

## Some Notes on the Recent Balance of Payments Experience in Latin America

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The dominant development in Latin American economies over the past few years — since the formation of the OPEC cartel and the more than quadrupling of the price of crude petroleum — has been the emergence of very large deficits in the current account of the balance of payments, deficits that in several countries of that part of world now exceed ten percent of national income. These current account deficits have not, however, led to the classic Latin American balance of payments crises; reserves for the region (excluding Venezuela) are currently only slightly below the 1973 level (in nominal dollar terms) and only a small number of countries (such as Argentina) have suffered significant losses in reserves. Rather, the current account deficits have been matched, by and large, by capital account surpluses of similar orders of magnitude. Capital account surpluses have long been the rule rather than the exception in Latin America, reflecting both the investments made by foreigners and the lending programs of the official institutions such as the World Bank and the Inter-American Development Bank. The extraordinary post-1973 capital account surpluses are different, however, in that they consist in substantial part of loans obtained directly by *governments* (or agents of governments) from *commercial* banks as part of their recycling of the (dwindling) OPEC trade surpluses.

Data concerning the goods and services account of the balance of payments for ten major Latin American countries is presented in Table 1. As that table indicates, the goods and services deficit of those ten countries alone has risen from an average of US \$ 3.2 billion for the 1970 - 72 period to US \$ 15.2 billion during 1975, or nearly 400 percent. The growth in the deficit is not only larger than the full increase in the foreign exchange cost of crude petroleum for those countries, but also it now amounts to about eight percent of their collective national incomes, and about one-half of the total OPEC current account surplus.

As was mentioned earlier, virtually the entire expansion in the current account deficits of the countries in question has been accomplished

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*Table 1*  
**Balance on Goods and Services Account**  
**(millions of U.S. dollars)**

	1970-72 Average	1973	1974	1975
Argentina	— 253	703	108	— 1,325
Bolivia	— 43	— 36	61	— 175
Brazil	— 1,136	— 1,785	— 7,180	— 6,752
Chile	— 225	— 467	— 387	— 651
Colombia	— 347	— 89	— 402	— 226
Ecuador	— 132	— 22	9	— 197
Mexico	— 999	— 1,489	— 2,989	— 4,183
Paraguay	— 21	— 22	— 57	— 82
Peru	— 8	— 303	— 773	— 1,614
Uruguay	— 39	18	— 154	— 216

*Source:* International Financial Statistics, August 1976.

(taking those countries as a group) by expanding their capital inflows rather than by a simple expansion of domestic credit financed in and by the central banks. As of mid-1976, reserves of the ten countries were only slightly below the 1973 level of approximately US \$ 10 billion (as defined by the IMF). Even more remarkable, these capital inflows have been, by and large, arranged for by the governments involved. Prior to 1974, no Latin American observer with whom I am acquainted thought that such a scale of borrowing by Latin American governments from international commercial banks was possible simply because the banks would be unwilling to lend such large amounts. That all changed with the piling up of deposits in those banks by the OPEC countries after the oil-price increase, and as a result, the banks in question quite willingly lent on an unprecedented scale to the central and state banks in Latin America. The expenditure-reducing policies of many of the developed countries to cope with inflation contributed to the availability of OPEC funds to the developing countries. The basic situation now is that the OPEC surpluses are being more or less matched by deficits in the developing countries, with approximately half of those deficits being accounted for by Latin America.

The viability of this situation is in serious doubt and is a matter of some serious concern. First, the OPEC surplus is rapidly dwindling and expenditure, relative to income, is tending to increase in at least some of the developing countries, thereby reducing the financial surplus

available to Latin America countries and developing countries in general. Second, service on foreign debt has obviously risen very rapidly in many Latin American countries, causing them to be viewed as increasingly poor credit risks by the international commercial banks. As the loans obtained from those commercial banks have typically been of relatively short term and at rates of interest of one to two percentage points above the London interbank rate, the burden of the debt service has forced a "roll over" of existing loans and a consequent increase in the difficulty of obtaining new funds. The clear implications is that the massive borrowing policy of the past three years cannot long endure in Latin America, and that expenditure-reducing policies will have to be brought into play in many countries. The fact that these countries have pursued expenditure-increasing policies at precisely the time that much of the industrialized world has experienced a serious recession is likely to be one of the key factors explaining why the Latin countries (with some exceptions; e. g., Chile) have been so successful in avoiding the effects of that recession (apart from changes in the terms of trade), and suggests that the immediate economic outlook is unfavorable in those countries.

