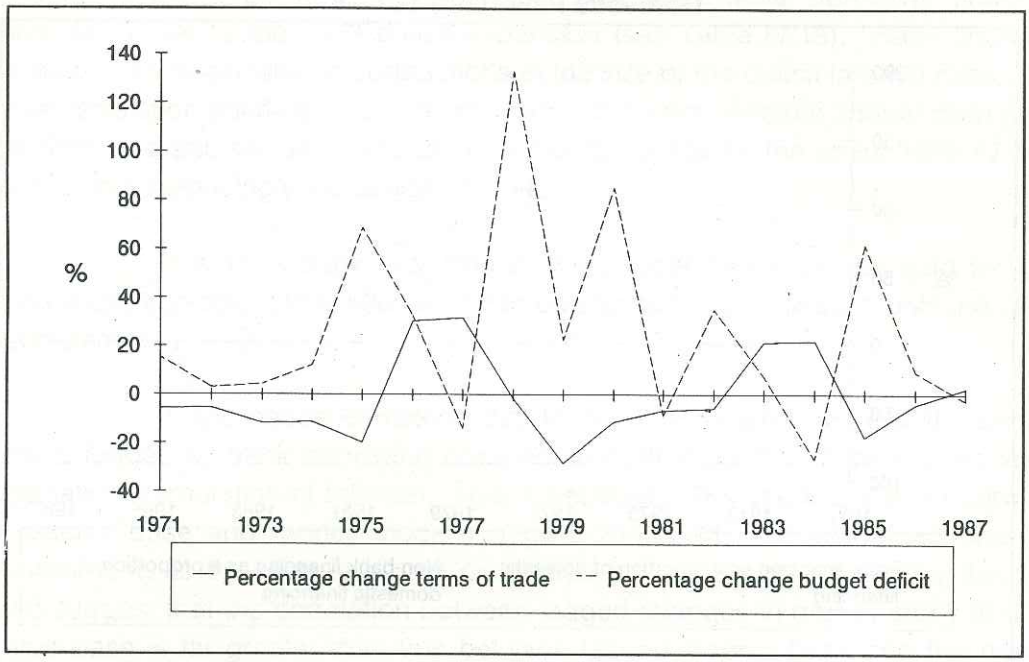
IV.2.2.4 The Overall Deficit

The preceding expenditure and revenue considerations suggest that **the budget deficit is strongly influenced by the terms of trade**. Table IV.17 and Figure IV.8 provide support for the existence of such a relation. As expected the pre-1978 relation appears to be a lagged one and the post-1978 relation a contemporaneous one. Curiously, the latter relation appears to be significantly weaker than the former. The explanation seems to lie in the distorting impact of the massive once-and-for-all increase in capital expenditure by the government between 1978 and 1980. If these years are excluded there is a marked increase in the coefficient of correlation.

Table IV.17
Coefficient of Correlation Between Budget Deficit and the Terms of Trade

	1971-87	1971-77	1978-87	1980-87
Budget deficit -vs-				
Terms of trade	-0.37	-0.35	-0.4	-0.75
Terms of trade (t-1)		-0.62		

Figure IV.8
Budget Deficit and the Terms of Trade 1971-87



Bringing the various strands of the argument together it would appear that the budget deficit acted as an absorber of inflationary impulses (particularly relating to capital expenditure) during the 1971-77 sub-period, a propagator of inflationary impulses from 1980-87, and a primary source of inflationary impulses between 1978 and 1980.

IV.2.2.5 Bank Financing of the Deficit: the Monetary Propagation of Inflationary Impulses

Although bank financing accounts for considerably less of budget financing than non-bank financing, it tends to be more responsive than non-bank financing to changes in the deficit, particularly in the 1978-87 sub-period. In the earlier 1971-77 sub-period it is non-bank borrowing which appears to be the more responsive, at least as far as the two major increases in the budget deficit (1973 and 1975) are concerned (see Figure IV.9). Bank financing actually fell during the deficit expansion of 1973, and rose only very slightly during the deficit expansion of 1975. Bank financing did, however, contribute relatively more than non-bank financing to the continuing large deficit in 1976, falling precipitously in the following year along with the deficit. It is actually the extent of this accompanying fall in bank financing of the deficit in 1973 which largely explains why the correlation coefficient for the association between bank financing and the deficit is so much higher than that between the deficit and non-bank financing for the 1971-77 sub-period.

