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The Small-Country Assumption and the
Theoretical Analysis of Devaluation

ABSTRACT

This paper takes the small-country assumption to its logical extreme by employing a trade model with an absence of non-tradable goods. The assumption of no nontradables emphasizes the implications of changes in the real wage as a result of devaluation. The paper also pays attention to supply as a distinct policy problem in the context of a small, open country attempting to stabilize its economy. The relevance of the assumption of endogenous terms-of-trade changes as a result of devaluation is also discussed.

INTRODUCTION

Analyses of the effects of devaluation on the trade balance make two assumptions about the behaviour of prices. Either it is assumed that the domestic prices of tradable goods are determined domestically or that they are determined in the international market. The assumption of domestically determined prices may be associated with the elasticities approach to the balance of payments although it has been employed in more modern analyses (See Dornbusch [8] and McCallum and Vines [15]). In the Caribbean, the assumption that, as small countries, their economies are price-takers is standard. Associated with this assumption is an emphasis on the role of devaluation as an instrument for the redistribution of income. This paper explores the implications of a formal integration of the small-country assumption into the analysis of devaluation. In particular, it takes the assumption of smallness to its logical extreme by assuming the absence of non-tradables. This assumption is justified by the smallness that is typical of Caribbean economies and the high level of openness to international influences that is an essential

feature. The analysis gives emphasis to the central role and implications of changes in the real wage in determining the effects of devaluation and establishes supply as a distinct policy problem that requires special attention. In the final analysis, support is found at the theoretical level, for a certain scepticism that devaluation, *per se*, will stabilize the economy and it is argued that in the long-run the success of devaluation is linked to measures to improve the climate of production.

While the small-country assumption is the favoured one in the context of the Caribbean, it is recognized that there will always be an important relevance for analysis based on the assumption that prices are domestically determined. Some attention is addressed in this paper to factors which suggest the relevance of this assumption, noting also the instances in which it can be misleading.

There are two sets of ground rules that must be established at the outset. Firstly, this paper will be concerned with the trade balance and not the whole balance of payments. Improvement in the trade balance may go a long way toward resolving the problems of overall external balance and may indicate a move in the direction of a more favourable and sustainable economic structure. In the Caribbean context, there is a particular interest in including the travel account, which reflects the performance of tourism, with the trade balance because tourism resembles a traditional commodity export in terms of its contribution to the balance of payments.

The importance of distinguishing the effects on the trade balance from those affecting the balance of payments as a whole relates to the need to isolate the effects of devaluation from those of net capital inflows which may accompany devaluation episodes. Casual observation with respect to Jamaica, for example, over the period 1975-84 suggests a strong link between net capital receipts and the performance of the balance of payments (See table 1). In the only two years, 1982 and 1984, when surpluses are recorded in the balance of payments, net capital receipts are exceptionally high, US\$465.6 million and US\$482.7 million respectively. This does not mean that devaluation does not affect the trade

TABLE 1. SELECTED SUMMARY INDICATORS WITH RESPECT TO THE JAMAICAN BALANCE OF PAYMENTS, 1975-1984

Year	Balance of Goods and Services	Changes in Reserves (US\$) million	Net Capital Receipts
1976	-308.6	180.9	126.7
1977	-54.6	30.5	34.3
1978	-112.4	165.8	-78.5
1979	222.6	137.4	-10.2
1980	-257.1	57.8	107.1
1981	-461.1	95.6	225.4
1982	-538.3	-86.0	465.6
1983	-582.0	289.1	190.5
1984	-410.4	-225.7	482.7

Sources: Bank of Jamaica, *Balance of Payments of Jamaica 1985* (Jamaica: Bank of Jamaica, 1986); Bank of Jamaica, *The Central Bank and the Jamaican Economy 1960-1985* (Jamaica: Bank of Jamaica, 1985).

balance. However, these figures help to reinforce scepticism about the effectiveness of devaluation on the external accounts and underline the view that apparent improvements in the balance of payments during a stabilization process may typically be attributable to net capital receipts rather than devaluation.