The changes that have occurred in the current account of the balance of payments of several of the Latin American countries during the past three years have been of a magnitude beyond that experienced recently by any set of countries except for OPEC after the 1973 rise in the price of crude petroleum. Several countries (e. g., Peru, Panama) currently have deficits in the goods and services account well over ten percent of national income, and most Latin American countries have deficits in excess of five percent of national income, compared with levels of only two or three percent in the late 1960's and early 1970's. One of the effects that one expects to see as a consequence of such marked increases in current account deficits is a change in the price of non-traded relative to traded goods.<sup>1</sup> The recent experience in Latin America should provide a rather fertile testing ground, therefore, for certain propositions concerning the behavior of relative prices and of purchasing power parity in particular. It is to these and related issues that much of the remainder of the paper is devoted.

A key aspect of the recent Latin American experience insofar as the balance of payments is concerned is the fact that in most countries the change in the capital inflow (and hence in the current account) can be treated as exogenous in that the foreign borrowing involved was undertaken by the various central banks (or agents thereof) rather than re-

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<sup>1</sup> While this classification is admittedly an imperfect one, particularly in an empirical context, it will be employed in this paper for lack of something better.

flecting a change in, say, local investment opportunities as perceived by foreigners or others. In addition, in many countries the bulk of the extraordinary increase in the banking systems' holdings of domestic assets took the form of private-sector rather than public sectors liabilities, and were matched by a decline in the banking systems' holdings of foreign assets. Thus the increase in spending (relative to income) has not been due to classic public-sector budget deficits, but rather a more or less conscious policy on the part of the authorities to borrow abroad in order to lend at home. In Brazil, for example, domestic assets of the banking system rose by about 60 percent in both 1974 and 1975 in the face of a balanced budget; prior increases in those assets were at an annual rate of only 25 to 30 percent in that country.

This particular behavior permits us to treat the main movements in the account as exogenous for most of the countries for the time period (1976 - 77) that is the focus of this paper. Moreover, we shall abstract from monetary factors (i. e., the balance of payments proper) and treat the current and capital accounts, apart from sign, as identical. This permits one to set up a very simple model in which the following definitions will be used:

- $Y^e$  = expenditure,
- $Y_t^e$  = expenditure on traded goods,
- $Y_{nt}^e = Y^e - Y_{nt}^e$  = expenditure on non-traded goods,
- $Y$  = production in value terms,
- $Y_t$  = value of production of traded goods,
- $Y_{nt} = Y - Y_t$  = value of production of non-traded goods,
- $p = P_{nt}/P_t$  = the relative price of non-traded goods,
- $Q_t$  = quantity demanded of traded goods,
- $S_t$  = quantity produced of traded goods, and
- $c$  = the capital inflow as a fraction of  $Y$ .

As the allocation of the proceeds of foreign borrowing has been quite general in recent years in the countries in question, there is no presumption that the demand increases so generated have been particularly biased in favor of either traded or non-traded goods. We shall, therefore, keep the model simple by assuming that expenditure on and production of traded and non-traded goods depends only upon relative prices<sup>2</sup>:

$$\begin{aligned} (1) \quad & Y_{nt}^e / Y^e = f(p) , \\ (2) \quad & Y_{nt} / Y = g(p) , \quad g' > 0 . \end{aligned}$$

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<sup>2</sup> In more quaint terms, the assumption is that the marginal and average propensities to spend are equal.