Figure IV.9
Bank and Non-bank Financing of the Budget Deficit as a Proportion of Total Domestic Financing 1971-87

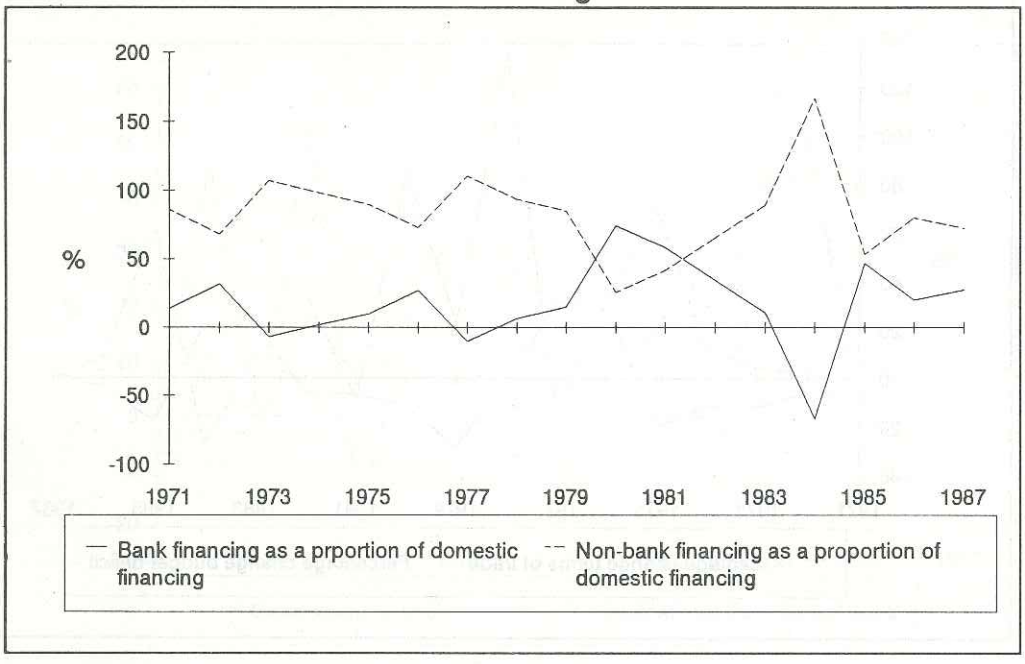


Table IV.18
Absolute Changes in the Budget Deficit and its Financing from Domestic Sources (1971-87)

Rs Million

Year	Deficit[a/]	Bank	Non-Bank
1971	180.8	-234.7	239.3
1972	38.7	199.3	-29.9
1973	72.2	-382.0	326.0
1974	-32.0	79.9	-118.7
1975	948.1	146.1	552.6
1976	915.4	460.0	216.7
1977	-636.5	-805.9	309.0
1978	3930.8	360.8	506.0
1979	896.8	504.6	1425.2
1980	6254.1	6446.9	-1417.5
1981	-1510.7	-3210.1	294.2
1982	4570.0	88.9	4827.0
1983	1417.9	-2802.0	2539.5
1984	-5564.3	-3847.6	-3556.9
1985	9801.0	10095.0	1931.0
1986	1949.6	-5152.0	657.8
1987	-1653.7	1006.6	-468.2

a/ Budget deficit net of foreign grants

Source: Central Bank

During the 1978-87 sub-period bank financing was more responsive to changes in the deficit. Bank financing contributed relatively more than non-bank financing to the 1980 and 1985 deficit expansions, while non-bank financing contributed more to the 1983 deficit expansion (see Table IV.18). Bank financing was also more responsive to contractions in the size of the deficit in each case. The simple correlation coefficient for the association between absolute annual changes in bank financing and annual changes in the budget deficit for the entire 1978-87 sub-period is, not surprisingly, quite high at 0.84.

In sum, if bank financing of the budget deficit can be said to have played a role in propagating inflation, it can be said to have done so in only the 1978-87 sub-period.

It also needs remarking that for SPKs the mere fact that the budget deficit is funded by bank borrowing does not in itself imply that there is a monetary propagation/stimulation of inflation. This is because SPKs see the relation between the reserve base and money stock changes, particularly in a liberalised financial enviorenment, as the reverse of that postulated by Monetarists. Certainly the data would suggest that the correlation between lagged changes in money stock and the reserve base is far greater than that between lagged reserve base and the money stock.