The second initial point to be established is that the concern here is with the behaviour of the trade balance in terms of *foreign* currency instead of domestic currency and, for convenience, is referred to as the *foreign balance*.¹ Among the motivating factors devaluation is the need to generate enough foreign exchange to meet foreign debt obligations and to obtain foreign inputs into the development process and therefore it is the foreign balance that matters. It is generally accepted that it is of material importance whether the analysis is done in terms of the foreign or domestic balance and that a reference to the domestic balance might actually be misleading. The importance of the distinction is underlined when, as is usually the case, devaluation is under-

taken from a position of trade imbalance. It is demonstrated, for example, that when the trade balance is in deficit, 'it is possible for devaluation to have a favourable effect on the foreign exchange balance, but an unfavourable effect on the domestic currency balance'. [Hirschman 13, p. 52]. An important implication is that even though the foreign balance may improve as a result of a devaluation, the pressures against the achievement of balance in the internal management of the economy might actually be aggravated.

The primary objective of this paper is to explore some methodological questions associated with the analysis of devaluation. As a point of departure, it briefly outlines the workings of the conventional trade model in the second section. The third section introduces the model based on the strong assumption of openness and the fourth focuses on the real wage implications of such a model. The fifth section provides a brief exploration of the relevance of approaches which emphasize price elasticities. Finally, the sixth section concludes with some suggestions of areas for further empirical research.

THE ORTHODOX SMALL-COUNTRY ANALYSIS

It is reasonable to argue that, as small countries, Caribbean economies behave as price-takers in the international market. Their producers are assumed to be faced with a situation where they can sell all their output at the prevailing international price and have nothing to gain by reducing their prices. This behaviour does not affect the price determination of traded goods only but of all *tradable goods*, including goods which are not traded but are substitutes for traded goods. Import substitutes are prime example of goods that are not traded but qualify as tradable goods.

In the small-country approach, the terms of trade are given since the prices of both importables and exportables are given by the international market. The fixed terms of trade may be represented by the expression:

$$P_x/P_m = P^*_x/P^*_m = c,$$

where c is a constant, P_x stands for the price of exports, P_m for the price of imports and symbols with the asterisk are

foreign exchange prices.

The assumption of fixed price ratios applies to all categories of tradable goods. Consequently, a devaluation causes the prices of imports *and* exports in domestic currency to rise *pari passu* with the change in the exchange rate. This change in prices affects all goods that are substitutes of traded goods, whether they are themselves traded or not and so it can be expected that the price increases are widely felt in the domestic economy. Indeed, the condition that prices are linked to international prices serves to provide a definition for tradable goods.

The condition that the prices of tradable goods are given by the international market implies the assumption of international uniformity in prices. This condition, referred to as the 'law of one price', abstracts from the existence of transport costs and trade restrictions or assumes that disparities between prices due to transport costs and such factors are unaffected by changes in exchange rates. It also implies a world of many small countries competing in the international market and producing a small range of homogeneous goods. The basis for the law of one price is commodity arbitrage which would prevent any persistent divergence between prices of tradable products in one country and those of other countries.

The law of one price is a convenient feature of trade models because it allows us to analyze the effects of devaluation in isolation from those of exogenous changes in the terms of trade. Since price ratios among tradable goods are given, this allows us to treat these goods as one composite good. By contrast, there are the non-tradable goods the prices of which, by definition, are domestically determined, independently of the international market. These prices may be determined by demand and supply or by a mark-up rule or by some other process but their essential characteristic is that they bear no systematic relationship to international prices. Prime examples of non-tradable products are services which, by nature, tend to be geared toward the domestic market.² Trade models incorporating these two categories of products, tradables and non-tradables, typically revolve around changes

in their relative prices.

