"Capital Flows and Economic Performance in Trinidad and Tobago 1993 - 2001."

By

Mr. Arjoon Harripaul

Economist,

Central Bank of Trinidad and Tobago

CENTRAL BANK OF TRINIDAD AND TOBAGO

Research and Policy Department

CAPITAL FLOWS AND MACRO-ECONOMIC PERFORMANCE IN TRINIDAD & TOBAGO.

Arjoon Harripaul[1]

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Author's email address: aharripaul@central-bank.org.tt

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ABSTRACT

Capital Flows and Economic Performance in Trinidad and Tobago.

Trinidad and Tobago experienced an unprecedented inflow of foreign capital during the 1990s. As a percentage of GDP, these inflows increased from an average of about 7 per cent during 1987-91 to an average of around 17 per cent during the five years ended December 2000. The recent inflows, however, were distinctive in terms of the greatly increased importance of FDI (equity capital) and the greatly decreased importance of bank borrowing (debt capital). Whereas FDI amounted to almost US $500 million in the 1987-91 period, that figure increased almost six-fold to US $3.4 billion in the 1996-2000 period. Large capital inflows into some countries have held the promise of significantly increasing investment and growth by relieving some of the problems associated with limited capital resources and a deficiency in foreign exchange reserves. These inflows also help to push down domestic interest rates. However, large inflows can result in macroeconomic instability by contributing to an acceleration in domestic demand, a deterioration in the external current account, and pressures on the prices of goods, real estate and financial assets. The most serious concerns about capital flows stem from the possibility that they might abruptly slow or even reverse themselves.

The paper examines the extent to which capital inflows have altered the macroeconomic performance in Trinidad and Tobago over the last thirty years. An examination of the macroeconomic impacts of capital inflows was undertaken using a Block-Recursive Simultaneous Equation System Model. The results indicate that inflows of capital show no clear effect on investment and are inversely related to consumption in Trinidad and Tobago. The results confirm that foreign capital inflows do have a significant and positive impact on the employment generation process in Trinidad and Tobago. The study also found that increases in capital inflows are positively correlated with changes in the interest rates but had no effect on the determination of the real exchange rate in Trinidad and Tobago.

Keywords : Capital Inflows; Capital Mobility; Macroeconomic Impacts of Capital Inflows.

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CAPITAL FLOWS AND MACRO-ECONOMIC PERFORMANCE IN TRINIDAD AND TOBAGO.

1. INTRODUCTION

This paper attempts to explore and examine the impact of foreign capital flows on the macro-economy of Trinidad and Tobago. We use a block recursive econometric model in the Cowles Commission tradition to examine the impact of capital inflows on such key macroeconomic variables like investment, the real exchange rate, the domestic interest rate, employment and consumption in the economy of Trinidad and Tobago. However, the methodology adopted does not take into account the consequences which non-stationarity in several of the time series variables may have for the validity of the econometric results.

Capital flows in a small open developing economy should be a topic of great concern for anyone concerned with policy issues. Economic growth and development are undoubtedly two of the primary goals of most developing countries. Morisset (1989) argued that insufficient domestic savings are a key constraint in achieving sustainable economic development in these economies. In recent years, many developing countries particularly in Asia and Latin America have experienced a surge in private capital inflows. For a number of these countries including Trinidad and Tobago, this has served to relieve some of the problems associated with limited capital resources and a deficiency in foreign exchange. Although Trinidad and Tobago has been the recipient of significant capital inflows in the last two decades, economic transformation and development has proven to be elusive.

The government of Trinidad and Tobago embarked upon a programme of economic stabilization in the late 1980s that involved major changes in its commercial and trading policies. One of the most important efforts at restructuring the economy occurred in April 1993 with the shift from a fixed to a floating exchange rate regime. All remaining capital controls have been abolished facilitating the country's goal of improving efficiency in financial markets. Economic and financial liberalization has posed numerous

challenges for policymakers. However, there has been very little formal analysis of the impact of foreign capital inflows in the Caribbean.