IV.2.2.6 Credit to the Private Sector

Figures IV.11 and IV.12 and Table IV.19 provide an indication of the extent to which the other major component of domestic credit expansion, gross credit to the private sector, influenced movements in the aggregate price level. It would appear that changes in gross credit to the private sector had a contemporaneous impact on the price level during the 1971-77 period and a lagged impact during the 1978-87 sub-period. However, the former relation appears to be somewhat spurious upon further investigation. The correlation coefficient for the sub-period is considerably distorted by the large joint variation in the two variables between 1973 and 1975. In fact, if the high correlation coefficient tells us anything meaningful about the sub-period, it is that credit to the private sector (unlike credit to the public sector) was somewhat accommodating, in spite of the panoply of direct credit controls. The lagged relation between credit and the GDPD over the 1978-87 sub-period is perhaps, at least in part, to be explained by the greater availability of credit during this period. With an increased supply of credit, businesses were better able to temporarily absorb increases in costs.

Figure IV.11
Gross Credit to the Private Sector (Including Public Corporations) and Inflation 1971-87

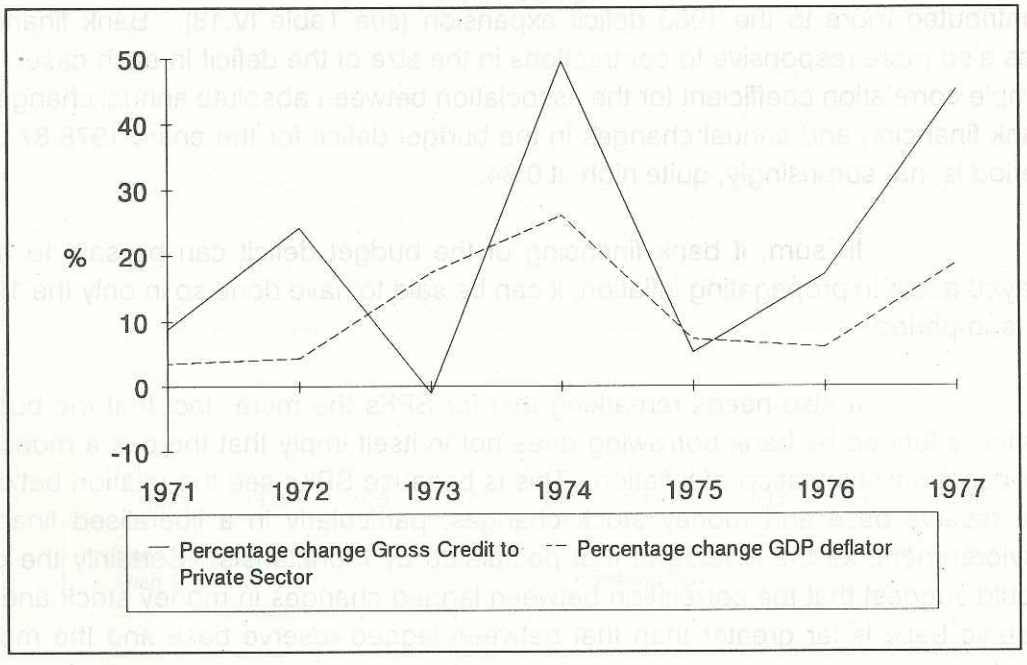


Figure IV.12
Lagged Changes in Gross Credit to the Private Sector (Including Public Corporations) and Inflation 1978-87