The validity of the law of one price has not gone unchallenged. It has been observed that 'in reality the law of one price is flagrantly and systematically violated by empirical data.' Isard [14] presents evidence that 'exchange rate changes substantially alter the relative dollar-equivalent prices of the most narrowly defined domestic and foreign manufactured goods for which prices can readily be matched. Moreover, these relative price effects seem to persist for at least several years and cannot be shrugged off as transitory' [Isard 14, p. 942].

In spite of Isard's evidence, it is arguable that the law of one price may be applicable in the context of Caribbean countries. Firstly, Isard's evidence is based on investigation of the USA, Japan, Germany and Canada. These countries being large, it is not surprising that their domestic prices may govern the determination of the prices of their tradables to a considerable extent. It is arguable that this would not be the case for small countries such as those of the Caribbean. Secondly, empirical evidence supports the law of one price when applied to primary products even in the case of large countries. This is probably attributable to the fact that primary products tend to be homogeneous, irrespective of their place of origin. The evidence against the law of one price is based on investigations of manufactured goods where the scope for product differentiation is stronger. Primary products constitute a substantial portion of the output of Caribbean countries providing some basis for the validity of the law of one price.

THE STRONG ASSUMPTION OF OPENNESS

In order to sharpen the focus of the small-country analysis, this paper makes the extreme assumption of the absence of non-tradables. Changes in the domestic price level will, therefore, be assumed to be determined by developments in the international market. This is essentially the opposite extreme to the closed economy model which has been widely employed in economic analysis. This is considered not to be far-fetched in the Caribbean context where economies

are so small and, moreover, are so open to the influences of the international economy, especially as a result of their proximity and virtual assimilation into the US economy. This assumption leads to the conclusion that the effects of devaluation in terms of disabsorption and the redistribution of income are particularly strong in our economies.

It may at first appear that our assumptions about openness are extreme but on closer examination substantial grounds can be found in its defence. The first consideration that comes to mind in defence of a strong assumption of openness is the high importance of trade in the typical small country. In the case of Jamaica, for example, imports have exceeded 50 per cent of GNP in 1981 and 1984 and have usually been in excess of 40 per cent. Exports and imports added together have been almost 90 per cent of GNP in some years. It is to be expected that with trade having such a preponderant role in the economy, the formation of prices domestically would be heavily influenced by international prices. An immediate source for the transmission of international price changes to the domestic economy is imports of intermediate goods which constitute about 50 per cent of total imports in Jamaica.

It may be argued, in addition, that even where goods are not currently traded internationally, their price determination is influenced by international prices. It has been pointed out that even if a good is not traded, its factor inputs have to be attracted from the production of traded goods and therefore this is a channel for the price formation of non-traded goods to be influenced by international developments. Where a good employs an 'internationally immobile specific factor such as climate or land of a specific quality', it is argued that in most cases the product is itself tradable [Frenkel and Johnson [11], p. 28]. Frenkel and Johnson present the example of coal mines which employ a specific natural resource but produce coal, which is tradable. These examples are important in demonstrating that even though many goods are not traded, it is difficult to conceptualize examples of goods, the price determination of which can be entirely divorced from the international market.

It is significant that although Frenkel and Johnson are basing their comments on the small-country assumption, they are not thinking particularly of economies as small and open as Caribbean states and other mini-states. The point however applies *a fortiori* to such countries.

It is usually assumed that non-tradables consist primarily of services e.g. haircuts, medical services. Services are considered typical non-tradables simply because they are the most obvious examples of items which characteristically must be exchanged at the location where they are produced. For a number of reasons however, even this is not as significant a factor as usually assumed. Firstly, in the small countries of the Caribbean, tourism is a principal industry, sometimes the most pervasive. This means that the most pervasive service in many cases is tradable. Furthermore, with the growing technological sophistication in areas such as communications, other services are becoming highly tradable.

