



1. Introduction: The net effect of participation in the international economic system may be summed up in the balance of payments, the bottom line, so to speak, of the nation's economic and financial transactions with the rest of the world. As such the balance of payments has been a variable of major significance to nations large and small, more so with the current crisis in the world economy. A favourable balance has permitted the export of capital, the extension of one nation into the economic affairs of another, the penetration of some societies into others, and the emergence of the international economic order as we know it today. Orthodox analyses suggest that the state of the balance of payments determines the possibilities of the dependent economies gaining access to higher technological processes and increased stocks of capital, and so seriously affects their ability to share in the consumption levels and patterns of the 'modern' world. The new emerging Third World theories however posit a wider and sinister significance to the balance of payments. In mercantilist thought a favourable trade balance represented increased opportunities for generating employment at the expense of the foreigner. In present-day conditions of virtual full employment in the industrial countries the balance of payments represents the consequences of unequal exchange relations on the world distribution of income and the opportunity for capital accumulation on a world scale. Approaches to the analysis of this problem have included the classical study of Meade [11], the Keynesian approach of Alexander [1], the now prevalent monetarist view as exemplified by Frenkel and Johnson [6] and

analyses of the problem from a Third World perspective due to Emmanuel [5] and Amin [2]. The writings of British economists, exemplified by Ball et. al. [3], on balance of payments problems in a declining phase of participation in the international economy are also instructive. Full reference is made to the author's studies of prices and wages in the Trinidad and Tobago economy [15] [16]. The peculiar history and structural features of the Trinidad and Tobago economy and its current thrust towards industrialisation in the context of modern corporate structures and the problems associated with technology transfers [8] provide an intricate background to these issues.

2. Background Issues: Until the attainment of political independence in August 1962, Trinidad and Tobago was a British colony. In keeping with mercantilist informed tenets colonial government provided a stable social, political, legal and institutional framework within which economic activity could be pursued. A free enterprise system which discouraged secondary activity and fostered the production of primary commodities (staples) complementary to the needs of the mother country was the predominant feature of the economic system. Trade was the key to economic activity. Enterprise, know-how, machinery and financial capital from Britain flowed into the colony as long as the needs of the mother country or the attractions of world trade suggested opportunities for the generation of surpluses from investment in the colony. The

surplus took the form of the excess of the value of staple exported over the amortised sunk capital and the current inputs of supplies - clearly the balance of payments! Since 1962 the basic structures set in place over the previous three centuries, have changed comparatively little. Production is still geared largely to export markets, while imports make the production of exportables possible. The Central Bank of Trinidad and Tobago, established in 1964, now has the responsibility for monitoring and managing the funds in the country's external accounts. Prior to independence, the well known colonial monetary mechanisms of fixed exchange rates, full banking and free convertibility between local currency and sterling rendered such a function unnecessary in relation to the United Kingdom, while the Bank of England (the imperial central bank) performed this role in respect of transactions between Trinidad and Tobago residents and non-United Kingdom nationals. Under such a system there could be no balance of payments problems as such for Trinidad and Tobago.

Since its coming into being in 1966 as the nation's currency, the Trinidad and Tobago dollar has been pegged to sterling at the rate Sterling £1 = TT\$4.80. This was changed only in May 1976 when instead it was pegged to the U.S. dollar at the rate US\$1 = TT\$2.40. Exchange control was implemented in earnest from June 1970. However rigid exchange control is inconsistent with a policy of "industrialisation by invitation", a policy which in its modern guise of joint ventures between foreign corporations and the Government of Trinidad and Tobago

must guarantee the repatriation of profits and capital on a continuous basis if any new foreign investors and foreign finance are to be attracted. Since the boom in oil prices in 1973 the balance of payments has turned from a position no more healthy than in neighbouring countries with similar economic structures and histories to that of sizeable surplus. But despite this it continues to generate the usual anxieties and the management of the foreign exchanges remains problematic.<sup>2</sup>

3. Framework of Analysis: The model of the functioning of the Trinidad and Tobago economy being assumed is that of an export propelled, dependent economy, passively incorporated into the international economy. The motive force is taken to be exports which are largely exogenously determined. In the recent past the oil industry has dominated the export sector but this has been supported by agricultural staples (sugar, coffee, cocoa, citrus) and light manufactures. The state of the balance of payments, it is being postulated, mirrors what happens to export earnings. It would seem that, with time, imports adjust<sup>3</sup> since a healthy foreign balance permits a rise in consumption (the supply of final goods is largely imported, a position reinforced by popular tastes). The investment necessary to generate increased exports might cause the balance of payments first to weaken - as capital inflows to finance capacity creation stimulate imports of capital and consumer goods in excess of financing - and only later to return to equilibrium as exports rise. Alternatively,

surpluses in the balance of payments might be the occasion to undertake substantial investments either to improve the quantity and quality of social capital (infrastructure) or to seek to change the production structure of the economy. This last possibility is enhanced by the peculiar structure of the economy whereby, ab initio, the national share of the domestic product is channelled from the wealth producing foreign corporations in the export sector to the Government in the form of tax revenue. Where there is a presumption to 'active government' - the social and economic structures in their historical context being presumed normally to operate against the interests of the broad masses of the people - the resource allocation of the national product in socially desirable directions is considerably facilitated, since the problem of Government is reduced from that of 'taxing and spending' to that of 'spending' only.

