Export Promotion, Exchange Rates and Commodity Prices

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The collapse of primary commodity prices in the 1980s has been prolonged and has severely affected many developing countries. While low commodity prices can be partly explained by sluggish demand due to slow growth in the industrialised countries, high interest rates and technological change, this does not seem a complete explanation.

This paper examines the evidence in favour of the hypothesis that supply factors have partly been responsible. Many developing countries have faced severe balance of payments difficulties, in part due to the debt crisis, and have resorted to real exchange rate devaluations in order to boost export earnings. Such devaluations may have boosted export supplies, or prevented downward adjustments in capacity, and therefore put pressure on commodity prices. It also considers the policy implications of this externality, whereby attempts to boost export earnings in one primary producing country adversely affect the prices received by others.

I

Introduction

THIS paper is a study of primary commodity markets, focusing in particular upon the supply side of such markets. The commodity crisis of the 1980s has been prolonged and painful for most developing countries. Primary commodity prices have been at an all time low, and most forecasts indicate that they are likely to continue to be depressed in the medium term. While demand factors have played an important role in keeping prices low, this paper evaluates the hypothesis that low prices are in part due to excessive supply, or at least the failure of suppliers to adjust capacity downwards in the face of a decline in demand. The 1980s have been a period of acute balance of payments difficulties for many developing countries, in part due to the collapse of commodity prices but also due to other factors such as the debt crisis, and many countries have been forced to undertake real exchange rate devaluations and boost export supplies. From a policy perspective it is important to find out whether such policies have themselves contributed to the commodity and balance of payments crisis by causing oversupply in commodity markets. This paper considers the evidence in favour of such a proposition, and focuses in particular upon the negative externality whereby increases in supply potential in one country have adverse consequences for the prices received by others. Such interdependence between producers can have important implications for policy. This is particularly the case for policy advice offered by international institutions, since they can exert leverage upon a number of developing countries simultaneously. If such externalities are important, a case can be made for such institutions to internalise these considerations in their policy advice.

In this version of this paper we omit some of the more technical discussion, particularly that relating to econometric issues; the interested reader may refer to Bhaskar (1988) for a more comprehensive discussion of such issues. The paper consists of four sections. In Section II we examine the reasons for the current slump in commodity prices, and assess the evidence in favour of the proposition that debt-service effects are important in explaining the behaviour of prices. On balance, there seems to be some evidence in favour of this hypothesis, although a categorical answer is not possible. In Section III we examine a single commodity, tea, in order to assess the responsiveness of supply to price incentives. This is in order to see whether exchange rate depreciations have had an impact on supply. The evidence in this case does not seem very positive. Supply elasticities are generally low, and it does not seem that excess supply is due to policy-induced supply expansions. The weakness of demand seems more important. In this context, we find that the major source of demand expansion is from the developing countries, since the income elasticity of demand for tea is somewhat greater at lower levels of income. This implies that the current debt crisis and balance of payments difficulties of many developing countries may be affecting tea producers in a somewhat different way, by keeping demand depressed. Since this shape of the income elasticity schedule may also apply to other primary products, this factor may have relevance for other commodities as well. In Section IV we take up the problem of excess supply from a different angle. If real exchange rate developments have created problems of excess supply generally in commodity markets, it must be the case that they must be important in the major commodity producers. We consider the largest commodity exporters, i e, the indebted Latin American countries and the South-East Asian producers, and ex-

amine their real exchange rate movements. We find evidence for real depreciations among these countries, particularly among the most important producers. Trends in real exchange rates also indicate a tendency to depreciation of late among those countries which have not done so earlier. This suggests that excess supply in commodity markets may persist into the future, since such depreciations make downward supply adjustments less likely. In the final section we examine the policy implications of such interdependence among commodity producers. Since international agencies such as the IMF or the World Bank deal simultaneously with many developing countries, we suggest that such considerations should be internalised in the policy discussions, if policies are to be appropriate for the countries taken as a whole.

II

Commodity Prices in 1980s: A Possible Explanation

The terms of trade of primary commodities have been a central issue for developing countries. Concern has focused both upon the secular tendency of the terms of trade *vis-a-vis* manufactures, and upon the short run variability in primary commodity prices, with the UNCTAD proposals for primary commodity price stabilisation being aimed at solving the latter problem.[1] The issue of the terms of trade was sharply posed by Prebisch (1962) and Singer (1950), with the argument that there was a secular tendency for the terms of trade of primary products to deteriorate, due to their low income elasticity of demand. This tendency could also be accentuated by monopoly power in product and labour markets in the developed countries. These arguments and the ensuing controversy, as well as the

empirical evidence are examined in detail by Spraos (1980), and more recently by Sapsford (1985) and Sarkar (1986). The events of the 1970s, with the rise in oil and commodity prices and concern about the exhaustibility of resources and the consequent "limits to growth" seemed to banish these concerns. However, the events of the 1980s have brought these questions back into focus, and sharply indeed. A new acute phase in the decline of real commodity prices began with the international recession of 1980-82 when output fell in the OECD countries, and the price index of 33 primary commodities (excluding energy) relative to the price of manufactured imports fell by 32 per cent. More importantly, this decline was not reversed by the economic recovery which ensued in 1983. Although OECD output growth has been 3.2 per cent per annum in the years 1982-86, the customary link between developed country growth[2] and commodity prices seemed to have snapped. Real commodity prices in 1985 were below their 1982 level and were in fact at their lowest since the World War. Low commodity prices have been extremely favourable for most industrialised countries—not only have they ensured improved terms of trade and higher real income, they have also played a crucial role in bringing about the decline of inflation in OECD countries to the lowest level in 20 years (see Beckerman and Jenkinson, 1986). However, the problems for developing countries who are dependent upon these exports have multiplied.

The nature of trends in commodity prices may be discerned from charts 1-5. These charts show the movement (up to 1987) of an index of commodity prices in real terms, and are derived by deflating the commodity price in dollars by the index of industrial country export unit values in dollars. Chart 1 shows the development of the index of 33 commodities (excluding energy); the sharp decline in 1980 is followd by a minor recovery in 1983, but this soon collapses. Chart 2 shows the behaviour of the index of food; here the collapse of the mid-1980s is even more pronounced. A similar feature can be noticed in Chart 3, for beverages. The trend in raw materials is somewhat better, with a hint of a recovery in prices in the recent past (see Chart 4). The index of metals (Chart 5) also shows a substantial decline although there has been a partial improvement in prices of late. It must be pointed out that the recent recovery in commodity prices has been extremely limited—real prices in December 1987 were still 20 per cent below their average level of 1980-84, and the latest (1988) IMF World Economic Outlook forecasts that future prices are likely to stabilise at the levels of early 1988.

Before proceeding to a discussion of the econometrics of commodity prices, it might be useful to outline the major developments in the international economy in the 1980s which impinge upon commodity markets. The early years of the decade were marked by severe recession in the industrialised coun-

tries, mainly as a result of restrictive monetary policies which were aimed at reducing inflation. Between 1979 and 1982, output in the industrialised countries grew at less than 1 per cent per year, as compared to 4 per cent in the period 1976-79. The effect of slow growth on commodity markets was compounded by high interest rates— short-term rates were up to 7 per cent greater than inflation in the early 1980s, and real rates have remained extremely high since, at about 4 per cent. This may be contrasted with the negative real rates which characterised most of the 1970s. These high interest rates, which were an important inducement to reduce commodity stocks, were mainly due to the pursuit of a restrictive monetary policy by the United States in conjunction with a huge fiscal deficit. These policies also resulted in a huge appreciation of the US dollar, which rose by almost 60 per cent between the end of 1980 and early 1985. Subsequently this appreciation has been reversed, although the budget and current account deficit of the United States persists, putting pressure on interest rates world-wide. Since much of developing country debt was dollar denominated, the rise of the dollar and interest rates resulted in a big increase in the debt burden of borrowers, causing the crisis of 1981-82. Since then, the indebted countries have been forced to implement austerity policies to reduce their imports and augment exports in order to service their debt. One way of earning more foreign exchange has been through real exchange rate devaluations—the latest (1988) IMF World Economic Outlook documents that real exchange rates in the developing world today are substantially depreciated in relation to the past. Since the balance of payments difficulties of the developing world are far from over, these policies seem set to continue in the near future.

A central question in understanding commodity markets is an explanation for the collapse of commodity prices in the 1980s, and for the failure of prices to recover even when output growth improved in the OECD countries. The favoured method for analysing the determinants of commodity prices remains econometric, and it is on econometrically estimated commodity price equations that we focus upon in this section. A key fact regarding such econometric equations is that most estimated equations have turned out to be unstable in the 1980s, predicting real commodity prices substantially higher than actually materialised. This has been reflected in the fact that most price forecasts emanating from international institutions such as the OECD, the World Bank or the IMF have consistently overshot actual performance. Indeed, a recent study by Warr (1988) finds that the World Bank's commodity price projections are not statistically efficient and overpredict prices for a number of commodities.[3] This appears to be related to the effect of exchange rate fluctuations upon real commodity prices. With the rise of the dollar in the first half of the decade,

dollar commodity prices have fallen substantially. While this is not in itself surprising, since a rise in dollar value may be expected to raise commodity prices in terms of say German marks while reducing it in dollar terms, without any major effect upon the index in terms of a weighted average of industrial country export prices, the surprising thing is the magnitude of the negative effect. Dornbusch (1985) found the elasticity of the dollar commodity price with respect to the dollar value to be -1.5, while Beenstock (1987) finds an elasticity of -1.4. This implies that a rise in dollar values reduces real commodity prices not merely for the United States, but also for other OECD countries. It may be noted that these estimates allow for OECD output and interest rate effects, i e, they measure the response of commodity prices to dollar appreciation over and above any decline which is attributable to the rise in interest rates or output deflation in this period. These findings show that the steep rise in the value of the dollar has had a negative impact upon developing countries, not only by raising the real value of dollar denominated debt, but also by squeezing the terms of trade of primary products. This empirical result showing that dollar commodity prices react to an increase in the dollar value with an elasticity greater than unity, is contrary to the predictions of theory. The relation between exchange rates and commodity prices was set forward by Ridler and Yandle (1972) and developed further by Gilbert (1987), and this theoretical analysis predicts that the elasticity of the dollar price of commodities with respect to the value of the dollar should lie below unity, and probably around $0.6-0.8$. An explanation of why commodity prices over-reacted to the appreciation of the dollar seems important in explaining the low level of real commodity prices in the 1980s.