2.   CAPITAL INFLOWS: Some Stylized Facts for Trinidad and Tobago.

By definition, net capital inflows represent the increase in the net indebtedness of the country, and are measured somewhat imprecisely by the surplus on the capital account of the balance of payments. Thus, increases in capital inflows can be identified with larger current account deficits and/or an accumulation of reserves. Table 1 disaggregates the Trinidad and Tobago balance of payments into its three main accounts with greater emphasis being placed on the capital and financial account. Capital inflows since the beginning of the 1990s have resulted in significant strengthening of the capital account in Trinidad and Tobago: surpluses were recorded in each of the last five years with very small deficits in the two preceding years. This conforms with the experiences of countries in Latin America and Asia where capital inflows have been associated with financial account surpluses. Table 1 also shows that the country's foreign reserves position strengthened considerably in this period, as the Central Bank realized large inflows of foreign exchange from government's divestment program and international borrowing activity. In Trinidad and Tobago a substantial amount of the capital inflows have been channeled into net official reserves, which increased by US $1.3 billion in the period 1994-2000.

Trinidad and Tobago experienced a nearly unprecedented inflow of foreign capital during the decade of the 1990s. This was immediately following the period of the international debt crisis when net inflows to the country had all but dried up. After averaging about US $400 million annually during 1983-1987, capital inflows rose to US $735 million in 1993 and US $1.1 billion by 2000. As a percentage of Gross Domestic Product (GDP), these inflows increased from an average of about 7 per cent during 1987-1991 to an average of around 17 per cent during the five years ended December 2000. The inflows, however, were distinctive in terms of the greatly increased importance of FDI (equity capital) and the greatly decreased importance of bank borrowing (debt capital).

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Table 1.
Trinidad and Tobago : Balance of Payments, 1994-2000.
/US $ Mn/

Items	1994	1995	1996	1997	1998	1999	2000
Current Account	221.4	269.9	68.2	-578.9	-645.3	30.6	544.3
Capital & Fin Acct. (Net)	-32.5	-27.5	43.1	840.8	694.4	217.9	264.7
Official Borrowing	-7.3	-97.6	47.4	-245.5	-105.7	124.4	114.9
Official Loans	0.0	0.0	0.0	0.0	0.0	0.0	0.0
State Enterprises	-107.6	-69.3	-24.3	-13.0	-5.7	-14.5	-61.0
Direct Investment	521.0	295.7	356.3	999.6	731.9	379.2	654.3
Commercial Banks[1]	-120.6	88.5	-27.4	21.9	-49.7	73.7	-86.1
Other Capital Flows	-318.0	-244.8	-308.9	77.8	123.6	-345.0	-357.4
Errors & Omissions	-7.9	-209.9	102.2	-86.7	31.5	-86.3	-368.0
Change in Reserves (Minus means increase)	-186.5	-40.5	-213.5	-175.3	-80.6	-162.2	-441.0
Exceptional Financing	5.5	8.0	0.0	0.0	0.0	0.0	0.0

Source : Central Bank of Trinidad and Tobago

Note :   (1) As a result of changes in the exchange rate regime in 1993 commercial banks are classified as part of private sector capital.

Foreign direct investment (FDI) not only recorded a steady increase during the 1990s but also attained unprecedented levels in Trinidad and Tobago during this period, topping the US $1 billion mark in 1997. Since 1993, ten additional gas-based plants have been installed in Trinidad and Tobago producing petrochemical products, iron and steel products and liquefied natural gas (LNG). The country has been the recipient of US $3.4 billion of FDI in the last five years (primarily in the oil and gas sectors) relative to only US $500 million in the 1987-91 period[1]. As a result of these investments, Trinidad and Tobago, as a single country, has become the world's largest exporter of ammonia and methanol and by 2003 will be the 5th largest exporter of LNG. Trinidad and Tobago was the second-largest recipient of FDI in Central America and the Caribbean in 2000 attracting US $680 million in FDI, or 12 per cent of the sub-regional total for that year.

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[1]Source: Annual Balance of Payments Reports, Various issues, CSO, and Annual Economic Survey, Various Issues, Central Bank of Trinidad and Tobago.

The country was also the second largest recipient of FDI in the Caribbean Basin throughout the period 1996-2000.

A significant component of FDI inflows during the 1993-1997 period was the proceeds from divestment. Seven State Enterprises were divested during this period accounting for just over US $500 million. The privatization of State assets in Trinidad and Tobago began in 1989, with the proceeds from divestment being used for external debt repayment and the accumulation of foreign reserves. In 1989, during the first year of the reform program, FDI flows more than doubled from the previous year.