The balance of payments determines the money supply. In the conditions of the Sterling Exchange Standard of the colonial period, local currency was initially the currency of the mother country. In time local currency was issued but must be fully backed by foreign assets, and was freely convertible. The money supply was thus governed by the state of accumulated past balance of payments positions, and the operations of branch banks from the mother country, coupled with the criteria of credit worthiness they applied, restricted the pyramid of credit in certain directions (notably by financing economic activities only in those ways where the surplus generated took the form of

foreign assets, i.e. a surplus on the balance of payments) and so integrated the local capital market with that of the mother country. In post colonial times, the principles of Bretton Woods now enshrined in the Central Bank Act, allow the monetary authorities a small fiduciary issue, limited credit granting powers to the Government, and ostensibly, control over the domestic money supply through reserve ratio management. The base of the credit pyramid is thus the net foreign assets of the country (held by the Central Bank), and the money supply, interpreted as the change in the money stock during the relevant time period, is the sum of the change in the net foreign assets and the change in net domestic credit (see Polak [14]). Credit policy may become ineffective and be generally regarded as unnecessary where net foreign assets in the case where they accrue to Government are growing at a rapid rate such as at the present time, and consequently the balance of payments effectively determines the money supply.<sup>4</sup>

The money supply determines aggregate demand. This seems very much a monetarist argument. However it is not here being presented in the monetarist sense that for a constant income velocity the raising of the 'money barrier' permits the expansion of output. (The Keynesian channel is supposed to work through the impact of expanded money supply on the rate of interest and so on the investment function). More simply, since supply is largely imported, it is being argued that an expansion of the money supply would make credit available for the purchase of goods in elastic supply, the foreign exchange for meeting

the cost of imports being already contained in the augmented supply of money.

Rising aggregate demand stimulates imports. As suggested earlier, this may be viewed as taking place either directly in the form of increased final goods and intermediate (c.k.d.) packets, or indirectly through capital formation in infrastructure, or in the creation of productive capacity. The import content of both types of investment is known to be high. As presented the model suggests a systematic tendency to stability. For rising exports will in time lead to rising imports through the mechanism of the money supply. However the growth in imports in the long run narrows the balance of payments, and so the growth in money supply is restrained from taking an explosive path.

If international prices are stable and the international monetary system well behaved in a regime of fixed exchange rates, the model as described should lead to a stable equilibrium. Where however import prices are rising these trigger off a domestic inflation. Domestic prices rise and there is set in motion a struggle between the various income classes in the society to maintain their real income levels and to share in any increased prosperity brought by an export boom. Wages follow domestic prices and the increased money supply permits (finances) a price-wage spiral. The increased real income of the country inevitably raises purchasing power, and this stimulates imports. The sellers' market which inevitably develops for goods imported through licenses or assembled locally in small capacity plants, or



queuing to enter at a congested port, permits a higher mark-up and further fans the price-wage spiral.

The cases of two other Caribbean countries raise the issue as to whether the model works in reverse i.e. where exports have been stagnant or declining. This would seem to have been the case in both Guyana (where price and wage increases have been low compared with the rest of the Caribbean) and Jamaica (where price increases have been comparatively high). In both these countries import prices triggered a domestic price increase. In Guyana there were attempts to insulate the economy from the severity of balance of payments problems by austerity measures at the earliest opportunity, and by wage restraint. In Jamaica on the other hand the period of imported inflation almost coincided with sizeable public works programmes which raised aggregate money incomes and stimulated the demand for imports thus bringing more of the higher world price levels to the country; the politics of the situation might have put further pressure on the balance of payments causing an outflow of capital and a slow-down in inflows. It would seem therefore that the Guyana case is explained by the model, while the case of Jamaica can be accounted for by changes in the socio-political system at the time.

4. Trends in the Balance of Payments: A study of the balance of payments accounts<sup>5</sup> for Trinidad and Tobago indicates that over the years

both exports and imports have grown steadily, and that the current balance has been unfavourable in every year of the two decades 1956-1976 with the exception of the last three. Appendix II gives the data. The severe world depression of 1972/73 and the fall in domestic crude oil production to a ten-year record low in 1971/72 caused the exceptional occurrence of a drastic decline in exports in 1972. The coming into production of the East Coast off-shore fields in 1972, followed by the sharp increase in oil prices consequent on O.P.E.C. activity, gave a sharp boost to export earnings from 1974. Imports follow the trend in exports fairly closely except that they seem to adjust at a slower rate especially when there are steep changes in exports. Some writers, notably in the export-propelled dependency school, have argued that export proceeds represent injections into the income stream which, through some export multiplier process, generate increased levels of incomes. Since supply to the economy has a high import content and imports are income elastic, the higher levels of incomes induce a higher level of imports. On this argument, there is no ex ante shortage of foreign exchange since imports adjust to the level of exports leaving little or no gap on current account. The present healthy balance on current account could, on this argument, be a temporary phenomenon only unless export earnings continue to grow.

Another feature of the balance of payments accounts is the steady inflow on long term capital account. This has been positive in every year except 1976. It is possible to identify waves in the

behaviour of this variable, associated as Parris [12] argues with the "investment climate" and with the ability of the Government to raise foreign loans for its development programmes. Thus the late sixties represent years of high capital inflows associated partly with Government's First Development Plan emphasising infrastructure and with private foreign capital inflows aimed at capturing the integrated markets of a Federated West Indies along the lines of the Lewis strategy of development. The lean years 1961 and 1966 were election years when a wait-and-see posture is often adopted, while the trough in capital inflows of 1966/67 was also partly associated with the Finance Act of 1966 and the crisis in business confidence which it is said to have engendered. The era of high capital inflows since 1969 is based partly on the concerted effort of the Government to 'manage' the political situation so as to create a favourable investment climate and partly on a new wave of official loans to finance projects.