The hypothesis offered by Dornbusch (1985) to explain this link between dollar appreciation and commodity values lies in terms of the supply side. Dornbusch argues that many developing countries may have responded to the dollar appreciation by depreciating their currency in real terms, i e, by devaluing vis-a-vis the dollar more than other industrial countries. Consequently, the dollar appreciation may have induced large real exchange rate devaluations in developing countries, resulting in an expansion of export supplies, causing downward pressure on commodity prices. Many developing countries were forced to resort to real devaluations due to the increased real burden of dollar denominated debt, as well as the balance of payments difficulties induced by the world recession. The hypothesis is that with the rise of the dollar and the rise in world interest rates, many developing countries faced a sharp rise in debt repayments, and were forced to expand export supplies in order to boost export earnings. This rise in export supplies was responsible for the fall in commodity prices.

This question has been taken up more

systematically by Gilbert (1987) and Chang (1987). Gilbert (1987) estimates an equation for the dollar commodity price, using quarterly data from 1965 to 1986. This equation is estimated for the World Bank 33 commodity index (excluding energy), as well as the three main sub-indices—food, agricultural non-food and metals and mineral.[4] Our focus is on the relation between exchange rates and commodity prices, and one important modification that Gilbert introduces is to use a more appropriate index of the dollar exchange rate that the IMF MERM index. The MERM index is based on a weighted average of exchange rates, with weights based upon the importance of countries to US trade, which is clearly unsuitable when one is concerned with the effects on commodity prices. Instead, an index of dollar value based upon OECD gross domestic weights is used, which is clearly more appropriate. The explanatory variables include those normally used such as OECD output growth, interest rates and the value of the dollar. In addition, to test the hypothesis that debt service requirements have contributed to low commodity prices, the logarithm of the debt service/commodity price index ratio is also used. This reflects the idea that with a higher debt service burden relative to export earnings, countries increase commodity exports, with a consequent negative effect upon commodity prices.

The empirical results provide some support for the hypothesis that debt-induced supply shifts have been important in the decline in commodity prices. The first finding is the distinction between the compensated and uncompensated elasticities of the commodity price with respect to the dollar exchange rate. The compensated elasticity allows for the real debt effect and therefore is an estimate of the effect of a change in dollar value keeping the debt service ratio constant, whereas the uncompensated elasticity considers the total effect. Gilbert finds that the compensated elasticity lies in the range [0.6, 0.8] for the aggregate index, in line with the Ridler and Yandle theoretical results. The evidence for debt effects is particularly strong in foods, resulting in an uncompensated elasticity of [0.9, 1.1], while the compensated elasticity is 0.76. The evidence for debt-related effects is somewhat less clear-cut for agricultural non-foods, and weak for metals and minerals where the difference between compensated and uncompensated elasticities is not very large. On the basis of these results there seems to be some evidence that debt-induced supply shifts are partially responsible for depressed commodity prices, particularly since they seem to be the only coherent explanation for the large negative effects of dollar appreciation upon commodity prices.[5]

While Gilbert's conclusions have been questioned by Chang (1987), it seems to us that his arguments are not very persuasive. The alternative equations estimated by Chang, which purport to show the irrele-

vance of debt related effects, seem improperly specified and fit worse than Gilbert's.[6]

To summarise, there seems to be some evidence in favour of the hypothesis that the increased burden of debt faced by many primary producing countries has been partially responsible for weak commodity prices in the 1980s. While the evidence is not conclusive, there does not seem to be any other convincing explanation for the behaviour of commodity prices. In addition, such an explanation can also enable us to make sense of the extremely large effects of the dollar appreciation. Of course, such a hypothesis cannot be adequately tested at the aggregate level. What is needed is a more detailed investigation of individual commodity markets in order to see whether the balance of payments requirements of primary producers have resulted in efforts to boost export supplies by exchange rate devaluations and other means. The effects of these measures upon actual supplies and commodity prices also merit further investigation. A study of inter-country differentials in export performance can also shed light on this question.

III

Devaluation, Producer Incentives and Export Supply: An Analysis of the International Tea Market

In this section we take up a single commodity market in order to consider in more detail the questions raised in the previous section. In particular, we consider the question of devaluation and producer price incentives, in order to see whether such policies may have led to over-supply and downward pressure upon prices. The choice of tea was dictated by several considerations. We have already seen that the over-supply and debt related effects were most clearly indicated in the index of foods, suggesting that further analysis be focused on a commodity belonging to this category. Tea is one of UNCTAD's list of 16 core commodities, with 85 per cent of world exports being made by developing countries.[7] Exports are highly concentrated upon four countries (India, Sri Lanka, China and Kenya) accounting for two-thirds of world exports. The high concentration of exports makes the interdependence between commodity producers particularly relevant from a policy perspective, since the fewness of numbers makes an explicit allowance for such interdependence easier. In addition, three of the above four countries belong to the Commonwealth, and are also the main producers of black tea.

Long-term trends in the tea market have been adverse for producers. The product exhibits a very low income-elasticity of demand at high levels of income, so that demand from developed countries has been stagnant. In addition, consumer tastes have been switching away towards coffee and synthetic substitutes in the main export markets such as the United Kingdom. As a result,

industrial market economies imports fell by 0.6 per cent per annum in the years 1971-1984. Both because of population growth and a possible higher income elasticity at lower levels of income, developing country imports of tea grew at 4.7 per cent per annum over the same period, enabling the exporters to increase supplies at 2.4 per cent per annum. Excess supply has also been mitigated by the growth of demand in some of the main producing countries, such as India, where the domestic market has become increasingly important. Traditionally, India and Sri Lanka, and to a lesser extent Indonesia held a monopoly of the black tea market, supplying almost 90 per cent of world exports at the end of the war. Their market share has been eroded by the rise of the newer producers in Africa, in particular Kenya, and to a lesser extent, Malawi, Tanzania and Mozambique. The importance of tea to the balance of payments of these countries is also obvious from Table 2. Sri Lanka, Kenya and Malawi are strongly dependent upon tea export earnings, with almost a third of revenue being earned by the single crop in the case of Sri Lanka.

Chart 6 shows the developments in the international tea price in real terms since 1959. Once again we deflate the tea price in dollars by an index of industrial country unit export values in dollars to get a measure of the real price. The picture is clearly one of long-term decline in the terms of trade of tea vis-a-vis industrial commodities. The index of the real

TABLE 1: SHARES OF MAJOR EXPORTERS IN WORLD TEA EXPORTS

(Per cent)

Region/Country	Average Share (1981-83)
Asia	66.4
Bangladesh	2.4
China	12.8
India	26.6
Sri Lanka	18.2
Africa	15.0
Kenya	8.9
Malawi	2.3
Mozambique	0.9
Tanzania	1.1
Developing Countries	84.6

Source: United Nations.

TABLE 2: SHARE OF TEA IN TOTAL EXPORTS OF MAJOR PRODUCERS

(Per cent)

Producers	Average Share (1981-83)
Bangladesh	6.4
China	1.1
India	5.6
Sri Lanka	31.3
Kenya	15.6
Malawi	16.9
Mozambique	7.9
Tanzania	4.3

Source: United Nations.