Table 2.
Trinidad and Tobago : Recent Divestment - Foreign.

Company	Date Divested	Principal Investor	Value (US$Mn)
TSTT (49 %)	Dec. 1989	Cable & Wireless	85.0
Fertrin/TTUC (100 %)	Mar. 1993	Arcadian	132.1
T&T-Methanol (31 %)	Jan. 1994	Ferrostaal/Helm	47.0
Trinidad Cement (20 %)	Aug. 1994	CEMEX	10.8
Power Generation Company (49 %)	Dec. 1994	SEI/Amoco	107.5
ISCOTT (100 %)	Dec. 1994	ISPAT	70.1
BWIA (51%)	Jan. 1995	Acker Group	20.0
T&T-Methanol (69 %)	May 1997	Ferrostaal/Helm/CMC	104.4

Source : Divestment Secretariat of Trinidad and Tobago

Portfolio investment flows have not been very significant in Trinidad and Tobago, given the relatively underdeveloped domestic capital market among other factors. Cross border trading among the three regional Stock Exchanges (Jamaica, Barbados, and Trinidad and Tobago) commenced in April 1991, providing another source of portfolio capital movements. Initially trading was heavy but by mid-1992, the initial enthusiasm waned, on account of economic uncertainties in the respective economies.

Official capital flows complemented private capital flows in Trinidad and Tobago during the 1990s. Although the actual amounts received from the IMF via the two Stand-by arrangements were relatively small, the real significance was that it gave greater recourse to multilateral financing, significant debt rescheduling as well as debt conversion. Trinidad and Tobago is one of three regional countries that have accessed funding in the international private capital market. The country completed ten bond issues in the international and regional capital markets during the 1990s. After a five-year absence, the country re-entered the international capital market in 1992 raising US $525 million in bonds during 1992-2000. A further US $75 million was raised on the regional capital market during 1993-94. Furthermore, Trinidad and Tobago accessed just over US $800 million in loans from multilateral agencies in the 1990s. Table 3 presents a schedule of the characteristics of the outstanding issues during the last decade.

Table 3
Trinidad and Tobago : Bond Issues
1992-2000

Issues Date	Principal Amount	Coupon	Maturity
November 1992	US $100.0 million	11.5 %	November 1997
July 1993	US $25.0 million	10.25 %	July 1996
November 1993	US $125.0 million	9.75 %	November 2000
August 1994	US $50.0 million	10.83 %	August 1997
October 1994	US $150.0 million	11.75 %	October 2004
December 1996	US $150.0 million	8.0 %	December 2006
November 1998	US $150.0 million /1	Libor plus 3.26%	November 2008
September 1999	US $230.0 million	9.88 %	October 2009
June 2000	US $250.0 million	9.75 %	June 2020
June 2000	US $100.0 million	3.75 %	June 2030

Source : Central Bank of Trinidad and Tobago
/1   Domestic bond Issue in foreign currency.

Various factors, both domestic and external, explain the resurgence of capital inflows into Trinidad and Tobago during the 1990s. On the domestic side, the perceived riskiness of Trinidad and Tobago's investments was reduced, and the expected rate of return increased, by a series of reform and stabilization measures undertaken during the latter part of the 1980s and throughout the 1990s. Structural reforms undertaken during this period included the lowering of trade barriers, the liberalization of the financial system and privatization and restructuring of state-owned enterprises that had been nationalized since the 1970s, and the near elimination of the fiscal deficit. The policy shift may have also been influenced by the demonstration effects of certain successful strategies followed by a few developing countries, the so-called NICs in particular. Their export-oriented development strategy, particularly the emphasis on foreign investment and trade, is considered the main cause of their success. These reforms together with the stabilization programme initiated in 1988, were aimed at correcting the imbalance in the external account.