It must be pointed out that not all capital inflows recorded in the balance of payments are net new flows. Some represents the re-investment of investment income earned in the country. To the extent that this is true, "capital inflows" may in part be a measure of the profitability of past investments and the willingness of foreign investors to postpone the repatriation of amortized capital, interest and profits.<sup>6</sup> This perspective on capital inflows suggests that the history and performance of past foreign investment can create a legacy of continued 'inflows of capital', so far as the balance of payments accounts

record them, without the entry of new capital, and that in time, if the attractiveness of reinvestment in Trinidad and Tobago does not match competing opportunities elsewhere in the world, a rising stream of capital outflows set in train. The net outflows recorded in 1976 could well indicate the possibilities of this threatened debt trap.<sup>7</sup>

In the two decades under review the basic balance shows that the balance of payments variable may be regarded as falling into the following four suggested phases. During the late fifties there was a positive balance based, it would seem, on the capital inflows largely on official account. From 1960 to 1967 the basic balance was negative. Official foreign borrowing had not been possible on the scale desired, and private capital inflows were small, as, it seemed, a critical political struggle was taking place to determine whether the society would be managed in a way favourable to local and foreign capitalists or favourable to organised labour and the broad masses of the historically dispossessed.<sup>8</sup> The years 1968 to 1973 was an indeterminate period as the political battle reached a peak, and oil production declined (though an oil boom was known to have been in the offing). There were however inflows of private foreign capital for specific projects, and some official capital inflows for social capital formation; but both were small. The final period, beginning in 1974, showed a very substantial basic balance, the result largely of the oil boom and the delayed import growth as well as continued inflows of official and private capital.<sup>9</sup>

In balance of payments double entry accounting, short-term monetary movements automatically 'finance' the deficits or accommodate the surplus.

5. Trends in Costs and Prices: Movements in prices and wages broadly fit into the schema of the vicissitudes of economic life and political events in Trinidad and Tobago already discussed. If as a proxy the retail price index is used to indicate movements in domestic prices and the index of minimum wage rates of manual workers on time rates the behaviour of wage rates, then it seems generally true to say that in the last two decades, domestic prices have been relatively stable up to about 1970 and that with the exception of the period 1965 to 1970, when the I.S.A. was effective, wage rates rose faster than prices. Since 1970 there has been a substantial price inflation which peaked at 22.4 percent in 1974. Wage rates have just about kept pace with prices though with a lag to reflect the institution of the three year wage bargain. As such, attempts to recoup the erosion of purchasing power lost through price increases have just about succeeded.

Data on the behaviour of import and export prices are incomplete for the longer period there being no official figures for the years 1961 to 1963. However the data for 1951 to 1960 suggest violent fluctuations in export prices about an upward trend and more stable

import prices about a steeper upward trend.<sup>10</sup> In the period since 1964 import prices have risen steadily, and these increases have been particularly steep since 1973. Export prices have not kept pace with resulting deterioration in the terms of trade. Gafar [7] had noted that there was a long term deterioration in the commodity terms of trade of the order of 23% between 1954 and 1970 and a 120% improvement in the income terms of trade for the same period. For the more recent period<sup>11</sup> the commodity terms of trade had deteriorated some 29% between 1964 and 1972 but improved thereafter, with the higher oil prices, to par in 1975 and to only a 4% deterioration at 1976. The income terms of trade also declined by 11% between 1964 and 1972 but recovered with the oil boom to show a 13% gain by 1976. Table I illustrates.

Table I: Average Annual Growth Rates

Period	Index of Retail Prices	Index of Wage Rates	Index of (a) Import Prices	Index of (a) Export Prices
1956-1965	2.4	8.3	-	-
1965-1976	9.1	10.1	15.0	13.1
1965-1972	4.6	5.1	9.6	2.4
1972-1976	16.8	18.3	26.0	29.1

(a) Excludes Section 3 - Mineral fuels

Two other indicators of trends in costs are given. The index of average weekly earnings for production workers in industry<sup>12</sup> indicates that earnings rose from 100 in 1971 to 218.4 in 1976 giving an

average increase of 17.2 percent per annum. In the same period however the increase in G.D.P. at current prices was 26.4 percent per annum, while G.D.P. at constant prices averaged 10.7 per cent.<sup>13</sup> The index of retail prices rose 12.9 percent per annum. While the rate of growth in earnings exceeded that of real G.D.P., when account is taken of the growth in retail prices, real labour costs did not grow as fast as real G.D.P.

Trends in capital costs may be roughly judged from the trends in interest rates and profits. The weighted average rate of interest on loans and advances by Commercial Banks<sup>14</sup> rose from a low of 7.07 per cent in 1965 to a high of 10.76 in 1974 and stood at 9.97 percent in 1976. The average rate of increase in interest rates in this period which this suggests was a mere 3.5 percent per annum. There are no published data or studies on profits. It may well be however that if real G.D.P. was growing faster than real labour costs and if interest rates, as measured, rose only slowly, profits - the residual share in product - might have taken up the slack and grown appropriately. Thus the trend in capital costs could have been higher than suggested by the trend in interest rates.

6. An Illustrative Export Propelled Model: An attempt to capture the salient features of the export propelled model outlined and to make

preliminary estimates of its parametric structure follows. Solution of the model will allow the impact of wages and prices on the balance of payments to be approximately measured. After preliminary screening, and taking into account theoretical approaches to specification of the various functions, the following form of the model was considered the most reasonable.