CHART 1: NON-FUEL COMMODITY PRICE INDEX, 1960-1987
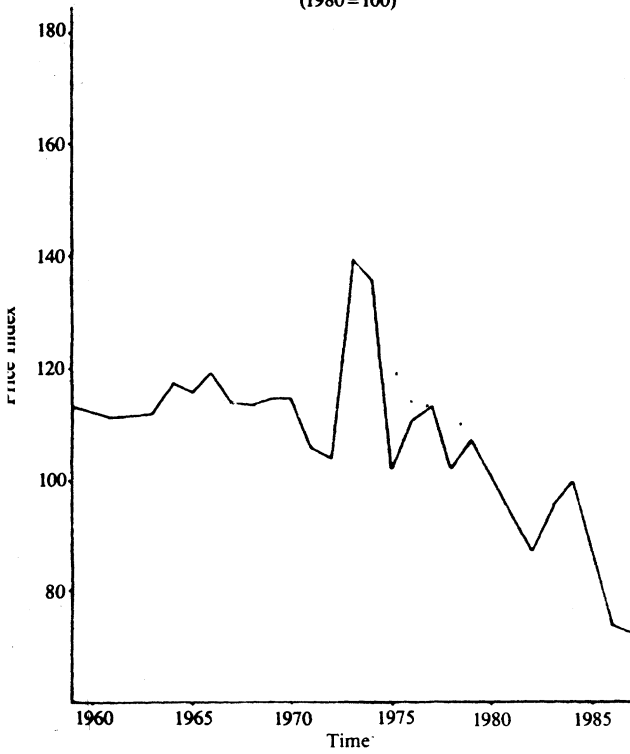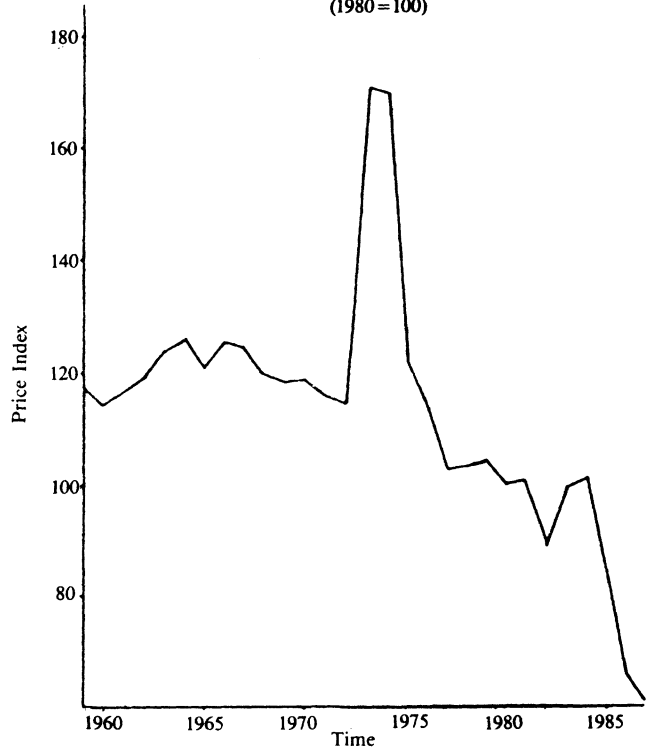(1980=100)

CHART 2: FOOD PRICE INDEX, 1960-1987
(1980=100)

ource: All charts are based on IMF data.

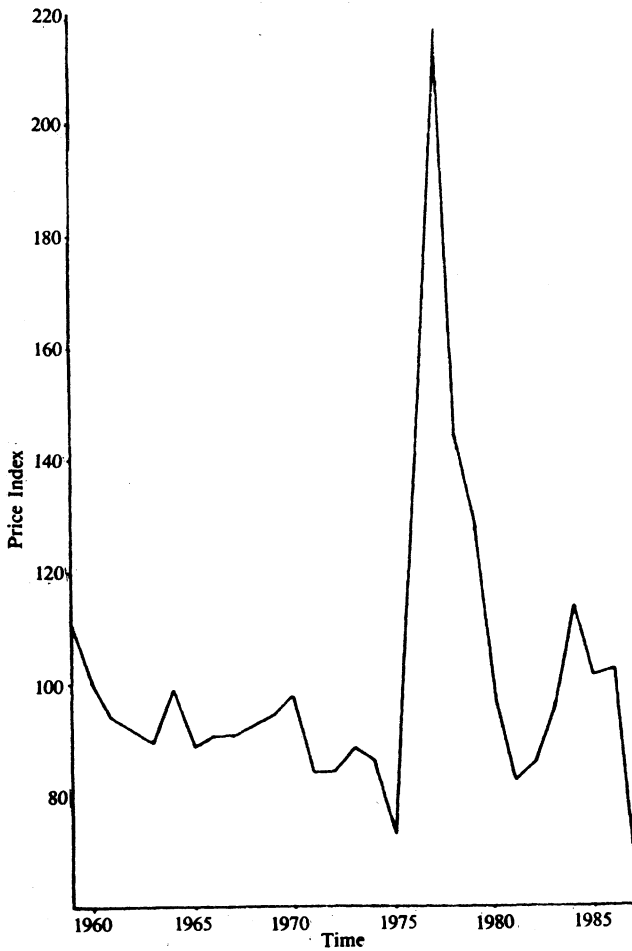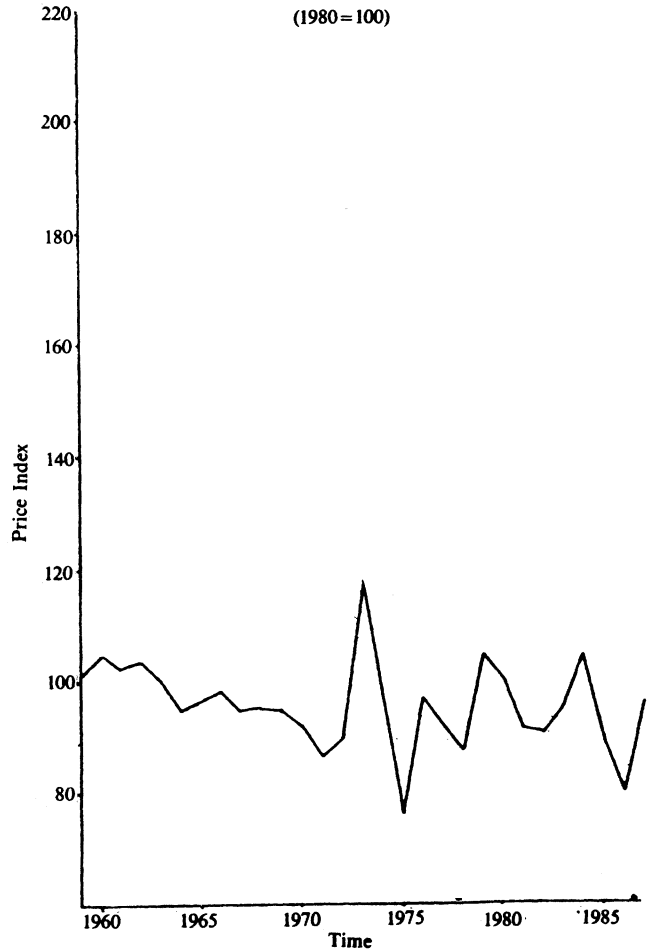CHART 3: PRICE INDEX OF BEVERAGES, 1960-1987
(1980=100)

CHART 4: PRICE INDEX OF AGRICULTURAL
RAW MATERIALS, 1960-1987
(1980=100)

price of tea in 1987 was less than a third of its level in 1959. One aspect needs comment: the sharp rise in prices in 1984. This was due to the imposition of export curbs by the Indian government in order to moderate domestic tea prices. It is striking that this episode was so ephemeral, with the price of tea falling below its 1982 level by 1986, and continuing to decline in 1987.

The methodology of our study needs to be explained first. The question we ask is: to what extent have devaluation and export promotion policies been responsible for an increase in export supply in the main exporting countries, thereby putting downward pressure upon tea prices? In the first instance, we examine the policy environment in the main black tea producing countries,[8] and detail the nature in which incentives in the export sector have been altered by government policy. Subsequently, we examine the effect of these changes in incentives upon export supplies. We estimate export supply functions for the main black tea producers, in order to see the nature of the relevant supply elasticities. Finally these results, together with information regarding demand developments are assessed in order to arrive at some tentative conclusions as to the validity of the hypothesis under question.

EXCHANGE RATES AND EXPORT INCENTIVES IN SELECTED COUNTRIES

Economic theory tells us that the supply of tea from the producers in any country depends upon the real price of tea received by producers. This real price is simply the tea price paid in domestic currency to producers, deflated by an index of input prices, as well as prices in other sectors of the economy. For simplicity we can take the consumer price index as the relevant deflator.[9] In the absence of any taxes or subsidies to producers, the real producer price is simply the product of the real international tea price and the real exchange rate. Consequently, the percentage variation in the real producer price can be decomposed into the percentage change in the real international price of tea and the percentage change in the real exchange rate. Variations in the real price of tea have already been considered in the introduction to this section. There has been some controversy about the appropriate measure of the real exchange rate (see for instance Wickham, 1987). For our purpose, since we are concerned with the profitability of exporting a primary commodity, the simplest measure seems the most appropriate as well. The real exchange rate is defined as the product of the annual average exchange rate in dollars (the price of one dollar in terms of domestic currency) and the price index of industrial country exports in dollars deflated by the domestic consumer price index. Variations in this real exchange rate index depend upon nominal exchange rate changes as well as relative rates of inflation.

Chart 7 shows Kenya's real exchange rate over this period. It is clear that Kenya has had a trend towards a real exchange rate devaluation since the late 1970s. Exchange rate policy has favoured the tradable sectors, and in the case of tea, has partially alleviated the costs to producers of the decline in the terms of trade.

Chart 8 shows Sri Lanka's real exchange rate. In Sri Lanka's case, there was a tendency towards a real exchange rate appreciation in the early 1980s, but this has been reversed recently.

Chart 9 shows that India's real exchange rate, which also had a tendency towards appreciation until 1982, has depreciated subsequently.

Apart from real exchange rate variations and changes in the real tea price on international markets, the extent of producer subsidies/export taxes can also clearly vary. Data on this are difficult to get, and it is not clear how one can allow for this. In the case of Kenya however, we have been able to get the actual producer price, which when deflated, is clearly the relevant variable.