The sign of  $f'$  is ambiguous. We shall also assume that the market for non-traded goods clears continuously:

$$(3) \quad Y_{nt}^e = Y_{nt} .$$

Finally, expenditure equals income plus foreign borrowing<sup>3</sup>:

$$(4) \quad Y^e = Y (1 + c) .$$

Combining the above four equations yields:

$$Y^e/Y = g(p)/f(p) = 1 + c ,$$

and hence:

$$(5) \quad g(p) = (1 + c) f(p) .$$

By differentiating (5) totally, we obtain the relationship between relative prices and the capital inflow:

$$(6) \quad dp/dc = (f/g)/(g'/g - f'/f) .$$

It is quite straightforward to demonstrate that:

$$(7) \quad pg'/g = (1 - g) (1 + \varepsilon) ,$$

and:

$$(8) \quad pf'/f = (1 - f) (1 + \eta) ,$$

where:

$$(9) \quad \varepsilon = \partial \ln (S_{nt}/S_t) / \partial \ln p > 0 ,$$

and

$$(10) \quad \eta = \partial \ln (Q_{nt}/Q_t) / \partial \ln p < 0 ,$$

that is,  $\varepsilon$  and  $\eta$  are the elasticities of substitution between non-traded and traded goods in demand and in production, respectively.

By substituting (9) and (10) into (7) and (8) and the resulting expressions into (6), we obtain:

$$(11) \quad d \ln p / d \ln (1 + c) = [(1 - g) (1 + \varepsilon) - (1 - f) (1 + \eta)]^{-1} .$$

Equation (11) is basically a Marshall-Lerner type of statement with the difference that the distinction made is between traded and non-traded goods rather than imports and exports, on the one hand, and elasticities of substitution rather than supply and demand, on the other. The

<sup>3</sup> We are ignoring here monetary factors as well as the mechanism by which changes in income are translated into changes in expenditure in the event that the marginal propensity to spend out of income differs from unity.



simplicity of (11) derives in large part from the assumption that marginal and average propensities to spend are equal.

Examination of equation (11) indicates that the elasticity of relative prices with respect to the capital inflow (trade balance) may be quite high. To do so, let us assume plausible values for the parameters involved. In the current context, production of traded goods must be taken to include not only the production of actual imports and exports, but also of their close substitutes (i. e., those goods whose prices closely follow the prices of goods that actually enter into trade), and demand for traded goods must also include close substitutes. For this reason, it seems reasonable to assume that both  $f$  and  $g$  are substantially lower than is indicated by simple trade volumes as a fraction of output or expenditure; we shall assume that  $f$  is of the order of magnitude of 0.6.<sup>4</sup> In addition, it is conventional to assume that the elasticity of substitution in demand is approximately unity (i. e., that expenditure shares are approximately constant) and that the elasticity of substitution in production is quite low, perhaps 0.5. Using these values, and departing from balanced trade, the elasticity of relative prices with respect to the capital inflow (equation (11)) is 1.67, which rises to 1.96 when the capital inflow is equal to 10 percent of income. Smaller values for the elasticity of substitution in demand result, of course, in higher elasticities of relative prices with respect to the capital inflow; for example, if  $\varepsilon = 0.5$ , the latter elasticity is 2.5 at balanced trade, and 3.22 when the capital inflow is 10 percent of income.<sup>5</sup> The size of the elasticities of substitution — particularly in production — will depend, of course, on the length of time permitted for factor movements between the two sectors; for the period we are concerned with, it seems reasonable to assume that factor mobility would be quite limited and therefore we shall assume that the numerical value of equation (11) is in the neighborhood of 2.0.

The major part of the adjustment in quantities falls, of course, on the demand rather than the supply side. Defining relative quantity adjustments as follows:

$$(12) \quad \beta_Q = P_t dQ_t / Y dc ,$$

and:

$$(13) \quad \beta_S = P_t dS_t / Y dc$$

and noting that the relationships between elasticities of demand and

<sup>4</sup> For a lengthy discussion of the point in question, see *Harberger* (1964).