### The Model

Df: Balance of Payments	(1)	$B = X - I + K$
Import Function	(2)	$I = a_0 + a_1E + a_2K$
Expenditure Function	(3)	$E = b_0 + b_1W + b_2M$
Wage Determination	(4)	$W = c_0 + c_1P_{-1} + c_2X_{-1}$
Price Formation	(5)	$P = d_0 + d_1M + d_2P^i + d_3\Delta P$
Df: Money Supply	(6)	$M = B + C$

where  $B$  = balance of payments,  
 $X$  = exports,  
 $I$  = imports,  
 $K$  = net capital inflows,  
 $E$  = aggregate nominal expenditure,  
 $W$  = wages,  
 $M$  = money supply,  
 $P$  = domestic prices,  
 $P^i$  = import prices,  
 $C$  = net domestic credit.

The specification of the import and expenditure functions is similar to Khan's [10] except that net foreign assets are replaced by



net capital inflows, while the wage and price equations derive from previous work by the author [16]. Formally, the model comprises six equations in six endogenous variables, viz  $B$ ,  $I$ ,  $E$ ,  $W$ ,  $P$  and  $M$ . There are four exogenous variables,  $X$ ,  $K$ ,  $P^i$  and  $C$ , with two lagged endogenous variables  $P_{-1}$  and  $X_{-1}$  featuring explicitly. The model is therefore determinate. An examination of the order conditions indicated that all equations were identified.

The logic of the workings of the model might be as follows. Starting from a position of equilibrium, an exogenous increase in exports gives rise to a balance of payments surplus [equation (1)], raising the money supply [equation (6)], prices [equation (5)], wages [equation (4)], expenditure [equation (3)] and imports [equation (2)] thereby restoring equilibrium. A similar channel applies to the adjustment consequent on an exogenous increase in net capital inflows, though in addition capital inflows may enhance future export capacity thereby raising the level of economic activity at which the equilibrium is restored.<sup>15</sup> Similarly, autonomous increases in domestic credit would raise money supply, expenditure and imports, thereby worsening the balance of payments and reducing money supply. Exogenous increases in import prices would raise domestic prices, wages, aggregate expenditure, and imports thereby worsening the balance of payments; the consequent restraint on money supply would tend to work in the reverse direction depending on what happens in the price/wage transmission mechanism. It would seem that there is a systematic tendency in the model towards stability.

In the estimation of the model a number of constraints were encountered with data availability and this severely reduced the number of degrees of freedom in some equations. For instance, import prices were only available on a consistent basis since 1964, and money supply data only since 1960. The longest data series were however used in every possible case. Data are all annual observations, measured as percentage changes since they all showed strong secular trends. Exports, imports, capital inflows, broad money supply (M2) and net domestic credit have their usual balance of payments definitions, while aggregate domestic expenditure is the sum of consumption, investment and Government expenditure. Wages are approximated by the index of minimum wage rates of manual workers on time rates though in the expenditure equation the wage bills would have been more appropriate.<sup>16</sup> Domestic prices are approximated by the index of retail prices and the index of import prices used excludes mineral fuels. The method of ordinary least squares<sup>17</sup> was used initially and the best established results obtained after extensive experimentation.

#### The Estimated Model

$$(2e) \quad \dot{I} = -2.99 + 1.09\dot{E} + 0.05\dot{K}$$

(5.38)    (0.35)    (0.05)

$$R^2 = 0.41 \quad D.W. = 1.69 \quad d.f. = 17 \quad S_E = 141.89$$

$$(3e) \quad \dot{E} = -0.85 + 0.62\dot{W} + 0.52\dot{M}$$

(2.97)    (0.24)    (0.20)

$$R^2 = 0.70 \quad D.W. = 2.02 \quad d.f. = 13 \quad S_E = 6.22$$

$$(4e) \quad \dot{W} = 4.68 + 0.48P_{-1} + 0.11X_{-1}$$

$$(1.34) \quad (0.27) \quad (0.06)$$

$$R^2 = 0.64 \quad D.W. = 1.18 \quad d.f. = 18 \quad S_E = 4.23$$

$$(5e) \quad \dot{P} = -2.86 + 0.32M + 0.39P^i + 0.29\Delta P$$

$$(2.22) \quad (0.11) \quad (0.11) \quad (0.20)$$

$$R^2 = 0.84 \quad D.W. = 2.17 \quad d.f. = 8 \quad S_E = 3.02$$

Generally speaking the empirical results seem fairly well established bearing in mind that the variables are measured as percentage changes. The overall fit as measured by the multiple coefficient of determination ( $R^2$ ) and the standard error of estimate ( $S_E$ ) are good, serial correlation measured by the Durbin-Watson statistic (D.W.) absent except from equation (4e), and for the limited number of degrees of freedom (d.f.) the coefficient estimates compare favourably with their standard errors given in parenthesis. Coefficients all have their correct a priori signs and in nearly every case are significant at 5% or better.

7. Solution of the Model: By a process of substitution the reduced form of the model was derived, expressing the balance of payments firstly in terms of wages and prices, the variables of interest, and secondly in terms of predetermined variables only. Equation (7) gives the partial reduced form with the definitions of the all positive  $\alpha$  coefficients in terms of the structural parameters listed in Appendix III.

$$(7) \quad B = -\alpha_0 + \alpha_1 X - \alpha_2 C + \alpha_3 K - \alpha_4 W - \alpha_5 P_{-1}$$

Algebraically, all coefficients have their correct a priori signs indicating that the impact of exports and capital inflows on the balance of payments will be positive, while domestic credit, wages and domestic prices will have negative impacts.