Geography is another factor and in this context smallness need not be a consideration. Countries that are landlocked and have good communication links with their neighbours will find their prices being significantly related to international prices irrespective of size. A good example is Canada where superficial observation suggests that, but for government intervention, one would be hard put to find non-tradable activities. This is undoubtedly true also of Mexico and Central American countries. Caribbean countries are mostly islands but it is arguable that their good communications and close contacts with the North American continent and elsewhere outweigh any tendencies to insularity. This is, of course, abstracting from government intervention which could have the effect of creating sheltered sectors.

The strong assumption of openness finds support in the Caribbean literature. There have been several studies, some of which are reflected in Bourne [6], which have established the strength of the influence of international prices on price levels in the Caribbean. These studies tend to focus on changes in import prices and pay less emphasis to an inherent tendency for export prices to be influenced by international prices. The most compelling evidence of the dominance of the 'law

of one price' over the domestic economy is provided by Francis [10] looking at monetary policy in the Bahamas. On the basis of an empirical study conducted by the IMF, it is found that 'inflation in the Bahamas is almost solely imported' [Francis 10, p. 116]. The IMF study found that a change in the consumer goods component of the US producer price index (US being the main trading partner of the Bahamas) resulted in a roughly proportional increase in the Bahamian CPI with a 15-month lag. In addition, it was found that 'indigenous factors appear to have very little impact on inflation in the Bahamas' [Francis 10, p. 115]. This is strong support for the present model since it implies that on average, the prices of all goods *and services* reflected in the CPI are influenced by international price changes resulting in a change in the index of an equal percentage. The similarities among the Caribbean countries are strong enough for it to be assumed that this tendency applies widely in the region.

Further support for the strong assumption of openness may be adduced from observations made with respect to the Guyanese economy. It has been observed that

the Guyana dollar is effectively all but de-valored as the principal measure, standard and store of value has become the US dollar. The bulk of the items denominated in local dollars at their places of sale have had their prices determined in relation to the operating black market rates for foreign currency. [Thomas 17, p. 28].

While it may not be accurate to say that other currencies in the Caribbean have been de-valored, the denomination of prices in terms of foreign currency is widespread throughout the region.

The exclusion of non-tradables has a practical advantage in that it obviates the need, in empirical studies, to obtain data on non-tradables which are typically not readily available.

THE SMALL-COUNTRY ASSUMPTION AND REAL WAGES

The analysis of devaluation must revolve around some set of relative prices in order that, they may exert real effects. In the conventional analysis, the model revolves around

changes in the price ratio between tradable and non-tradable goods. Devaluation raises the domestic currency prices of tradable goods and since the prices of non-tradables are not affected initially, the price ratio of tradable to non-tradable goods is increased. Assuming that the nominal wage is constant, the rate of profit is increased in the tradable-goods sector relative to that in the sector producing non-tradable goods. Consequently, investment is attracted towards tradables. This development is favourable to the trade balance because it reduces the excess domestic demand for tradables, releasing more goods for export, and also reduces the excess supply of non-tradable goods which is another aspect identified with a deficit. It is to be noted, however, that the increase in demand for non-tradables might raise their price level tending to moderate the shift in demand toward them. The extreme case could be where the price ratio moves in favour of non-tradables and reverses the tendency toward an improving trade balance.

In the absence of non-tradables, it is necessary to provide a new price relationship to replace the traditional one of the ratio of prices of tradables to non-tradables. We suggest the ratio of the nominal wage to the domestic price of goods and services (i.e. the real wage) as the most suitable and relevant price relationship. The real wage is a central variable in the analysis of many economic issues and devaluation is certainly one of them.

Given the assumption that all goods and services are tradables, a devaluation causes domestic prices to rise in proportion to the change in the exchange rate. If we assume that the nominal wage is constant, then the real wage will deteriorate on a one-to-one basis with the change in exchange rate. The relevance of the assumption of a fixed wage is reflected in the preoccupation with 'wage guidelines' associated with devaluation and stabilization efforts in general. To the extent that the nominal wage is allowed to rise, the change in the real wage is reduced and the basis for real effects promoting improvements in the trade balance and output growth is weakened. Our ability to predict the response of the real wage is critical to the analysis of the effects of devaluation on the trade balance and output growth.