Finally, the extent of import protection is clearly important. Several countries have embarked upon policies of import liberalisation in the recent period. Such policies reduce incentives for import substitution, and increase the effective rates of return in export industries. Kenya has embarked upon such a policy in the 1980s, while Sri Lanka has undertaken a substantial degree of import liberalisation since 1977. India has also done some import liberalisation; however, this has not been on the same scale as the other two countries.

Charts 10-12 show the behaviour of tea export volumes in the three countries. Export volume shows strong growth in the Kenyan case, but is stagnant, with some tendency to decline, in both Sri Lanka and India.

The econometric estimation of export supply functions poses major problems. In the first instance, gestation lag between planting and production is long in the tea industry, typically being about six years. This implies that productive capacity in any year depends upon decisions taken six years ago, on the basis of expectations about future prices prevailing at that time. This in turn must involve expectations as regards the development of international prices, and about exchange rate policy, domestic inflation, as well as a whole host of other incentives such as producer taxes/subsidies. Ideally, one should model these expectations, perhaps by a recursive autoregression. In practice it proves almost impossible to estimate such an equation due to the limited number of observations, and major structural changes.[10] The entire period since the 1950s has been one of a structural shift in the international tea market. Kenya, the new producer, has rapidly increased its market share, while India and Sri Lanka, the established producers, have remained stagnant

in terms of export quantities. Econometric estimation would have to take into account these complex factors, and these problems are more fully discussed in Bhaskar (1988). In this paper we merely report our findings.

Kenya

The econometric estimation was most successful in the case of Kenya. For all estimations conducted in periods after 1968, the real producer price of tea was an important determinant of export supplies, and the price elasticity of supply was approximately 0.5. In other words, a 1 per cent increase in the producer price induced a 1.5 per cent increase in export volume of tea. However, the years before 1968 seem to indicate the lack of a clear price response. One explanation may be that the years 1960-68 include the final years of colonial rule and the first years of independent Kenya. The political uncertainties during this period, particularly among expatriates, could well be responsible for this phenomenon.

As we discussed earlier, incentives for export production may not be completely captured by the real producer price of tea alone. Another important factor may be the incentives for import substitution; import liberalisation may increase the incentives for export sales by shifting resources away from import substitution industries. To allow for this possibility we constructed an index of the rate of import duty; this turned out to have a negative effect on export supply, although the coefficient was not significant at the 5 per cent level (the t-statistic was 1.6).

Sri Lanka

The Sri Lankan tea industry has performed relatively poorly since the war. The index of export volume has remained stagnant; it was 102 in 1960, 100 in 1980, and 113 in 1986. Exports in the 1980s have remained well below their peak of 123 in 1965. Sri Lanka has lost market share as well, from 26 per cent of world exports in 1949-51 to 18.2 per cent in 1981-83. However, tea continues to play an important part in the Sri Lankan economy and exports, providing 31.3 per cent of export revenue in 1981-83.

The results on export supply responsiveness were less clear-cut than in the case of Kenya. The estimated equations gave more or less similar results regardless of the sample period. In all cases, the coefficient on prices had the expected sign, but was not significantly greater than zero at the 5 per cent level of significance. The point estimate of the elasticity of supply was also lower at approximately 0.1. This is clearly a fairly low elasticity. The performance of the equation was much poorer than in the case of Kenya and the presence of a negative time trend brings out the relative stagnation of the Sri Lankan tea industry, with a tendency of output to decline. The responsiveness of supply to prices also seems fairly low. The lack of price responsiveness may also be a reflection of the structural changes brought about in

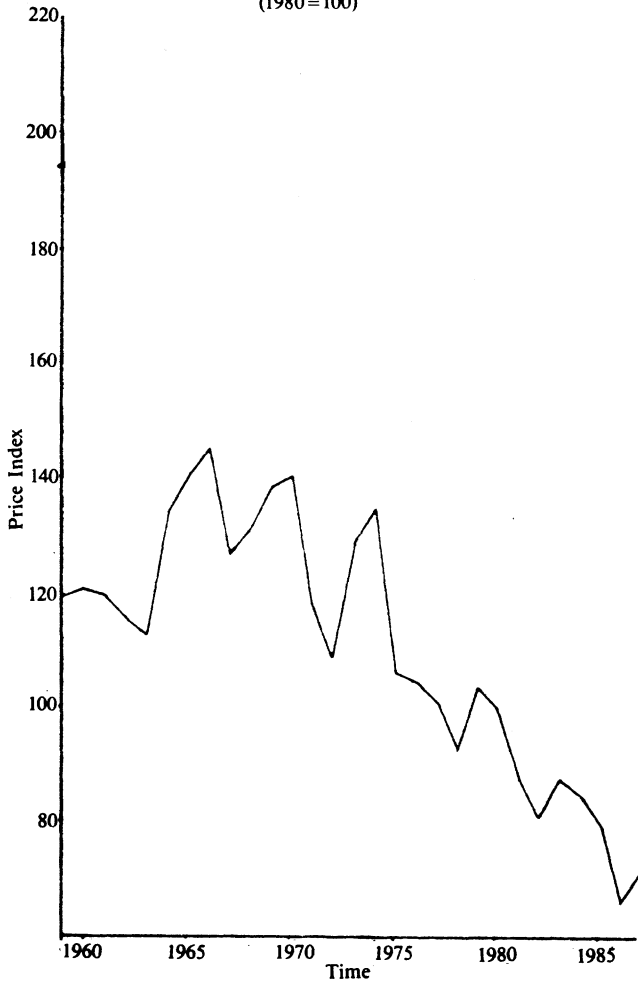CHART 5: PRICE INDEX OF METALS, 1960-1987
(1980 = 100)
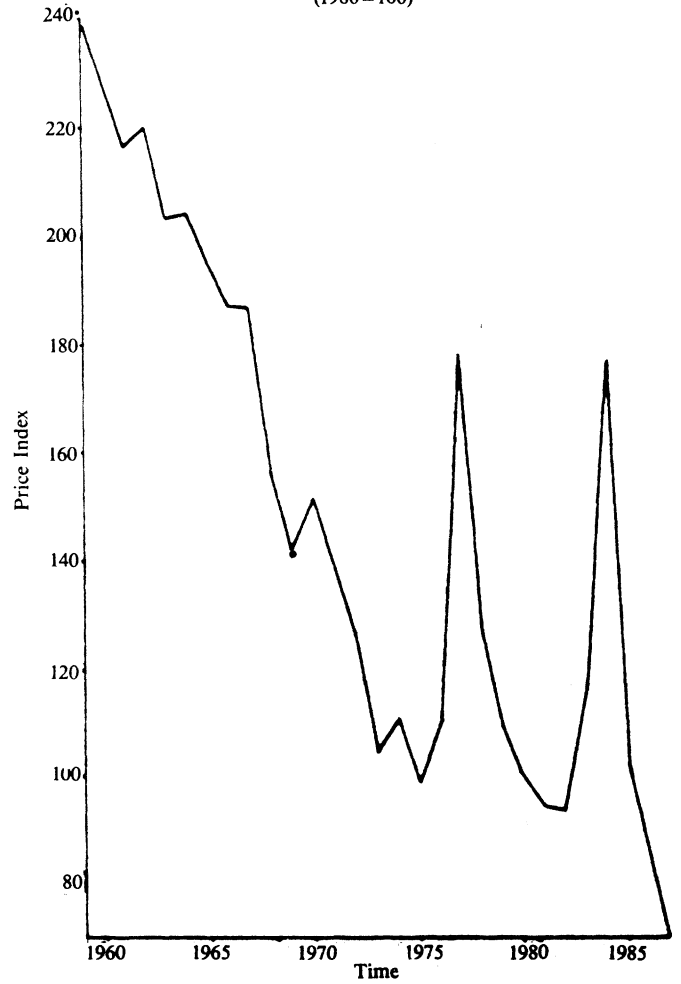
CHART 6: INTERNATIONAL PRICE OF TEA, 1960-1987
(1980 = 100)