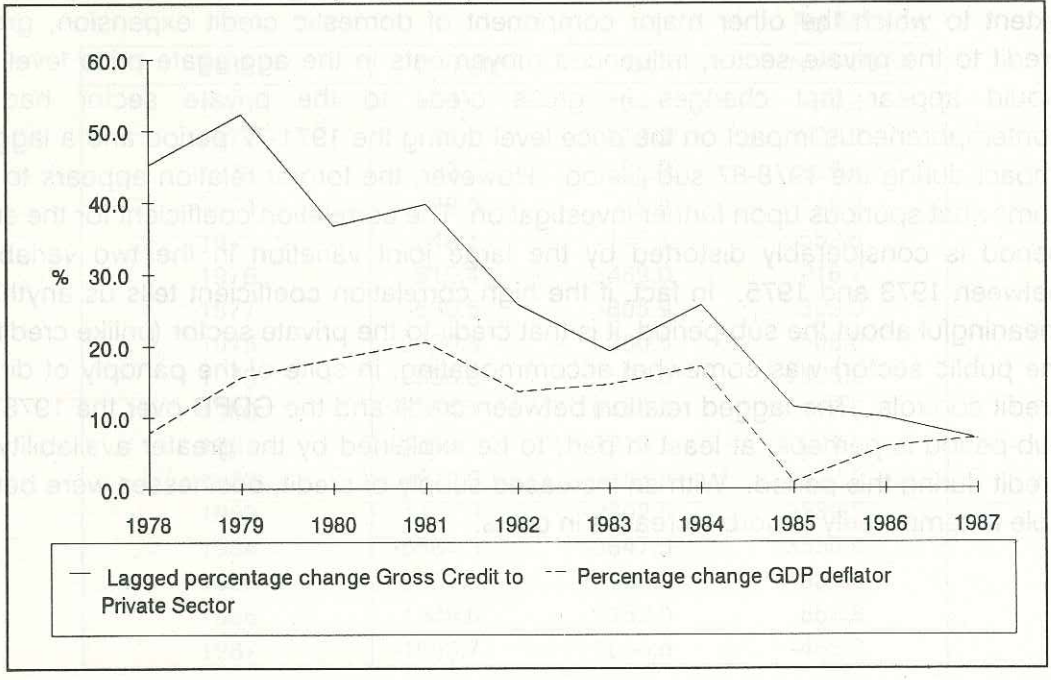


Table IV.19
Correlation Coefficients for the Association between Inflation and Credit to the Private Sector

	1971-87	1971-77	1978-87
Inflation -vs-	**Correlation coefficient**		
Credit to private sector (incl.)	0.48	0.60	0.67
Credit to private sector (incl.)$_{t-1}$	0.14	-0.30	0.78[a/b/]
Credit to private sector (excl.)	0.41	0.50	0.41
Credit to private sector (excl.)$_{t-1}$	0.36	0.02	0.79[a/c/]

a/ 1979-87
b/ Comparable figure using the WPI as the inflation index is 0.60
c/ Comparable figure using the WPI as the inflation index is 0.38

What then determines credit to the private sector? Most credit to the private sector is for business purposes, to finance working and fixed capital outlays.[34] Since non-labour costs figure so large in these outlays, one can expect that credit to the private sector (especially in the context of a relaxation of credit controls) will be somewhat related to changes in imported input prices.

An indication of the impact of imported input costs on credit demand can be obtained by taking as the proxy for imported input costs a composite import price index of intermediate and investment items. The composite index is computed on the basis of the weights assigned the two components in the overall index.[35] Figure IV.13 is a plot of percentage changes in this index against percentage changes in credit to the private sector and Table IV.20 shows correlation coefficients for the joint variation of these two variables. From these it would appear that there is indeed a relation between the two variables which is strongest both in the 1978-87 sub-period and when the private sector is taken to include public corporations. That the relation gets stronger in the 1978-87 sub-period is possibly due to the fact that credit was considerably looser during this period and therefore far more responsive to demand. That the relation gets stronger when public corporations are counted with the private sector may be because public corporations (not being constrained by profitability criteria) have been more able to absorb cost increases through borrowing than private corporations. In the sub-period 1971-77 it could also mean that many public corporations had a more privileged access to credit.

Using the import component of the WPI as the proxy for imported input costs provides confirmation of the above findings, at least as far as the 1978-87

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34 Because of the absence of any significant alternatives for earning interest by financial institutions in developing economies, the supply of credit by banks and other lending institutions tends to be highly responsive to business demand.

35 The drawback with the index for our purposes here is that its commodity coverage includes items which are not inputs into the production process, such as military equipment and the like.

sub-period is concerned (see Table IV.20). Indeed the relationship between credit expansion to the private sector and the import component of the WPI is even closer than that between credit to the private sector and the import price index. The correlation coefficient for the joint variation of credit and the import component of the WPI is remarkably high. Much of the difference between the two correlation coefficients is attributable to the fact that the import component of the wholesale price index, unlike the import index of intermediate and investment goods, only covers inputs into the production process.