The reduction in the real wage occasioned by a devaluation is supposed to exert its effects in two ways. Firstly, it is supposed to make production more profitable and thus contribute to an expansion of exports. Secondly, it is supposed to lead to a reduction in the consumption of workers, leading to a general decline in imports. Assuming that capitalists have a lower propensity to consume than workers, these effects should combine to give an improvement in the trade balance. If these effects work the improvement in the trade balance should be very significant since the disabsorption of workers should release a larger proportion of output for export. If production does not increase, the trade balance might still improve as a consequence of the disabsorption of workers. However, in the context of our small economies and given the high magnitudes of typical imbalances, it is unlikely that there is enough room for disabsorption to allow the trade balance to improve.

Given the central role of the real wage in the small-economy model, it is evident that competitiveness is a matter of *wage* competitiveness rather than competitiveness in international prices over which we have no control. Devaluation emerges as an instrument for reducing the real wage in circumstances where, as is usually the case, a reduction in the nominal wage through alternative policy instruments is not feasible. The critical importance of real-wage reduction is underlined by Corden who observes that 'if there is indeed this real-wage resistance, it may not be possible to attain both internal and external balance'. [Corden 7, p. 31 and Dorjbusch 8, chapter 4]. The implication is that the real wage prevailing before devaluation is too high to sustain external and internal balance. This is a controversial issue in the context of countries where the standard of living is unacceptably low.

In light of the redistributive aspect, policy-makers contemplating devaluation need to be satisfied that the increase in the profit rate will bring forth capitalist responses that are favourable to the balance of payments. Considerable scepticism exists regarding the capitalists' responses in the Caribbean. 'Perverse' production responses have been observed as

capitalists remit their additional earnings abroad instead of expanding investment. With a rise in private capital outflows, it is possible for any improvement in the trade balance resulting from devaluation to be accompanied by a deterioration in the balance of payments in the absence of net capital inflows.

This process brings into focus the critical question of the reaction of capitalists to devaluation and to the increase in the rate of profit. The critical question that arises is, can we depend on the capitalists to expand their activities and thus promote a sound and sustained improvement in economic performance and especially the performance of the trade balance? In the Caribbean, this seems to be the point at which the process breaks down. In the transition after devaluation when conditions are characterized by a certain amount of instability and uncertainty, our capitalists fail to take an aggressive role in promoting expansion. In countries where the 'commanding heights' are in the hands of foreign investors, the increased profits come as a windfall which is repatriated abroad (See Girvan et al. [12] and Barbone and Rivera-Batiz [3]). Local capitalists take an overly cautious attitude, contributing to capital flight which aggravates the problem of the balance of payments.

To some extent, the lethargy of the capitalist sector is not unexpected in the circumstances of devaluation in the Caribbean. The expansion of exports is a matter not merely of increasing existing lines of production but of embarking on new ones and exploring new markets. This requires the expectation of long periods of sustained stability. In addition, the transition period may be characterized by difficulties in obtaining foreign exchange, bureaucratic problems and other bottlenecks which may discourage the investor (See Thomas [17], Bernal [4] and Witter [20]). In light of these considerations, it is evident that the attempt to stabilize the economy has to involve serious attention to promoting a favourable climate for production, whether by the capitalist sector or in partnership with the public sector. This dimension suggests the relevance of what Witter [19] and [20] refers to as the 'crisis of production' and it is worth noticing also the recommendation for 'a focus on specific producing, income-earning and spending activities and sectors, rather than on

the generalized manipulation of prices, including the foreign exchange rate.' [Thomas 17, p. 36]. It should be pointed out that increased *productivity* is complementary to devaluation in terms of its effects and is an integral aspect of the development process which tends not to be given adequate emphasis. A related problem is that of finding ways to reduce the dependence of production on imported raw materials in the long-run.