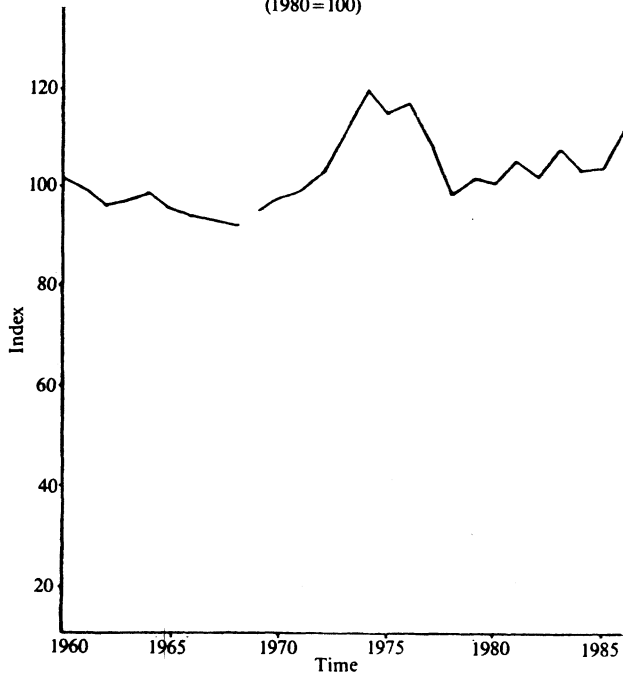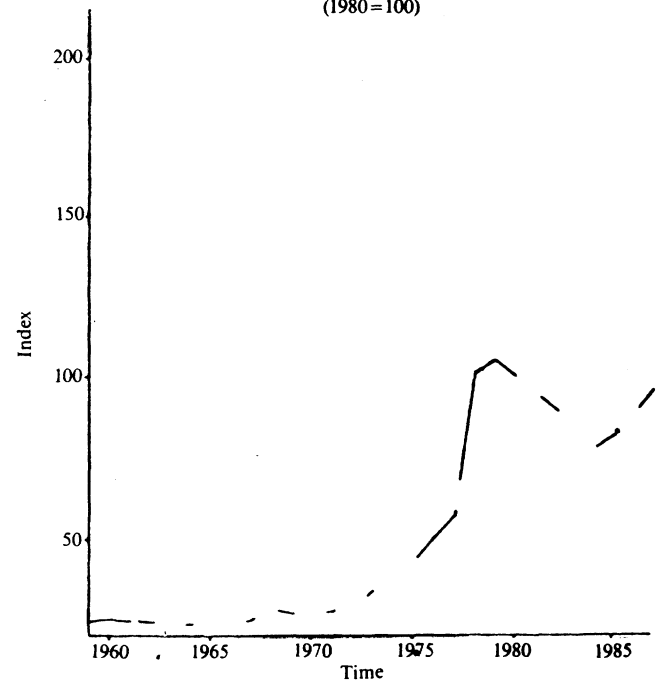CHART 7: REAL EXCHANGE RATE OF KENYA, 1960-1987
(1980 = 100)

CHART 8: REAL EXCHANGE RATE OF SRI LANKA, 1960-1987
(1980 = 100)

the industry in the early 1970s. The government carried out a land reform and many estates were nationalised, and began operating as public enterprises. These publicly owned companies were less concerned with profit maximisation than with other goals such as employment maintenance and ensuring foreign exchange earnings. Such a motivation would make downward adjustment of supply less likely should the price of tea fall in the international market—since tea provides almost a third of Sri Lankan foreign exchange earnings this would have serious effect on the balance of payments. In such a situation the government would be more interested in boosting exports to earn foreign exchange even if prices were unprofitable. Such factors could make for low supply elasticities in the industry.

India

India has long been the major player in the international tea market. While its share of the international tea market has declined from 49 per cent in 1949-51 to 26.6 per cent in 1981-83, it still remains the largest producer and exporter. A major difference as compared to the other countries in our study is that India is also an important consumer of tea. The domestic market has grown rapidly, and domestic absorption has been an important reason limiting the oversupply in the tea market. The importance of domestic consumer interests was brought home sharply by the events of 1984, when the Indian government curtailed tea exports in order to moderate domestic prices, thereby sending international prices skyrocketing, albeit for a very brief period. Further, the Indian exports are considerably more diversified than either Kenya or Sri Lanka, with tea contributing only 5.6 per cent of export earnings in 1981-83.

Estimation of an export supply function proved most troublesome in the Indian case. Despite trying a number of specifications, we were unable to find a satisfactory equation. In most estimations the coefficient on the producer price turned out to be negative. Nor is this explainable on theoretical grounds. The plantation sector consists mainly of profit maximising firms, and peasant production or the state sector are not relevant.

We are now in a position fo summarise the results of our study of the international tea market. The elasticity of supply does not seem to be very high in the international tea market. This seems to be the case particularly for the two largest producers, India and Sri Lanka. In the case of Kenya there is more evidence of supply responsiveness. Consequently, there does not seem to be very strong evidence in favour of the hypothesis that exchange rate policies have encouraged oversupply in the international tea market. Perhaps one might be able to argue that in the absence of exchange rate devaluations, the collapse of tea prices in the 1980s might have brought about supply adjustments in

the main producing countries, with some reduction in capacity. An evaluation of this hypothesis would however have to consider alternative policy scenarios in individual countries, something which is beyond the scope of this study.

Our study also suggests that demand factors may have played an important role in the tea market, in a way which is not often noted. It is clear that the main increase in the demand for tea in recent years has been from the developing countries. Whereas demand in the industrial countries has declined, consumption in the developing world has grown at 4.7 per cent per annum. This is also consistent with the low income elasticity of demand for tea at high levels of income, with demand being more responsive to income when income is low. One of the factors behind the slow growth of demand in the 1980s is therefore likely to be the stagnation in living standards, with absolute decline in some instances, in the developing world. Due to the debt crisis and the fall in price of other commodities, incomes have been squeezed, thus squeezing demand.

IV

Trends in Real Exchange Rates among Major Commodity Producers

Rather than follow up our study of the tea industry with another commodity study, we pursue a different tack in this section. We consider the behaviour of real exchange rates in countries which are important commodity producers. We take up those countries which produce an important share of the total value of commodities traded on the international market, and consider whether exchange rate policies have been such as to give rise to a tendency towards over-supply in these countries. More specifically, we base our choice of countries upon their shares in the total trade of the World Bank's 33 commodities. We exclude those countries which are mainly oil producers. The sample of countries chosen consists of Argentina, Brazil, Colombia, Malaysia, Indonesia and Thailand. Two other countries, Chile and (to a lesser extent) Philippines, are also important commodity producers. However, a study of the evolution of their real exchange rates has already been conducted by Wickham (1987), and we can draw upon his results to extend our discussion. Table 3 shows the share of these countries in total commodity trade; those countries which are significant oil exporters are marked with an asterisk.

To give an idea of the importance of these countries, we can consider their market shares of individual commodity exports. Argentina has 8.7 per cent of the maize market, 5.9 per cent of the groundnut market, over 5 per cent of the markets for wool, beef and wheat, and 61 per cent of the market for linseed oil. Brazil has 20 per cent of the coffee market, 12 per cent of the cocoa market, 25 per cent of the market for

iron ore, 13.5 per cent of bauxite, 13 per cent of manganese, 32 per cent of sisal, 10 per cent of tobacco, and 6 per cent of sugar. Indonesia has 25 per cent of the rubber market and 13 per cent of tin. Malaysia has 70 per cent of palm oil, 47 per cent of rubber and 29 per cent of tin. Thailand has 22 per cent of rice, 15 per cent of rubber and 13 per cent of tin. Philippines has 27 per cent of copra, Chile has 22 per cent of copper and 25 per cent of fishmeal, and Colombia has 16 per cent of the coffee market.[11]

Since these countries are the most important players in international commodity markets, supply conditions in aggregate are likely to be dominated by their internal economic developments. Charts 13-18 show our calculations for real exchange rates in these countries between 1978 and 1987. The three Latin American countries have undergone substantial real exchange rate devaluations in this period. The trend has not been uniform, as one might expect given the high inflation rates which have characterised these economies, but the overall movement of the real exchange has been upward. The magnitude of real devaluations has been particularly great in Argentina and Colombia. Turning to South-East Asia, Indonesia has undertaken a major devaluation. The experience of both Malaysia and Thailand has been rather different. Both these countries experienced real appreciations in the early eighties, but this has been reversed by depreciations since. Their exchange rates do not show any significant trend over the entire period as a whole. In addition, Wickham's analysis (1987) shows that Chile and Philippines have appreciated in real terms in the recent period.

In terms of the importance of countries in the commodity markets, it therefore seems that exchange rate depreciations have been significant. In our sample, three important countries (Argentina, Brazil and Indonesia) have had big devaluations, and so has Colombia. It is difficult to argue conclusively, on the basis of this evidence, that such policies have been primarily responsible for over-supply in commodity markets. However, it is clear that such exchange rate changes aggravate the disequilibrium in commodity markets, by preventing supply

TABLE 3: SHARES OF SELECTED COUNTRIES IN TOTAL COMMODITY EXPORTS OF THE WORLD

(Per cent)

Country	Average Share (1981-83)
Argentina	0.8
Brazil	1.5
Chile	0.6
Colombia	0.5
Indonesia*	3.4
Malaysia*	2.2
Philippines	0.5
Thailand	0.7

* Significant oil exporters.
Source: United Nations.