<sup>5</sup> These calculations for  $c \neq 0$  are somewhat misleading, as  $f$  has been maintained at 0.6, requiring all of the change to take place in  $g$  which in fact would not be the case.

supply, on the one hand, and substitution elasticities, on the other, are given by:

$$\partial \ln Q_t / \partial \ln p = -f \eta ,$$

$$\partial \ln S_t / \partial \ln p = -g \varepsilon ,$$

equations (12) and (13) become:

$$\beta_Q = (1 - f) [\varepsilon (1 - g) - \eta] / [(1 - g) \varepsilon - (1 - f) \eta] ,$$

and:

$$\beta_S = 1 - \beta_Q .$$

At balanced trade, the relative adjustment functions become:

$$\beta_Q = 1 - g \varepsilon / (\varepsilon - \eta) ,$$

$$\beta_S = g \varepsilon / (\varepsilon - \eta) .$$

On the basis of our assumed values for the elasticities of substitution, clearly 70 to 80 percent of the quantity adjustment falls on the side of demand for traded goods in response to a change in the capital inflow. We have assumed, of course, that in the absence of changes in relative prices, "new" demand would be distributed between traded and non-traded goods in the same fashion as existing demand. This implies that, on the basis of our assumed parametric values, half or more of the effect of the change in relative prices takes the form of expenditure switching, the remainder being reflected in changes in the composition of output. The possibility that these two effects may be of similar orders of magnitude is not widely recognized, but it does lend credibility to the presumption that changes in relative prices of non-traded goods may be quite substantial, at least in the short run, in response to exogenous changes in the volume of the capital inflow.

One implication of the results obtained on the basis of the simple model postulated above is that the validity of the purchasing-power-parity assumption is cast in doubt in cases where substantial changes have occurred in the relationship between output and spending, as has been the case in Latin America over the past three years. These results have particular relevance for mini-devaluation policies (such as in Brazil, Argentina, and Chile), and for major devaluations as in the case of Mexico recently. The parametric values assumed earlier suggest that, with fixed world prices and a fixed exchange rate, the domestic price level will move by about the same percentage as the change in expenditure relative to income.<sup>6</sup>

<sup>6</sup> With  $f = g = .6$ , and  $d \ln p / d \ln (1 + c)$  equal to about 2.0, a one percent increase in spending relative to output will increase the equilibrium price level by 1.2 percent.

*Table 2*  
**Balance on Goods and Services Account  
 and Inflation Rates (in percent)**

	Inflation <sup>a)</sup>	Goods & Services Balance, 1975 <sup>b)</sup>	Change in G & S Balance <sup>c)</sup>
Bolivia .....	79	9.4	7.1
Ecuador .....	52	5.7	1.9
El Salvador .....	48	8.3	7.5
Guatemala .....	34*	6.1	4.6
Honduras .....	23	15.7	11.8
Mexico .....	60	6.4	4.9
Paraguay .....	40	6.2	4.6
Brazil .....	30	8.0 <sup>d)</sup>	6.5
Colombia .....	25	2.0	— 0.9
Peru .....	49	13.9 <sup>e)</sup>	13.9
Uruguay .....	42*	8.0	6.5

*Source:* International Financial Statistics, August 1976.

a) Measured from average 1973 to April, 1976; if marked with (\*), measured from average 1973 to December, 1975. In the cases of Brazil, Colombia, Peru and Uruguay, the inflation rate is measured *relative* to the change in the exchange rate (against U. S. dollars).

b) Measured as a fraction of gross domestic product; figure is positive for a deficit.

c) Increase in deficit, 1970 - 72 to 1975, relative to 1975 GDP.

d) Approximate.

e) Figure for 1974 is only 6.7 percent.

Some highly preliminary comparisons of deficits and inflation rates for various Latin American countries have been made, and the results are presented in Table 2. Argentina and Chile were excluded from these calculations on the grounds that the rates of inflation in both countries have been so high and the exchange policy so arbitrary in the earlier part of the period that no meaningful comparison of changes in internal with changes in external prices is possible. Three fixed exchange rate countries — El Salvador, Guatemala, and Honduras — were added to the list appearing in Table 1.