Figure IV.13
Percentage Changes in Import Input Costs and Credit to the Private Sector 1971-87

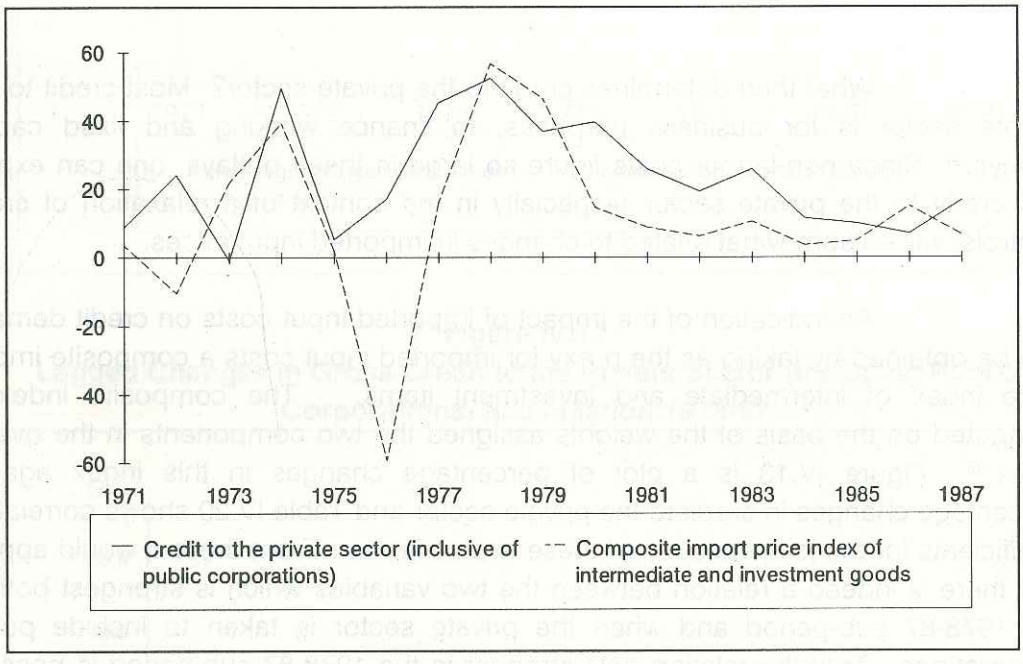
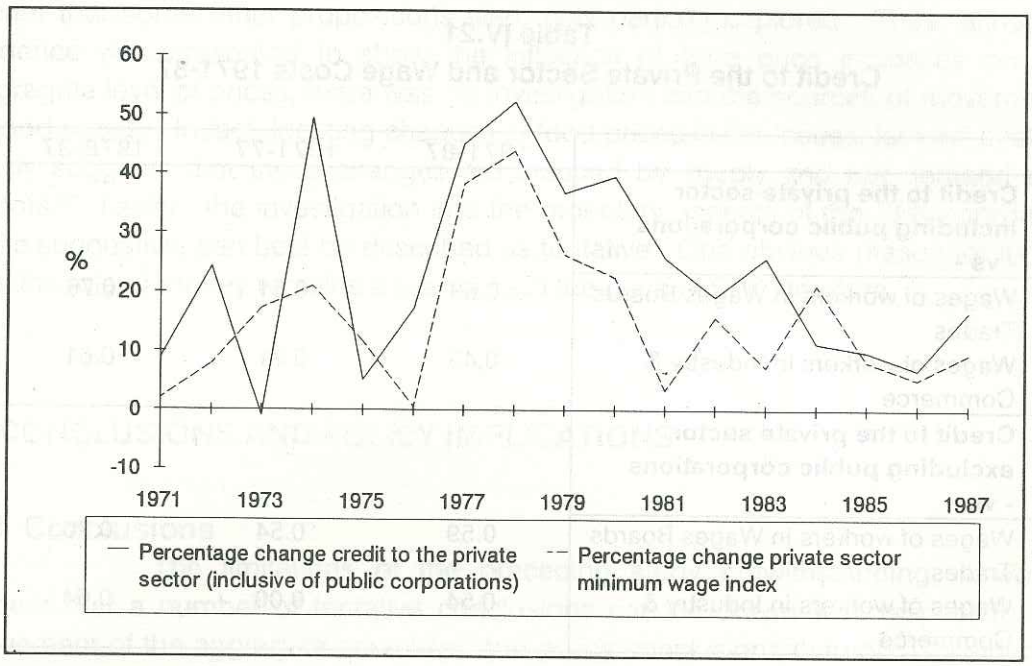