Table 4.
Trinidad and Tobago : Selected Economic Indicators, 1994-2000.
/Per cent of GDP unless otherwise stated/

Indicators	1994	1995	1996	1997	1998	1999	2000
Growth Rate of Real GDP	5.2	3.2	2.8	3.0	4.0	5.0	4.7
Current Account Balance	4.4	5.0	1.2	-9.9	-10.2	0.4	6.7
Capital Account Balance	-0.7	-0.5	0.8	14.4	10.9	3.2	3.3
Overall External Balance	3.6	0.6	3.9	3.0	1.3	2.4	5.4
Direct Foreign Investment	10.4	5.5	6.3	17.3	12.6	9.3	8.4
Inflation Rate (%)	8.8	5.3	3.3	3.7	5.6	3.4	3.6
Exchange Rate (TT$/US$)	5.87	5.89	5.99	6.25	6.28	6.27	6.28
Public Sector External Debt	41.3	35.4	34.1	26.8	23.2	23.0	20.7
Gross National Savings	19.1	25.8	25.5	26.2	16.8	21.3	24.2
Overall Fiscal Balance	0.0	0.2	0.5	0.1	-1.9	-3.1	1.6
Gross Capital Formation	14.5	20.8	24.3	36.2	28.1	20.9	17.5
Net Intl Reserves (US$Mn)	514.5	460.2	700.6	854.3	984.8	1073.3	1600.4

Sources : Central Statistical Office and Central Bank of Trinidad and Tobago

Evidently, all the major macroeconomic indicators suggest that the stabilization program was initially very successful in several respects. The exchange rate was relatively stable, the rate of inflation declined from 10.8 per cent in 1987 to 3.6 per cent in 2000, while GDP growth, which on balance had been nearly flat for the 1989-1993 period, showed positive growth for seven consecutive years beginning 1994. Additionally, the fiscal accounts were in virtual balance during the 1990s.

The stabilization program alone, however, cannot explain the surge in capital inflows, since this surge began well before inflation had come down and output had begun to recover. A second important factor in stimulating capital inflows may well have been the two successive Standby Agreements signed with the IMF which allowed the successful negotiation of debt rescheduling agreements which Trinidad and Tobago signed with its commercial bank creditors in 1989. In addition, the relatively attractive fiscal incentive packages offered to potential investors as well as the stable political climate in Trinidad and Tobago would certainly have played a role.

Finally, the inflow of capital into Trinidad and Tobago undoubtedly was spurred by the decline in US interest rates. The search for higher rates of return outside the US, coupled with the discrediting of direct bank lending in the aftermath of the debt crisis, probably explain much of the shift from bank lending to FDI in the composition of capital inflows into Trinidad and Tobago and other emerging market economies.

3.   CAPITAL INFLOWS: An International Perspective.

International capital flows increased significantly during the 1990s due to advances in communication and information technology and the liberalization of financial and capital markets. Hausler (2002) estimates that net global capital flows increased from US $500 billion in 1990 to almost US $1.2 trillion in 2000. For many of the world's emerging markets, private flows have become the major source of external financing, and account for three-quarters of all long-term resource flows. The developing economies of the Asia-Pacific Economic Cooperation Council (APEC) have been the recipients of a considerable volume of capital inflows in the 1990s. For example, in 1993 capital inflows to the APEC countries accounted for about 85 per cent of the capital that went to developing economies.

During 1990-93, developing economies in Asia received a net capital inflow of US $151 billion, more than double the amount recorded for the previous four years. Latin America and the Caribbean also attracted large amounts of foreign capital during the last decade accounting for about 25 per cent of flows into developing countries in 1996. Total net financial flows to the Caribbean grew from just below US $1 billion in 1990 to US $3.3 billion in 2000 as the proportion of private capital flows increased from 30 per cent to 94 per cent over the same period. Trinidad and Tobago and Jamaica were the main recipients of FDI flows to CARICOM accounting for 45 per cent and 15 per cent respectively during the 1996-2000 period.

These developments represent a major turning point from the previous decade, when, because of the debt crisis, little capital flowed to most developing countries. The debt crisis of 1982 was precipitated by a swift decline in capital inflows at a time when highly indebted developing countries were facing a slowdown of the world economy, a large increase in international interest rates, and a sharp loss in terms of trade. Capital flight, weak economic policies and institutions in many developing countries exacerbated the effects of these shocks. During the decade following the initial shock, most of these countries set about adjusting their policies and institutions to the new situation of severely restricted external financing. For the first few years after the debt crisis, most lending to these countries took the form of official loans from international financial institutions to support the reforms necessary to achieve sustainable balance of payments and at the same time laying the foundations for economic growth. However, the recent flow of capital has been of a much different composition than the 1970s spate of financing which preceded the debt crisis. Whereas the earlier flows were dominated by loans from large commercial banks, the new round of financing has a much higher content of portfolio equity, bonds and FDI. Therefore, in addition to relaxing the severe financial constraint the new wave of capital has the added advantage in that the flows are going to the private sector and are predominantly in the form of equity capital rather than debt financing.