The full reduced form of the model expressing the balance of payments as a function of the predetermined variables only is given by equation (8).

$$(8) \quad B = -\beta_0 + \beta_1 X - \beta_2 X_{-1} - \beta_3 C - \beta_4 C_{-1} + \beta_5 K - \beta_6 P_{-1}^i - \beta_7 \Delta P_{-1} - \beta_8 B_{-1}$$

The definitions of the positive  $\beta$  coefficients in terms of the structural parameters are also given in Appendix III. The equilibrium balance of payments relationship when  $B = B_{-1}$  is given by

$$(9) \quad B^e = -\gamma_0 + \gamma_1 X - \gamma_2 X_{-1} - \gamma_3 C - \gamma_4 C_{-1} + \gamma_5 K - \gamma_6 P_{-1}^i - \gamma_7 \Delta P_{-1}$$

where  $\gamma_i = \beta_i / (1 + \beta_8)$  ,  $i = 0, 1, 2, \dots, 7$ . Further, the full stock equilibrium position for the balance of payments when  $X = X_{-1}$ ,  $C = C_{-1}$  and  $P = P_{-1} = P_{-2}$  is

$$(10) \quad B^* = -\delta_0 + \delta_1 X - \delta_2 C + \delta_3 K - \delta_4 P_{-1}^i$$

where  $\delta_0 = \gamma_0$  ,  $\delta_1 = (\gamma_1 - \gamma_2)$  ,  $\delta_2 = (\gamma_3 + \gamma_4)$  ,  $\delta_3 = \gamma_5$  and  $\delta_4 = \gamma_6$ . In the long run credit policy is the only instrument in the hands of local policy makers for controlling the balance of payments. Import prices are completely exogenous, except perhaps for the choice of sources of imports; capital inflows may be influenced by manipulating the investment

climate, and exports to the extent that the creation of export capacity and efficiency in the export sector can better equip the country to cope with given export markets. In the short run in addition, policy makers may seek to influence price expectations, which to the extent that they impel consumers to bring forward their purchases, can have a negative impact on the balance of payments.

8. The Results: It might be useful to summarize the reduced form coefficients in Table II.

Table II: The Reduced Form Coefficient Estimates

i	0	1	2	3	4	5	6	7	8
$\alpha$	-0.27	.64	.36	.61	.43	4.66	-	-	-
$\beta$	-1.07	.64	.05	.36	.07	.95	.08	.06	.07
$\gamma$	-1.00	.60	.05	.34	.07	.89	.07	.06	
$\delta$	-1.00	.55	.41	.89	.07				

All the coefficient estimates are of the correct sign. The short run elasticity of the balance of payments with respect to exports is .64, credit expansion -.36, capital inflows .61 and so on. Specifically, its reaction to the wage rate is -.43 while to prices it is a sizeable -4.66. Thus whereas wages have a relatively small negative

impact on the balance of payments, the analysis suggests that domestic prices should be more closely monitored. The full reduced form coefficients ( $\beta_i$ ) suggest that in the short run the immediate impact of exports is to improve the balance of payments, though one year later it can worsen it slightly ( $\beta_2 = -.05$ ). Domestic credit immediately worsens the payments position and continues its negative impact one year later. The impact of capital flows is immediate strong and positive. However import prices, price expectations and positive payments balances all impact negatively on the current balance with a one year lag but only weakly. The short run equilibrium payments position is not dissimilar from the dynamic position just described since last year's balance of payments has only a very small impact on the current balance.

In the long run exports, capital inflows and domestic credit policy would seem to be the critical variables since import prices have only a small negative impact. The estimated coefficients are thus very interesting. Capital inflows have a much stronger and positive impact on the balance of payments than exports, possibly because they may raise future export capacity. The relative size of the coefficients also suggests that the restrictions on domestic credit necessary to sterilise a given dollar inflow on capital account must be far more severe than for an equivalent inflow brought by exports. They also suggest that of all the relevant variables capital flows have the largest impact on the balance of payments and that in order to neutralise the impact of a given capital loss, exports must grow by a factor of 1.6 or credit restricted by a factor of 2.2.

9. Conclusion: The persistent tendency of imports to outstrip exports and for the 'need' to attract capital inflows to avert a balance of payments crisis is a recurring theme in dependent economies, and prior to 1974 this was no less true of Trinidad and Tobago. Already there is evidence that the very favourable balance of payments position has begun to decline. Orthodox price and income adjustment processes have been found inadequate to explain the chronic tendency to foreign exchange crises in Third World countries, and attention is being focussed on exchange relations and the dynamics implied by the very structure of the international system of resource allocation, trade, corporate structures and financial institutions. The construction, estimation and solution of an illustrative export propelled model of the functioning of the Trinidad and Tobago economy permitted us to trace the impact of wages and prices on the balance of payments. It has been found that domestic wages and prices impact negatively on the balance of payments but that while the former shows a modest influence, the impact of the latter is considerable. The implication is that were inflation to get out of hand it could seriously affect the balance of payments position. It would seem however that, because supply is so highly elastic on account of the high import content of expenditure, there is a systematic tendency away from explosive inflation. In fact the system seems rather stable. In the longer run capital inflows and exports have the strongest positive impact on the balance of payments, while domestic credit impacts negatively. The coefficient estimates suggest that the balance of payments is far more sensitive to capital movements than to exports or to domestic credit and that a flight of capital would pose problems of the utmost severity.