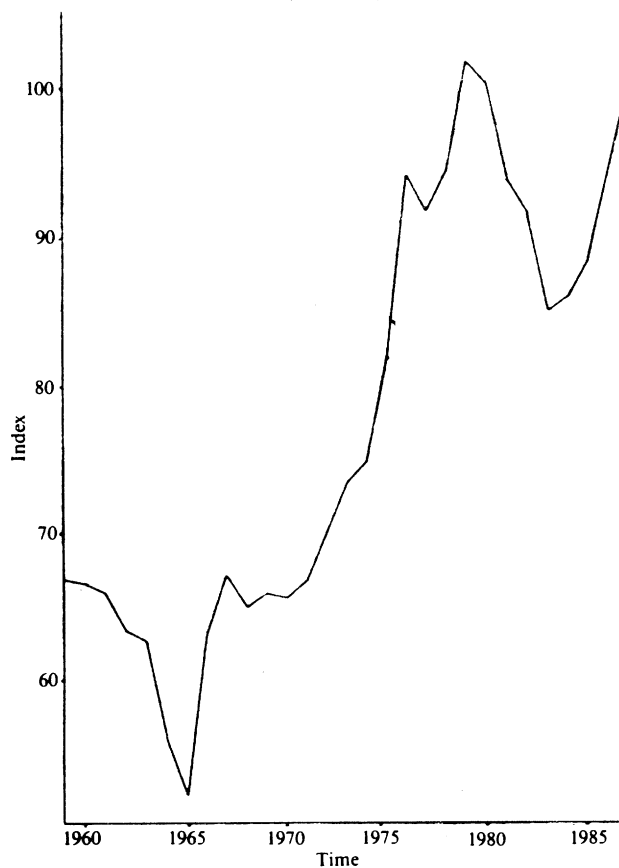CHART 9: REAL EXCHANGE RATE OF INDIA, 1960-1987
(1980 = 100)
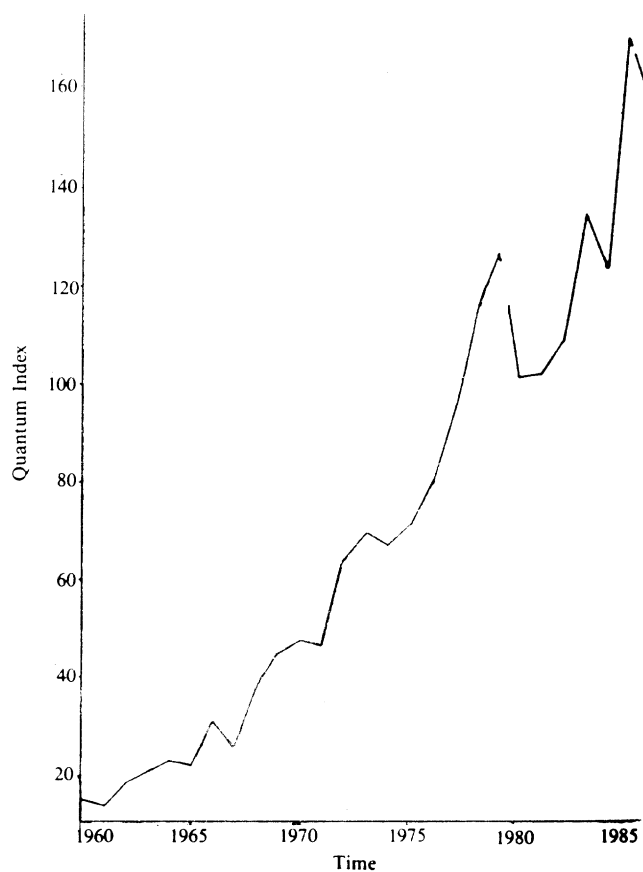
CHART 10: QUANTITY OF TEA EXPORTS, KENYA, 1960-1987
(1980 = 100)

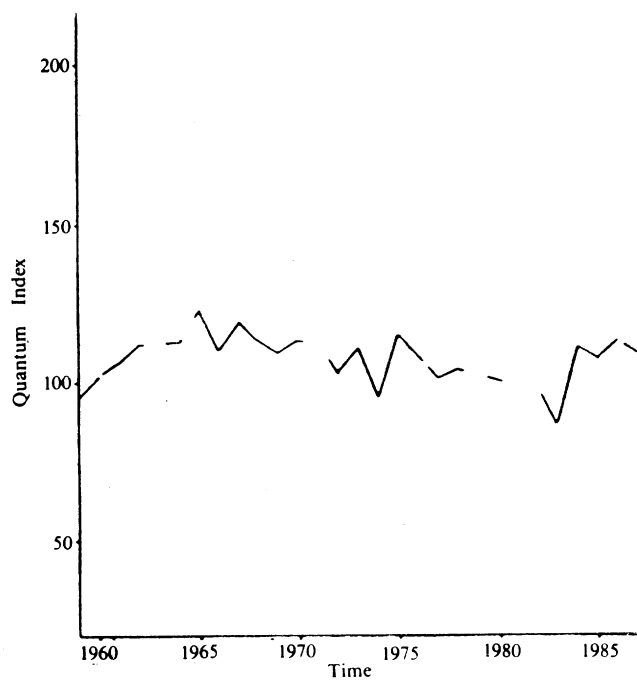CHART 11: QUANTITY OF TEA EXPORTS, SRI LANKA, 1960-1987
(1980 = 100)
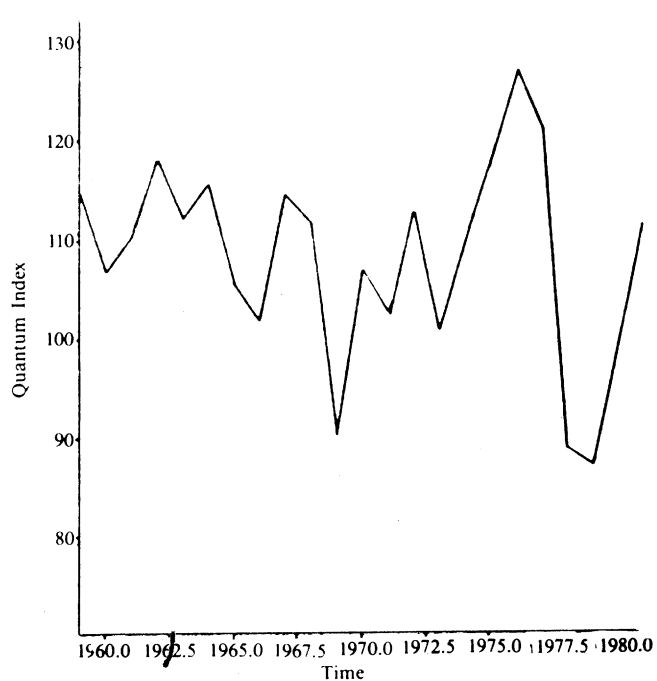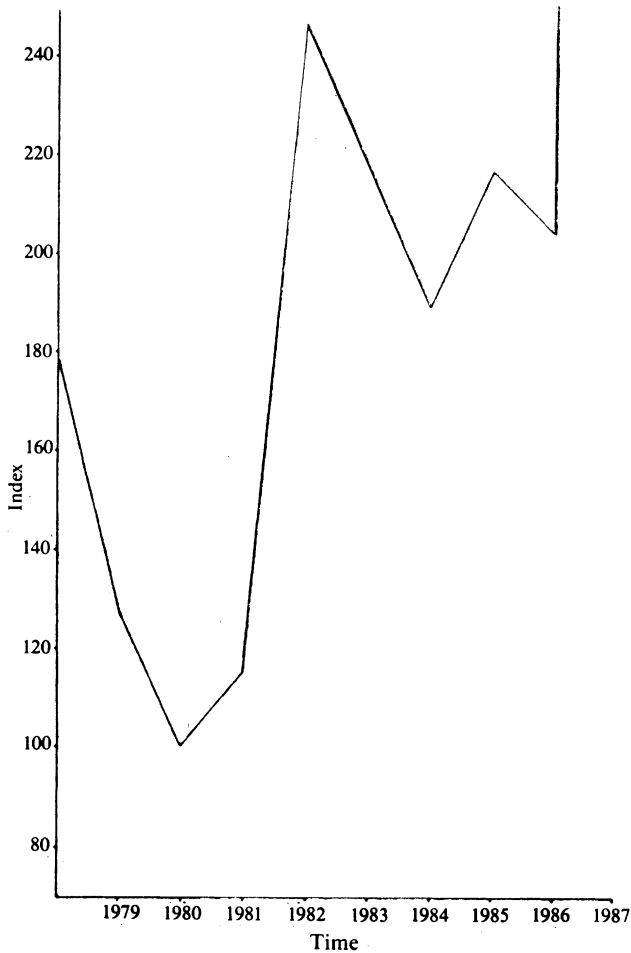
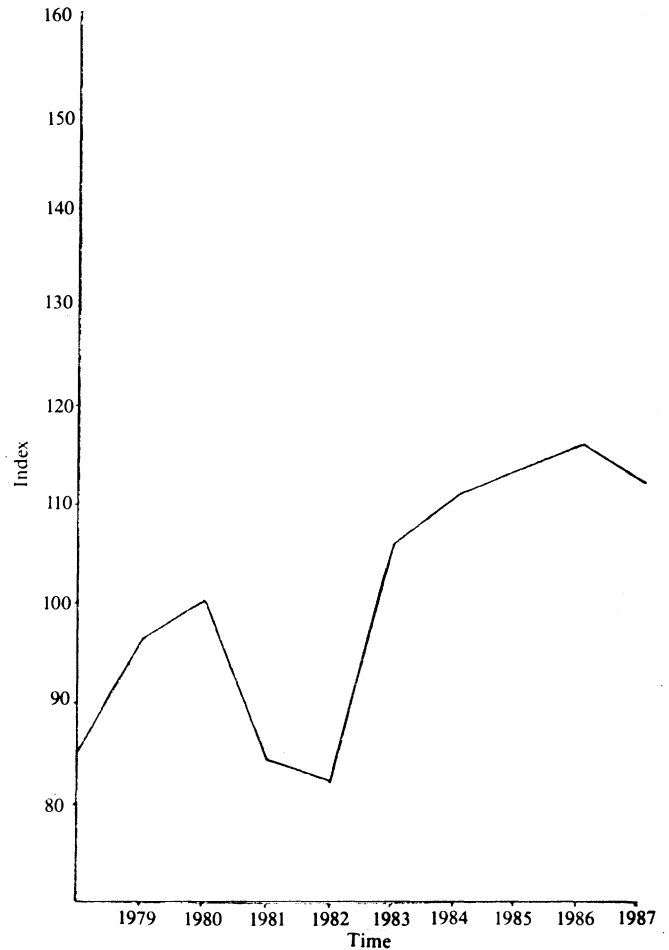CHART 12: QUANTITY OF TEA EXPORTS, INDIA, 1960-1987
(1980 = 100)

reductions. The recent weakness of commodity prices can perhaps be explained in such terms. With many countries facing a continuing debt burden and balance of payments difficulties, and adopting policies to at least retain if not increase export shares, adjustments in supply will be further delayed.