The results presented in Table 2 are in broad conformity with the theoretical arguments made above. The first seven countries appearing in that Table — Bolivia, Ecuador, Mexico, Paraguay, El Salvador, Guatemala, and Honduras — maintained fixed exchange rates against the dollar throughout the period of analysis (1973 average through April, 1976, unless otherwise noted).<sup>7</sup> Measuring the change in prices

<sup>7</sup> Panama also has a fixed exchange rate, but that country is not included as it lacks a monetary authority.



of traded goods by either the change in the U.S. consumer price index of 26 percent or the change in (dollar) export prices of the industrialized countries (as computed by the IMF) of 37 percent, we observe that the first five countries had rates of inflation greater than the rise in the prices of traded goods. The inflation in Guatemala was consistent with no change in relative prices, whereas in the case of Honduras the data suggest that the relative price of non-traded goods probably fell somewhat. Given the fact, however, that Honduras spends nearly half of its national income on imports makes it appear improbable that consumer prices failed to rise by as much as import prices.<sup>8</sup> Paradoxically, Honduras is also the country with the largest deficit on the goods and services account (relative to national income); this is partly, but by no means completely, explained by a fall in exports during 1975 owing to a natural disaster in the main export industry that also reduced income.

Setting aside Honduras for the moment, the inflation rates for the remaining fixed-exchange rate countries are broadly consistent with our expectations insofar as the *level* of the goods and service deficit is concerned; they are less consistent, however, when one compares the inflation rate with the *change* in the goods and services deficit from 1970 - 72 to 1975. Bolivia, with the largest deficit, had by far the highest rate of inflation, but (excluding Honduras) had only the second highest increase in the deficit on the goods and services accounts. Ecuador, which had the third highest rate of inflation, had the smallest increase in the goods and services deficit. A much more refined analysis is required, however, as the actual changes in prices of traded goods for the period in question may have varied considerably from country to country, particularly in view of the volatility of commodity prices at this time.

The inflation rates for the four crawling peg countries — Brazil, Colombia, Peru, and Ecuador — were computed as the ratio of the 1976 to the 1973 consumer price index after first deflating that index by the prevailing exchange rate. Brazil and Colombia experienced inflations — so defined — at or near the rate of change of prices of traded goods, whereas Peru and Uruguay had considerably higher rates. Except for Brazil, the general nature of the results is similar to that obtained for the fixed-exchange rate countries, and the results for Brazil

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<sup>8</sup> From 1973 to 1974, export prices of the industrialized countries rose by 25 percent, whereas consumer prices in Honduras rose by only 13 percent. It seems hard to believe that the prices of non-traded goods could have remained constant in the face of a 25 percent rise in the price of imports. Either exports prices for the industrialized countries are not the relevant measure for Honduras, or the consumer price index in that country is highly faulty. The latter is quite possible.

appear to fly in the face of arguments that the Brazilian authorities have permitted the cruzeiro to become overvalued.

The Mexican case is of special interest in view of the recent devaluation and the arguments that a devaluation was necessary in view of the misalignment of relative prices. While it is true that the Mexican inflation of 60 percent from 1973 through April, 1976 was far in excess of the rise in the prices of traded goods, it is also true that the Mexican economy is relatively more closed than is the case for most Latin American countries, and hence the effect of the change in the trade balance of nearly five percent of national income is expected to be greater there than in other countries.<sup>9</sup> If the elasticity of relative prices with respect to the trade balance is as high as 2.5, and assuming that traded goods account for only 25 percent of national expenditure (at balanced trade), the implied inflation for Mexico is 50 percent, indicating a misalignment of prices of non-traded goods of less than 15 percent. If this figure is reasonable, then one can predict that the main effect of the Mexican devaluation will be a very substantial inflation.

Although the numerical results presented above are at best illustrative, they are consistent with the hypothesis that applications of purchasing power parity requires one to take the relationship of income to expenditure into account. Much further work is required, however, before any definitive results can be obtained.

### References

- Harberger, A. C. (1964), Some Notes on Inflation, in: Baer, W. and I. Kerstenetzky (eds.), Inflation and Growth in Latin America; Richard D. Irwin, Homewood, Ill.*

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<sup>9</sup> Mexican imports amount to only about ten percent of national income. *Harberger (1964).*