Appendix 1. The Balance of Payments Accounts

- A. Flows during unit time period, usually one year.
- I. CURRENT ACCOUNT
    - (a) Exports of Goods minus Imports of Goods equals  
Balance on Visible Trade.
    - (b) Exports of Services minus Imports of Services equals  
Balance on Invisible Trade.
    - (c) Balance of Visible Trade plus Balance of Invisible  
Trade equal Current Balance.
    - (d) Unrequited transfers (net).
  - II. CAPITAL ACCOUNT
    - (e) Long Term Capital Inflows minus Long Term Capital  
Outflows equals Capital Balance.
    - (f) Current Balance plus Capital Balance equal Basic  
Balance.
  - III. Short Term Monetary Flows (Net) plus Basic Balance equal  
Overall Balance. Like all double entry system of accounts  
the Balance of Payments always balances.
- B. Stock at a point in time, usually at year end.  
Total national liabilities minus total national assets equals  
Balance of Net Foreign Indebtedness.



## APPENDIX II:

Trinidad and Tobago Balance of Payments<sup>(a)</sup>

Year	(1) (b) \$m Exports (F.O.B.)	(2) (b) \$m Imports (C.I.F.)	(3) Balance of Trade (Visible and Invisibles)	(4) Current Balance (3) + Unr. Transfers	(5) Capital Inflows	(6) Basic Balance (4) + (5)	(7) Monetary Flows (net)	(8) Errors and Omis- sions	(9) Balance of Paymen (7) + (8)
1956	288.9	300.7	-27.7	-30.0	48.3	+18.3	-4.2	-14.1	-18.3
1957	327.8	355.0	-57.2	-59.2	100.6	+41.4	-38.0	-3.4	-41.4
1958	368.6	411.6	-48.6	-52.8	69.6	+16.8	-14.3	-2.5	-16.8
1959	390.3	390.3	-86.1	-89.7	109.2	+19.5	-3.3	-16.2	-19.5
1960	437.3	502.1	-86.2	-87.8	69.2	-18.6	+27.7	-9.1	+18.6
1961	553.6	584.0	-66.0	-72.3	54.4	-17.9	+20.8	-2.9	+17.9
1962	559.9	606.2	-93.2	-97.1	67.3	-29.8	14.1	+3.7	17.8
1963	595.0	644.0	-99.7	-102.4	134.7	-32.3	-40.4	6.3	+32.3
1964	693.4	731.6	-83.3	-84.5	56.5	-28.0	+33.2	-5.2	+28.0
1965	708.2	812.7	-84.7	-116.0	111.7	-4.3	-3.0	-7.3	+4.3
1966	751.1	777.1	-70.6	-62.4	52.6	-9.8	+16.0	-6.2	+9.8
1967	758.2	729.0	-23.0	-25.0	45.4	-20.4	-4.1	-16.3	+20.4
1968	948.2	853.9	+34.2	32.6	62.7	+95.3	-45.5	-49.8	-95.3
1969	991.0	963.6	-35.8	-38.4	132.0	+93.6	+6.3	-99.9	-93.6
1970	1,004.7	1,082.2	-136.8	-141.1	180.3	+39.2	+15.6	-54.8	-39.2
1971	1,060.7	1,310.0	-247.4	-256.1	265.1	+9.0	-42.9	33.9	-9.0
1972	489.2	810.9	-326.0	-334.5	215.6	-118.9	+45.6	73.3	+118.9
1973	652.9	797.1	-89.6	-108.4	120.2	+11.8	+30.6	-42.4	-11.8
1974	1,905.6	1,084.2	+440.5	+405.3	142.0	+547.3	-582.7	35.4	-547.3
1975	2,557.5	1,607.7	+631.8	+585.9	354.7	+940.6	-963.7	23.1	-940.6
1976	3,021.3	2,101.0	+518.3	+445.2	-35.0	+410.2	-401.7	-8.5	-410.2

(a) Elizabeth Parsan's assistance in compiling this table is acknowledged.

(b) Excludes oil u.p.a. since 1966.

Source: The Balance of Payments of Trinidad and Tobago - various issues.

## Appendix III: The Reduced Form Coefficients

$$\alpha_0 = c_2 (a_0 + a_1 b_0) / (1 + a_1 b_2)$$

$$\alpha_1 = 1 / (1 + a_1 b_2)$$

$$\alpha_2 = a_1 b_2 / (1 + a_1 b_2)$$

$$\alpha_3 = (1 - a_2) / (1 + a_1 b_2)$$

$$\alpha_4 = a_1 b_1 / (1 + a_1 b_2)$$

$$\alpha_5 = c_1 (1 + a_1 b_1) / c_2 (1 + a_1 b_2)$$

$$\beta_0 = (a_0 + a_1 b_0 + a_1 b_1 c_0 + a_1 b_1 c_1 d_0) / (1 + a_1 b_2)$$

$$\beta_1 = 1 / (1 + a_1 b_2)$$

$$\beta_2 = a_1 b_1 c_2 / (1 + a_1 b_2)$$

$$\beta_3 = a_1 b_2 / (1 + a_1 b_2)$$

$$\beta_4 = a_1 b_1 c_1 d_1 / (1 + a_1 b_2)$$

$$\beta_5 = (1 - a_2) / (1 + a_1 b_2)$$

$$\beta_6 = (a_1 b_1 c_1 d_2) / (1 + a_1 b_2)$$

$$\beta_7 = (a_1 b_1 c_1 d_3) / (1 + a_1 b_2)$$

$$\beta_8 = (a_1 b_1 c_1 d_1) / (1 + a_1 b_2)$$

Because the model is overidentified, there is no unique mapping between the structural and the reduced form coefficients. The  $\alpha$ -coefficients were obtained by substituting in equation (1) for imports given by equation (2) and then for expenditure from equation (3), wages from equation (4) and money from equation (6). In order to reintroduce the wage variable, equation (4) was inverted and lagged exports substituted. The  $\beta$ -coefficients were obtained by substituting into equation (7) from equation (5) for lagged prices.