Table IV.20
The Correlation Between Credit to the Private Sector and Imported Input Costs 1971-87

	1971-87	1971-77	1978-87
Private sector including public corporations			
Import price index [a/]	0.50	0.31	0.79
Import component WPI	----	----	0.90
Private sector excluding public corporations			
Import price index[a/]	0.41	0.00	0.64
Import component WPI	----	----	0.94

a/ This is a composite index of the intermediate and investment goods components of the import price index

Figure IV.14
Private Sector Wage Costs and Credit 1971-87



Although wage costs are relatively smaller than imported input costs as a proportion of total costs, they are still sizeable and therefore can be expected to exert some influence on private sector credit demand. An indication of their influence can be gleamed by using as a proxy for changes in private sector wage costs, the Central Bank's wage indices for industries covered by Wages Boards.[36] In so far as anything about actual movements in wages can be read from this data, it would appear that wage costs exerted an influence on credit throughout the period, but that it exerted a proportionately greater influence in the 1978-87 sub-period when credit was somewhat more expansive (see Figure IV.14 and Table IV.21). To the extent that the apparent relation between these two variables over the earlier 1971-77 sub-period is not a spurious one, and noting that the correlation coefficient for the association between credit expansion and wages of workers in industry and commerce for the corresponding period is very much lower (see Table IV.21), one

36 The problem with attempting to say anything with conviction about movements in wages is the paucity and weakness of available data. The best available data in terms of time frame and coverage are the wage rate indices published by the Central Bank of Sri Lanka and the Labour Department. These indices cover, on the one hand, workers in the private sector and public corporations which are governed by Wages Boards, and, on the other hand, government employees, including government school teachers. Wage indices pertaining to workers in Wages Boards trades are further sub-divided into those in agriculture and those in industry and commerce. Workers in Wages Boards, however, only account for some 40% of employment in the organised private sector. In fact, workers in agriculture covered by Wages Boards only refer to those in the growing and manufacturing of tea, the growing and manufacturing of rubber, coconut, cocoa, cardamoms and pepper. Moreover, all the wage rates used in the calculation of the wages of workers in Wages Boards indices are minimum wage rates. Actual payments are likely to be considerably higher as these basic rates do not include overtime, bonuses, etc.

possible explanation for this phenomenon could be that the authorities pursued a policy of preferential credit to the agricultural sector during this sub-period.

Table IV.21
Credit to the Private Sector and Wage Costs 1971-87

	1971-87	1971-77	1978-87
Credit to the private sector including public corporations - vs -			
Wages of workers in Wages Boards Trades	0.69	0.61	0.76
Wages of workers in Industry & Commerce	0.43	0.21	0.61
Credit to the private sector excluding public corporations - vs -			
Wages of workers in Wages Boards Trades	0.59	0.54	0.70
Wages of workers in Industry & Commerce	0.54	0.00	0.64

IV.3 Summary of Findings

The important findings of this section are the following. Firstly, both world market prices and food prices have systematically influenced movements in the domestic price level over the entire 1971-87 period, although the nature of this impact, certainly as far as world market prices are concerned, differed between the two sub-periods and between the different price indices adopted. Secondly, both the budget deficit and credit to the private sector acted as propagators of externally induced inflationary impulses, particularly in the 1978-87 sub-period when the government was more able and willing to resort to bank borrowing to fund deficits, and credit policy in general was very much looser. Between 1978 and 1981 the budget deficit can also be said to have been a primary source of inflationary impulses as a result of the massive increase in public investment during these years. Thirdly, there is reason to believe, certainly in the period after 1978 with the liberalisation of the economy and the financial system, that changes in the money stock and reserve base were induced by changes in the real economy and were not the source of these changes. That is to say, there is reason to believe that the path of transmission was from price changes to changes in the money stock, and then from these changes in the money stock to accomodating changes in the reserve base.

It needs to be said before concluding this section that the preceding investigation of SPK propositions is in no sense an exhaustive one, nor, as noted at the outset of the section, was it intended to be. An absence of relevant data

precluded, for example, the investigation of propositions such as those relating to the impact on prices of changes in wages, taxes and subsides. Time limitations, and the normal constraints pertaining to preliminary studies of the present type, also meant that some other propositions were only partially explored. Thus, although evidence was presented to show the influence of food price increases on the aggregate level of prices, there was no investigation into the sources of movements in food prices. In fact, locating changes in food prices in the 'causal factors' section tacitly suggests that these changes are induced by supply and not demand-side factors.[37] Lastly, the investigation into the monetary aspects of the SPK approach, while suggestive, can best be described as tentative. One obvious reason for this is that the role of money remains a grey area in the general SPK literature.