DOMESTICALLY DETERMINED PRICES

The alternative to the small-country assumption is the assumption that the prices of tradables are determined exclusively by conditions in the country where they are produced. Consequently, the central price relationship may be represented by the ratio $P_x/(eP^*m)$ where all the variables are pre-determined. A devaluation is expected to make exports more competitive by lowering their prices in foreign markets, and to make imports less attractive by raising their prices in the domestic market. Whether the trade balance improves or not depends on the combined effects of the four price elasticities involved, i.e., the price elasticities of demand of local residents for imports and of foreign residents for our exports and the price elasticities of supply of exports both at home and in the countries with which our country is trading. Making the ironic but conventional assumption that the trade balance is initially in equilibrium, the sufficient condition for an improvement in the trade balance is that the absolute sum of the elasticities of demand must be greater than unity, the so-called Marshall-Lerner condition.

Instances of the use of the assumption of domestically determined prices can be found in the Caribbean literature on devaluation. For example, Blackman states that 'theoretically, devaluation corrects a deficit by effectively reducing the price of a country's exports thus leading to an increase in foreign demand for them; at the same time, devaluation raises the cost of foreign goods and leads to a reduction in the quantity imported' [Blackman 5, p. 10].

In a similar vein, Witter states that 'the rationale for devaluation within the IMF strategy is the elimination of the

current account deficit by encouraging exports with price advantages, and discouraging imports with higher costs' [Witter 20, p. 13].

The reliance on elasticities considerations has a general relevance in a world characterized by market imperfections and product differentiation. These characteristics may be associated particularly with the manufacturing sector which is a prime object of attention in the effort to improve the performance of Caribbean economies. An elasticity of particular interest in the analysis of the trade balance in the Caribbean is that of demand for imports of intermediate goods which is typically low. This low elasticity of demand is linked to the apparently low responsiveness of domestic supply of intermediate goods to price stimuli, frustrating the need for production to switch towards import-substitutes. This is an important setback to the achievement of an improving trade balance. Elasticities are also relevant in the short-run, considering that it may take a year or more for prices to adjust to a new level after devaluation. A final area of relevance for elasticities is studies of the effects of devaluation for intra Caricom trade. Since all the Caricom countries are small alike, it is possible that devaluation does confer a significant advantage in terms of price competitiveness. Another consideration suggesting a role for elasticities is the fact that the major currencies are continually fluctuating with respect to each other so that the price competitiveness of Caribbean exports in markets other than the USA may passively be subject to frequent change.

There is the danger, however, that elasticities considerations, by emphasizing price competitiveness, may detract from the need to concentrate on supply considerations. For example, it is often observed that devaluation is defeated by the fact that sales of our major primary product exports are denominated in foreign currency (See, for example, Witter [19] with respect to bauxite). This averts our attention from consideration of the factors which govern the production of these commodities such as demand conditions in the markets for which they are destined. If we use fixed terms of trade as the basis for the analysis, we are more inclined to focus our attention on the distinct questions relating to measures aimed at expanding domestic production.

CONCLUSION

The model with fixed terms of trade is suitable for the analysis of the small countries of the Caribbean because it is reasonable to assume that these countries are price-takers in the markets for both importables and exportables. However, reality will contain some elements of both approaches, i.e., the one incorporating fixed terms of trade and the other allowing for endogenous changes in the terms of trade. Moreover, the analysis of the effectiveness of devaluation may vary from place to place even in such a small region as the Caribbean. Some scepticism remains about the effectiveness of devaluation *per se* in alleviating the fundamental problems of stability and growth in small open economies such as those of Caribbean countries. In that light, the reduction in the real wage of workers which accompanies devaluation may be a high price to pay for dubious gains.

NOTES

¹It will also be convenient to refer to the trade balance in domestic currency as the *domestic balance*.

²A notable exception is tourism which is clearly a tradable service.

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