Appendix IV: TSLS Estimates of the Model <sup>(a)</sup>

<sup>(a)</sup>Mr. E. Adams provided computational assistance on this section). The Ordinary Least Squares (OLS) results presented are known to be biased. An attempt was made to obtain consistent estimates by use of the two stage least squares (TSLS) method. The disadvantage of this procedure is that whereas for some variables data were available from 1956 and for other variables from 1960, a complete data set was only available for the shorter period 1968/1976 or for all variables except net domestic credit (C) from 1964. The degrees of freedom problem thus created forced the use of the OLS method for the general model. Experiments with the complete data set but with the missing data points replaced by the mean value of the net domestic credit variable altered the coefficient estimates only marginally and were accordingly discarded. For comparative purposes the OLS estimates and the TSLS estimates for the sample period 1964/1976, with 12 data points since variables are measured as percentage changes, are presented.

## Import Function

$$(2e') \quad \text{OLS} \quad I = -5.57 + 1.55E - .02K$$

$$(4.07) \quad (0.22) \quad (.03)$$

$$R^2 = .84 \quad \text{D.W.} = 1.75 \quad S_E = 69.54$$

$$(2e'') \quad \text{TSLS} \quad I = -5.49 + 1.54\hat{E} - .01K$$

$$(5.66) \quad (.32) \quad (.04)$$

$$R^2 = .73 \quad \text{D.W.} = 1.94 \quad S_E = 112.62$$

## Expenditure Function

$$(3e') \quad \text{OLS} \quad E = -1.60 + .51W + .66M$$

$$(3.56) \quad (.29) \quad (.23)$$

$$R^2 = .76 \quad \text{D.W.} = 1.70 \quad S_E = 36.03$$

$$(3e'') \quad \text{TSLS} \quad E = -3.28 + .43\hat{W} + .80\hat{M}$$

$$(5.00) \quad (.39) \quad (.36)$$

$$R^2 = .68 \quad \text{D.W.} = 2.10 \quad S_E = 51.6$$

## Wage Determination

$$(4e')/(4e'') \quad W = 2.84 + .58P_{-1} + .11X_{-1}$$

$$(1.80) \quad (.32) \quad (.07)$$

$$R^2 = .81 \quad D.W. = 1.49 \quad S_E = 16.03$$

OLS and TSLS estimates identical as independent variables were pre-determined in both cases.

## Price Determination

$$(5e') \quad OLS \quad P = -3.70 + .31M + .43P^i + .28\Delta P$$

$$(1.84) \quad (.09) \quad (.10) \quad (.19)$$

$$R^2 = .88 \quad D.W. = .86 \quad S_E = 7.76$$

$$(5e'') \quad TSLS \quad P = -5.63 + .49\hat{M} + .33P^i + .44\Delta P$$

$$(1.30) \quad (.08) \quad (.07) \quad (.13)$$

$$R^2 = .95 \quad D.W. = 1.07 \quad S_E = 3.21$$

As indicated by both equations (3) and (5) there are offsetting shifts in the coefficient estimates. For the shorter period the net capital inflow variable,  $K$ , was far from significant and far worse than for the longer period.

Estimates of the reduced form coefficients were derived as follows:

Method	i	0	1	2	3	4	5	6	7	8
OLS	$\alpha$	-.44	.49	.51	.50	.39	.51			
TSLS		-.52	.45	.55	.45	.35	.43			
OLS	$\beta$	-3.71	.49	.04	.50	.07	.50	.10	.06	.07
TSLS		-3.69	.45	.03	.55	.08	.45	.07	.08	.08
OLS	$\gamma$	-3.48	.46	.04	.47	.07	.47	.09	.06	
TSLS		-3.42	.42	.03	.51	.07	.42	.06	.07	
OLS	$\delta$	-3.48	.42	.54	.47	.09				
TSLS		-3.42	.39	.58	.42	.06				

There seems to be very little difference across the board between the two sets of coefficients, and this suggests that for the same sample period the OLS and TSLS reduced form coefficients are similar. There is however substantial difference between the reduced form coefficients derived from the longer data series 1956-1976 using the OLS method and that for the shorter data period presented here. In particular the reaction coefficients to exports and capital inflows ( $\beta_1$  and  $\beta_5$ ) are much smaller in the shorter more recent data period while the reaction to net domestic credit ( $\beta_3$ ) is larger. This might suggest structural shifts in the behaviour of the system.