V. CONCLUSIONS AND POLICY IMPLICATIONS

V.1 Conclusions

The limitations of the preceding study notwithstanding, it would appear that a number of tentative conclusions can be drawn with respect to the movement of the aggregate price level and policy conclusions thereof. Considering the 1971-87 period as a whole it would appear that cost-push factors were generally more important in explaining movements in the aggregate price level than demand pressures, although the latter were clearly important in the 1978-87 sub-period, and more especially between 1978 and 1981, when public expenditure and credit to the private sector expanded massively. One of the (obvious) lessons of the study is, incidentally, that in the analysis of both causal factors and transmission mechanisms underlying inflation, there is a need to distinguish between the 1971-77 and 1978-87 sub-periods.

In the 1971-77 sub-period contemporaneous changes in **import and food prices** accounted for most of the changes in the aggregate price level. This conclusion holds whichever of the three indices - the GDPD, CCPI or WPI - is adopted. It further appears that changes in food import prices fed into changes in general food prices in at least certain years.

Changes in export prices also appear to have had some impact on the general price level. It was shown in section V. that they certainly had a direct impact on the CCPI. They may also have had an indirect and relatively smaller impact on the GDPD, via income and substitution effects.

The **propagation** of cost-push impulses during the 1971-77 sub-period was by and large muted, although there are signs of some propagation

[37] In fact, although the evidence was not presented above, it would appear that demand factors may have been important in explaining movements in food prices in the 1978-87 sub-period while imported food prices may have been more important in the earlier 1971-77 sub-period.

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through credit to the private sector (and wage rises). Much stronger than these propagating factors were **offsetting ones**. These included contractions in the budget deficit and bank financing of the deficit, the array of subsidies and price controls applied to basic food items, the preferential treatment accorded imports of food items and other basic necessities, the relative stability of the exchange rate, and the policy of domestic credit restraint.[38] The latter policy, in the context of a tight foreign exchange constraint, meant that external inflationary shocks, such as those experienced in 1973 and 1974, had simultaneously a deflationary impact on the domestic economy. Indeed, if there is any relationship between contemporaneous changes in money stock and the domestic price level during this period, it appears to be a perverse one.

The influence of cost-push factors on movements in the aggregate price level was also in evidence in the 1978-87 sub-period. Thus, changes in food and administered prices had a perceptible impact on both the CCPI and GDPD, and contemporaneous import and export price changes on the CCPI and WPI. The nature of the impact of external prices on the GDPD is less clear. The general impression one gets from the data is that if there was an impact it came from lagged changes in import price.[39]

More important than cost-push factors in explaining movements in the GDPD during this period are demand-pull factors. Those demand pressures which prevailed during this period were not, however, brought about by autonomous monetary impulses. Money supply and its components appeared to behave passively, responding in large part to changes in demand emanating from changes in costs of production and terms of trade.

V.2 Policy Issues

One of the policy lessons to be learnt from the preceding investigation is that it cannot be presumed that fiscal imbalances are always and everywhere the root cause of inflationary processes and, therefore, that the universal remedy for inflationary ills is contractions in the size of the deficit and its financing from bank sources. Thus, over the 1971-77 sub-period, inflationary pressures had little to do with changes in the size of the budget deficit and its financing and, therefore, contractions in the latter would not have significantly moderated these pressures. Even in a situation where expansions in the deficit and bank financing of the deficit are considered to be at least proximate causes of inflationary pressures, as in the 1978-87 sub-period, it is important to ascertain the nature and source of these expansions without presuming them to be autonomous - the mere result of budgetary mismanagement. Again, it is evident that over the 1981-87 sub-period, changes in the deficit and bank financing of the deficit were largely in response to

38 Certainly, these policies were one reason why Sri Lanka's rate of inflation was so much lower over this period than the average for LDCs (even excluding Latin America).

39 This would also tie in with the significant OLS estimation results for lagged changes in the relative world market price level variable with respect to inflation over this period.

fluctuations in the terms of trade. The point being made here is that some deficits may be justified, or at least more justified than others, and there may well be a case for tolerating them (and bank financing of them) in the short-run.