In addition, there is another factor making for excess supply. Metals and minerals are often produced by para-statal organisations, whose objectives are closely linked to those of national governments. Even in the absence of exchange rate depreciations, such firms can pursue goals such as maximising export revenue without a concern only about profits. Anecdotal evidence exists for such behaviour, for example, in the case of Chilean copper exports.[12]

V

Interdependence, International Institutions and Economic Policy

Commodity markets can, in some respects be characterised as a situation of "competition among the few". Although the individual producers of a commodity like tea may be atomistic, with no market power, the countries concerned often have a large share of the market. Since the incentives affecting the individual producer are determined at the level of the government, economic policy clearly must take into account the 'largeness' of the country concerned. This in itself is well established and uncontroversial. Traditional trade theory argues for the need for an optimum export tax in the case where the country is a major supplier on the world market, and where the export product is produced competitively (see, for example, Corden, 1974 for a discussion). However, not much attention has been focused upon the problem of interdependence, when producers are few, and where each's policy exerts a powerful influence upon the other's export earnings.[13] In this section we propose to take into account some implications of this interdependence, and to consider their implications for exchange rate and export policy.

Consider now an individual country, deciding to provide the optimum level of export incentives from its point of view. The higher the level of export incentives for the primary product, the larger its supply, and hence lower the international price. From the individual country's point of view, the optimum outcome is such that it balances the cost to itself of a lower price against the benefit of additional sales. It need not take into account the effect of this lower price upon other producers. In other words, if each country chooses the export incentives according to its own interest, the resulting outcome is strictly inferior for all exporting countries concerned. If countries could co-operate, and provide lower incentives to their primary producers, they could all do better.

While this argument is perfectly true, it may well be objected that the countries concerned will not co-operate, since such co-operation is fundamentally unstable. Each country will be moved by its own self-interest to break any co-operative agreement by expanding incentives for its own exporters. This argument however fails to take account of the fact that countries have typically not provided high levels of incentives for their primary producers. International institutions such as the IMF or the World Bank have shown us that many countries often follow policies which are not designed to encourage export production, and have argued that a reversal of such policies is necessary for an improvement in their economic performance. This suggests that political pressure

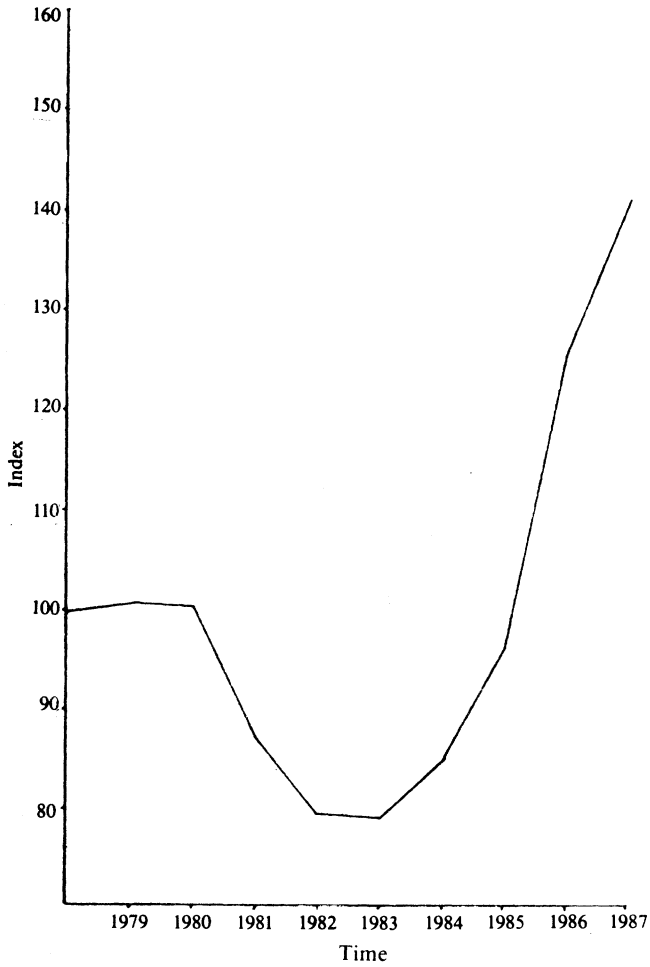CHART 15: REAL EXCHANGE RATE OF COLOMBIA, 1978-1987
(1980=100)

CHART 16: REAL EXCHANGE RATE OF INDONESIA, 1978-1987
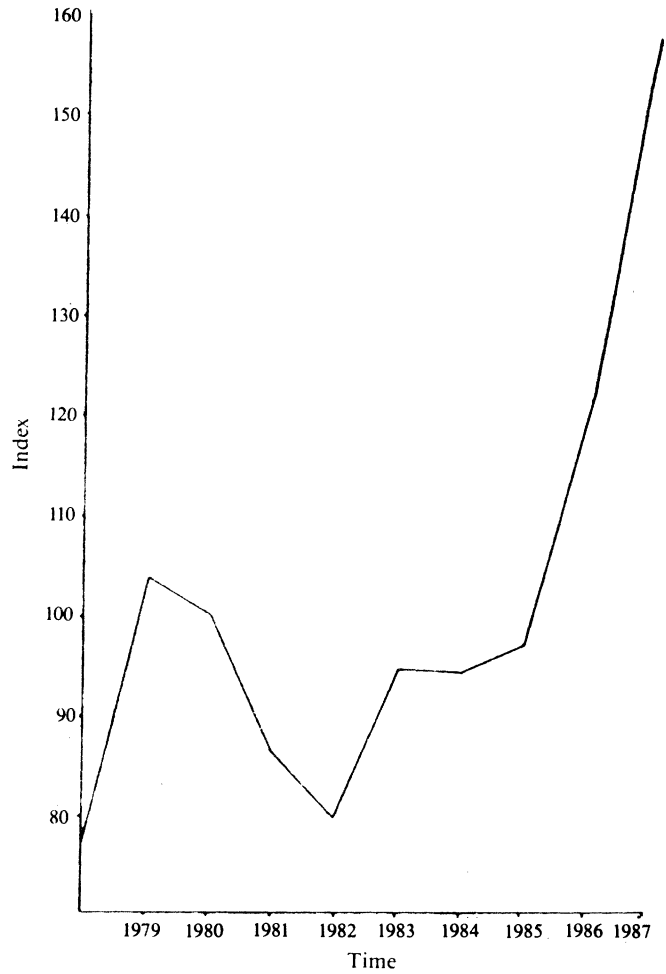(1980=100)

CHART 17: REAL EXCHANGE RATE OF MALAYSIA, 1978-1987
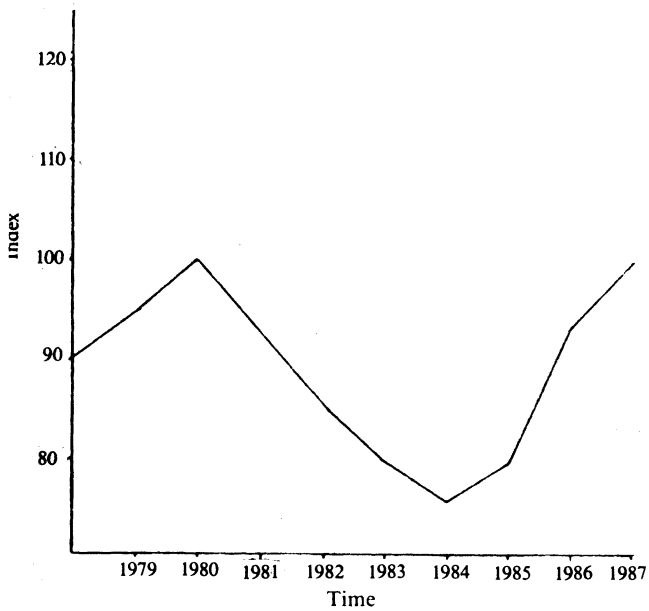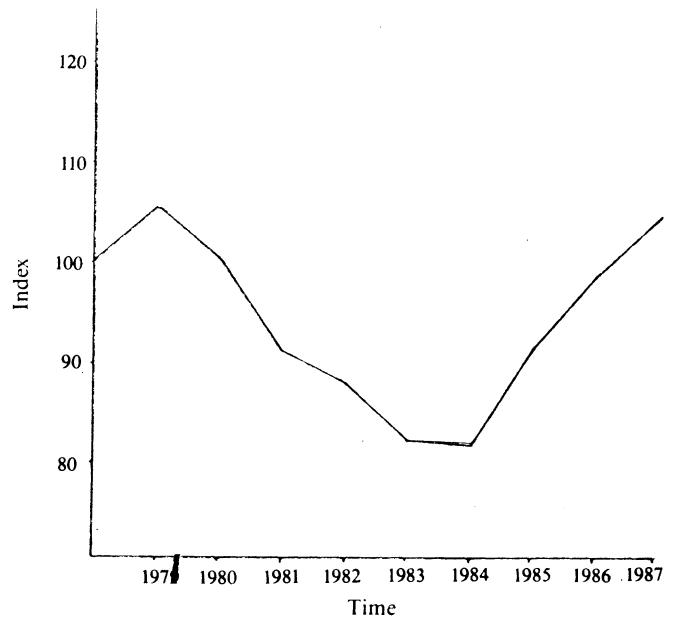(1980=100)

CHART 18: REAL EXCHANGE RATE OF THAILAND, 1978-1987
(1980=100)

groups exist, which would make for a lower degree of export orientation. The role of international organisations has often been to exert pressure for an export orientation in economic policy.