## APPENDIX V: IMPACT MULTIPLIERS

The full solution of the estimated model yielded the matrix of impact multipliers

	X	K	$\Delta P$	P-1	X-1	$P^i$	C	const
B	.64	.61	0	-.21	-.05	0	-.36	-.69
I	.36	.39	0	.21	.05	0	.36	.69
$\hat{\pi} =$ E	.33	.31	0	.19	.04	0	.33	3.36
W	0	0	0	.48	.11	0	0	4.68
P	.20	.19	.29	-.07	-.02	.39	.20	-3.10
M	.64	.61	0	-.21	-.05	0	.64	-.68

These multipliers seem all well-behaved. However the specification of the model would seem to have defined fairly specific roles for the variables  $P^i$  and  $\Delta P$ , and the wage determination equation is not integrated into the model. There seems nevertheless some insights to be gleaned from the multipliers, even though their presentation is mainly for econometric completeness. In solving the model the variable  $\Delta P$  was regarded as a proxy for 'price expectations' and treated as exogenous. If however price expectations are endogeneously generated, then  $\Delta P$  should be expanded and the estimated equation (5e) rewritten as

$$(5ea) \quad P = -3.76 + .45M + .55P^i - .29P_{-1}$$

With this new price equation, the impact multipliers matrix becomes

	X	K	P-1	X-1	$P^i$	C	const
B	.64	.61	-.21	-.05	0	-.36	-.69
I	.36	.39	.21	.05	0	.36	.69
$\hat{\pi} =$ E	.33	.31	.08	.04	0	.33	3.36
W	0	0	.48	.11	0	0	4.68
P	.29	.28	-.38	-.02	.55	.29	-4.05
M	.64	.61	-.21	-.05	0	.64	-.68

NOTES

1. The author acknowledges the helpful comments on an earlier draft of this paper made by participants at the Tenth Annual Regional Monetary Studies Conference, and the written comments of T.W. Farrell.
2. Courtenay Blackman [4] has recently discussed these anxieties and problems in the differing circumstances of deficit and surplus in various Caribbean countries, and has suggested policy solutions.
3. Imports would indeed appear to follow exports with a lag. An Almon function with a third degree polynomial and four year lag when fitted to data on exports (X) and imports (I) for the years 1951 to 1977 was very well established ( $R^2 = .98$ , D.W. = 1.92) giving  $I = 147.72 + 0.24X + 0.3X_{-1} + 0.15X_{-2} + 0.06X_{-3} + 0.24X_{-4}$ . The impact of exports on imports peaks one year later and thereafter declines.
4. Guitian presents the complete monetarist position pointing out that in a closed economy or an open economy with freely fluctuating exchange rates the nominal money supply is in the control of the banking system and is exogenous. The public may by their action bring the real supply of money into equilibrium with demand by bidding up prices. However in an open economy with fixed exchange rates the money supply is endogenous since by their action the public can adjust it through deficits or surpluses in the balance of payments.
5. For the structure of the balance of payments accounts see Appendix I.
6. A recent publication by Trinidad and Tobago's Central Statistical Office entitled "Direct Foreign Investment Flows, 1973-1976 - A Special Supplement to the Balance of Payments Report, 1976" pointed out that in the three year period 1974 to 1976, foreign corporations reinvested \$1890.7m. of their retained profits and remitted \$132.3m.
7. Cheryl Payer [13] has analysed this problem in the context of world financial institutional arrangements e.g. the IMF and IBRD.
8. See Parris, op. cit.
9. It has been suggested that the 1975 capital inflow of \$354.7m. and the 1976 outflow of \$35m. were associated with speculative capital movements anticipating the revaluation of the Trinidad and Tobago dollar announced in May 1976.
10. See C.S.O.: Annual Statistical Digest - 1970, Table 153, p 140.
11. See C.S.O.: Quarterly Economic Report, October-December 1977, Table 9, p.13.

12. See C.S.O.: Economic Indicators, various issues.
13. See C.S.O. The Gross Domestic Product of the Republic of Trinidad and Tobago, 1977.
14. Central Bank of Trinidad and Tobago: Statistical Digest, various issues.
15. In order to examine the impact of net capital inflows on future export performance, the period 1951 to 1977 was examined using the technique of Almon lags. The results showed very high serial correlation. When however the abnormal years 1975 to 1977 were excluded and a second degree polynomial with lag of three years assumed, the following well-behaved regression emerged:

$$\begin{aligned}
 X = & 161.88 + 3.37 (K + K_{-1} + K_{-2} + K_{-3}) - 8.34 (K_{-1} + 2K_{-2} + 3K_{-3}) \\
 & (131.73) (1.22) \qquad \qquad \qquad (2.72) \\
 & + 3.02 (K_{-1} + 4K_{-2} + 9K_{-3}) \\
 & (0.90)
 \end{aligned}$$

$$R^2 = 0.60 \quad , \quad S_E = 262.57 \quad , \quad D.W. = 1.62 \quad , \quad d.f. = 17$$

From this

$$X = 161.88 + 3.37K - 1.95K_{-1} - 1.23K_{-2} + 5.53K_{-3}$$

These results suggest that capital inflows significantly enhance future export performance, and in equilibrium when  $K = K_{-1} = K_{-2} = K_{-3}$ .

change in exports with respect to capital inflows is 5.72 and the long run elasticity, calculated at the point of means, approximately 0.88. Norman Girvan urged investigation on this point.

16. For the period 1951 to 1962 on which data are available the correlation between the percentage change in the wage bill (WB) and the percentage change in the wage rate (WR) was 0.83, and 0.93 if the wage rate was lagged one period.
17. It is well known that the method of ordinary least squares (OLS) gives biased results when applied to simultaneous models in which endogenous variables appear on the right hand side of the estimated equation. The consistent method of two stage least squares (TSLS) yielded the results presented in Appendix IV.



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