A second policy implication of the preceding analysis is that control of the money supply may be a less effective means of tackling inflation than has traditionally been believed. There are two aspects to this. Firstly, there is some doubt as to the existence and strength of the relation between money supply and the aggregate price level. Secondly, there is good reason to doubt the ability of the authorities to exert a control over the money supply whether this control is in terms of the broad aggregates comprising money supply or, relatedly, in terms of the reserve base.

This does not, however, mean there is no role for either monetary or credit policy in stabilisation strategies. Most certainly there is, especially in a situation where demand factors are at least the proximate determinants of inflation - as in the post-1978 period.

Changes in food prices, especially that of rice, have apparently had such a consistent impact on the aggregate level of prices (as well as wages) that some attention also needs to be paid to their stabilisation. Direct controls on the prices of certain basic items during the 1971-77 period, while arguably injurious to productivity and output of these commodities, were clearly effective in moderating general price/cost of living increases. The alternative, more modest attempts at stabilising key commodity prices after 1978, by stimulating their supply through various producer subsidies and selective credit refinancing schemes, appears to have been less effective, at least in the short-term, but may have been less deleterious to productivity and output. One problem with assessing the relative effectiveness of the two approaches to **selective price stabilisation** is that there was a considerable policy overlap between the two sub-periods. That is to say, it took a fairly long time for direct price controls and consumer subsidies operating in the former sub-period to be dismantled. Indeed, by 1987 many important commodity subsidies were still in place.

Finally, the preceding analysis has pointed to the adverse direct and indirect impact which currency depreciation has had on the general price level (and the current account balance). Currency depreciation increases costs and encourages competitive price increases by import substituting enterprises, as well as aggravating demand pressures through its impact on the budget deficit and credit supply. The nature and magnitude of the impact of currency depreciation on prices vary with the economic environment. The impact is likely to be greater and more immediate the greater the resource constraints (especially foreign exchange constraints), the less diversified the production structure, and the more inelastic the credit supply. Studies on supply and demand responses to currency depreciation also cast doubt on the extent to which depreciation serves as a corrective to

payments imbalances, even in the longer term (see Rajapakse 1989 and Colombage 1989).

All of this suggest that caution must be exercised in the use of currency depreciation, even as an adjustment measure. Cognisance needs to be taken of the impact of currency depreciation on inflation and policy variables such as the budget deficit and credit expansion if it is not to have a spiralling effect on the process of inflation, and if real levels of public expenditure and investment are to be maintained in accordance with long-term planning goals. In particular there may well be a strong case for at least lagging corrective exchange rate adjustments.

Appendix I

Using the rate of change of past inflation, P_{t-1}-P_{t-2}, as an approximation of inflationary expectations, and plotting this against changes in income velocity of money circulation, suggests that the observed velocity fluctuations are at least partly explainable by shifts in expectations. OLS estimation of the velocity equation

$$V_t = a_0 + a_1 P^e_t + u_t \qquad [A1]$$

$$a_1 < 0$$

where

V = the Cambridge k or the reciprocal of the velocity of circulation

P^e = price expectations ($P_{t-1} - P_{t-2}$)

seems to provide further support for this relation, at least for the M1 version of it (see Table below). The parameter estimate of P^e in the M1* version of [A1] is significantly different from zero at the 1 per cent level, and in the M2* version at the 11 per cent level. R2s are 0.51 and 0.16 respectively for the two versions.

OLS Estimation of the Impact of Expectations on Velocity of Circulation

Dependent variable	Velocity M1	Velocity M2
Constant	1.25	-1.54
	(1.09)	(-0.71)
Expectations	1.14	0.42
	(5.32)	(1.69)
R2	0.51	0.16
D.W	2.1	1.57
SER	7.65	9.0
Obs.	17	17
Period	1971-87	1971-87

One problem with equation [A1] is, however, that it assumes changes in nominal income are **homogeneous with respect to money stock**. This assumption can be tested by OLS estimation of the following equation,

$$Y_t = a_0 + a_1 M_t + a_2 P^e_t + u_t \qquad [A2]$$

$$a_1, a_2 > 0$$

The null hypothesis is that $a_1 \neq 1$. The results show that this hypothesis can be rejected at the 5 per cent level for both M1 and M2 versions of [A2].

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