The arguments presented here suggest that an international organisation which is concerned about the export performance and balance of payments of a group of countries should take the interdependence between them into account. Even if it be the case that it would be optimal (in welfare terms) for each country to maximise its export earnings, the optimal policy suggested by the organisation should be different. More specifically, the countries concerned can maximise export revenue by each individual country not maximising its own revenue. On the other hand, should each country try to maximise its own export earnings, the net effect would be lower export revenue.

This also suggests that an evaluation of the policy recommendations of international organisations should take into account the effects of these policies upon all the countries which are affected by the policy, rather than merely the specific country to which the policy is addressed. That such a perspective is important is in fact suggested by Camdessus, Managing Director of the Fund, who declared that the objective was "to focus the attention of each country on the consequences of its actions for the others and for the rest of the world, and to help to evaluate the consistency of national policies with objectives for the group as a whole". This also implies that the standards of assessment of Fund stabilisation policies must be different. It is also usual, in discussing policy alternatives, to compare countries who have adopted different policies, and to see which one has done best. This procedure is not very useful, since the country which adopts a policy of export promotion may do better than one which does not. However, both countries may have done better had neither undertaken such policies.

In conclusion, one may suggest that policies in developing countries should be such as they do not aggravate the fundamental over-supply in commodity markets, and enable a downward adjustment of supply potential. These adjustments are difficult in a situation of chronic debt and balance of payments difficulties, when countries are attempting willy-nilly to expand their exports. One alternative would be for such countries to expand manufactured exports without stimulating commodity supplies. For instance, a policy which could achieve such a goal could be a devaluation coupled with a tax upon primary exports. This would permit import substitution and export promotion in manufactures without increasing commodity supplies. Politically however, such taxes may be difficult to impose in conditions where real commodity prices have seen such sharp declines, and where primary producers have seen sharp cuts in living standards. Another alternative could be the promotion of manufactured export and import

substitutes specifically, via tariffs and export subsidies. Although such a policy is equivalent in economic terms to one of taxing primary exports while resorting to a devaluation, it may be politically less difficult to impose. Diversification into manufactured exports may have its own problems (including the possibility that the fallacy of composition operates here as well), but these are likely to be less severe than the outlook in commodity markets unless fundamental supply adjustments take place in the near future.

Notes

[I am grateful to David Bevan, Paul Collier, Bunt Ghosh, Christopher Gilbert and Ganeshan Wignaraja for discussions. My special debt is to Hans Singer for his numerous suggestions and detailed comments on earlier versions of this paper, and to S K Rao for his comments and encouragement. Needless to add, I alone am responsible for the views expressed here and any errors.]

1 See Ghosh et al (1987) for an evaluation of commodity price stabilisation.
2 See Dornbusch (1985) for a demonstration of the close relation between developed country growth and real commodity prices.
3 Singer (1988) argues that since actual prices have clearly fallen short of forecasts, this should constitute grounds for debt relief to borrowers whose debts were incurred on the basis of such forecasts.
4 The estimated models are developed from the general to parsimonious strategy suggested by Sargan and Hendry, and have an error-correction representation.
5 Of course it is possible that there might be some other explanation for the apparent large effect of the dollar appreciation upon commodity prices. The early 1980s were a turbulent time for the world economy, and other factors may have played a role in the collapse of commodity prices.
6 Chang makes a number of criticisms of Gilbert's methodology: firstly, he questions Gilbert's error correction specification and criticises the regression of the *change* in commodity prices upon (among other things) the *level* of debt service, and argues that higher level of debt service will result in lower commodity prices rather than falling commodity prices. This criticism is clearly misplaced, since, in the error correction specification, the change in the dependent variable is related to the deviation from the equilibrium relationship between the levels of the dependent and explanatory variables. The equilibrium relationship is clearly specified in levels, so that the change in commodity price will be zero once equilibrium is established between the level of commodity prices and the debt service ratio. Chang conducts an alternative estimation which purports to show that the debt service ratio has no significant effect upon commodity prices. He estimates an equation in levels, which does not include the lagged dependent variable among the regressors. This seems dangerous given the importance of lagged adjustment in export supplies, and not surprisingly he finds evidence of positive serial correlation of the residuals, indicating dynamic misspecification. A second estimation is performed where the first difference of the commodi-

ty price index is regressed upon a distributed lag of first differences of other explanatory variables and upon the *level* of the debt service ratio. This procedure is misplaced since by differencing one loses valuable information about the long-run solution (see Granger, 1986), and in addition it makes no sense to estimate a relationship between variables of different orders of integration (such as the debt service ratio and the change in commodity prices). In any case, Chang's equations have a higher standard error than those estimated by Gilbert, and often have an elasticity with respect to the dollar exchange rate greater than unity.
7 The figure is for 1980 and is taken from the United Nations Yearbook of International Trade Statistics.
8 Kenya, India and Sri Lanka are examined in detail. The main country which is excluded is China, and this is because the effects of exchange rate policy will be quite different in a planned economy.
9 Note that this may not be strictly correct if there is a divergence between trends in consumer prices and input prices. Maizels (1986) makes this point particularly in the context of wages, if wages rise less than output prices, as is often the case in devaluations, the incentives to export may be greater than suggested by our index of the real exchange rate.
10 For other attempts to model export supply see Goldstein and Khan (1978) or Hussain and Thirlwall (1984). Bond (1983) and Adams and Behrman (1982) contain some recent estimates of supply elasticities in commodity markets.
11 All figures are based on an average of 1981-83. Two important commodity exporters in the developing world which are not included here are China and Cuba, since the implications of exchange rate changes are likely to be quite different in economies where market allocation is limited.
12 See Gilbert and Perlman (1987) for more evidence on such supply behaviour.
13 A few writers have discussed the "fallacy of composition" in the policy of export promotion in primary commodities; see Maizels (1986) or Overseas Development Institute (1988) for instance. This problem has also been discussed in the context of manufacturing exports by developing countries.

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SUNDARAM FINANCE LIMITED
MADRAS 600 002
FORM IVA
(See Rule 4A(1))

NOTICE

It is hereby notified for the information of the public that SUNDARAM FINANCE LIMITED proposes to make an application to Central Government in the Department of Company Affairs, New Delhi, under sub-section (4) of Section 23 of the Monopolies and Restrictive Trade Practices Act, 1969, for approval to the take over of the whole or part of SUNDARAM FINANCE SERVICES LIMITED.

Brief particulars of the proposal are as under:

(i)	Name and address of the applicant	: SUNDARAM FINANCE LIMITED (SF) 21 Patullos Road, Madras 600 002
(ii)	Name and address of the undertaking the whole or part of which is proposed to be taken over and the manner of take over, i.e. by acquisition of shares, acquisition of control or management, whether by the acquisition of ownership of the undertaking or under any mortgage, lease or licence or under any agreement or other arrangement	: SUNDARAM FINANCE SERVICES LIMITED (SFSL) 21 Patullos Road Madras 600 002 Acquisition by SF to the extent of 51% of SFSL's proposed equity of Rs. 2 cr.
(iii)	Management structure of the applicant	: A public limited company managed by the Managing/Joint Managing Directors under the supervision and control of the Board of Directors

(iv) Capital structure of

(a) The applicant : **SUNDARAM FINANCE LIMITED**

Authorised Capital

250 lakhs Equity Shares of Rs. 10/- each—Rs. 25 cr.

Issued, Subscribed & Paid-up Capital

1,20,00,000 Equity Shares of Rs. 10/- each—Rs. 12 cr.

(b) The undertaking proposed to be taken over : **SUNDARAM FINANCE SERVICES LIMITED**

Authorised Capital

1,00,00,000 Equity Shares of Rs. 10/- each—Rs. 10 cr.

Paid-up Capital

70 Equity Shares of Rs. 10/- each—Rs. 700/- being shares taken up by signatories to the Memorandum of Association

(v)	Line(s) of business of the undertaking which will or is likely to emerge as a result of the proposed take over	: Financial services—viz. corporate finance, investment/merchant banking, portfolio management/investment counselling, stock and share broking, hire purchase, leasing, factoring, venture capital, operation of mutual funds etc.
(vi)	Consideration for the take over	: Acquisition—10,20,000 equity shares of Rs. 10/- each (including 70 equity shares held by the subscribers to the Memorandum) amounting to Rs. 1,02,00,000/-
(vii)	Scheme of finance indicating the source(s) of finance for the proposed take over	: Entirely from own funds

2. Any person interested in the matter may make a representation to Secretary, Department of Company Affairs, Government of India, Shastri Bhavan, Dr Rajendra Prasad Road, New Delhi, within 14 days from the date of publication of this Notice intimating his views on the proposal and indicating the nature of his interest therein.

Madras
9th May, 1991.

for SUNDARAM FINANCE LIMITED
S VENKATESAN
SECRETARY