Private capital flows, as defined in this paper, have two major components : FDI and private borrowing. The issue of whether the inflows were primarily driven by sound domestic policies and market-oriented reforms - the "pull" factors - or declining international interest rates and poor returns in stock markets in industrial countries - the

"push" factors - became a focal point of the policy discussions. If external conditions played a key role in inducing the inflows, it has been argued, then there is cause for greater concern, as a change in the international environment could prompt a reversal of the flows. On the other hand, if these inflows were responding primarily to conditions in the recipient countries, there is less reason to be concerned about swift reversals. Therefore, according to Khan and Reinhart (1995), policies would thus need to be set according to which factors appeared dominant. History has also shown that external factors tend to have an important cyclical component, which has given rise to repeated booms and busts in capital inflows.

The recent surge in capital inflows was *initially* attributed to domestic developments, such as effective stabilization programs, liberalization of the capital and trade account and credibility in the conduct of macroeconomic policy. Eventually it became clear that the phenomenon was widespread and this suggested the existence and interplay of important global factors. Reisen (1993) argues that the revival of capital inflows in Latin America can be seen as home-made : balanced budgets, lower inflation, privatization and deregulation, trade liberalization, and the restructuring of the external debt. If that was the case then there would have been little reason to expect an early reversal of the capital inflows in Latin America. However, this is not the first time in this century that there have been substantial capital inflows to that region. The most recent was in the period 1978-82 which led to the Latin American debt crisis. Prior to that there was another important period in the 1920s. Both periods saw huge capital inflows from the United States, and in both periods the flows were reversed leading to major crises. Many Asian countries building on sound economic policies and strong performances in the latter half of the 1980s continued to attract rising levels of net inflows, especially FDI.

Several factors and trends interacted in the early 1990s to make developing countries a fertile territory for the renewal of foreign lending. First, the sustained decline in world interest rates, coupled with a recession in several of the industrial countries stimulated investor interest in relatively higher-yielding developing country securities. In fact, by late 1992, US short-term interest rates were at their lowest level since the early 1960s. The lower interest rates also improved the creditworthiness of debtor countries, reducing default risk, an improvement which is reflected in the marked rise in secondary market prices of bank claims on most of the heavily indebted countries. Second, there has

been a trend towards international diversification of investments in major financial centers. Increasing amounts of funds managed by institutional investors such as life insurance companies and mutual funds have entered emerging markets. Regulatory changes in the United States have also made it easier for foreign firms to place their equity and bonds under more attractive conditions to investors. Third, many heavily-indebted countries made significant progress towards improving relations with external creditors. Fourth, several countries began to adopt sound monetary and fiscal policies as well as market-oriented reforms that have included trade and capital market liberalization. There may also be contagion or bandwagon effects, such as when adverse news about one country's creditworthiness alters international investors' perception of others'. Given this mix of domestic and external factors, the empirical evidence seems to suggest that external forces have been quite important impulses to capital flows in the first half of the 1990s.[2]

4. TOWARDS A THEORETICAL FRAMEWORK

This section seeks to find an appropriate theoretical framework for analyzing capital inflows in a small developing country. A review of the various theories and models of capital flows suggests that the imperfect capital-mobility case provides the most appropriate framework of analysis for an economy like Trinidad and Tobago. One that does not play a dominant role in international financial markets, does not have a well-established domestic capital market and where macroeconomic policies do not affect world interest rates.

Perhaps the most applicable model for Trinidad and Tobago is the one adopted by Frankel (1994) which makes use of a standard textbook example of an open economy model under conditions of less than perfect capital mobility. We can summarize the negative relationship between income and the rate of interest necessary to maintain equilibrium in the market for goods and services by a downward-sloping line. The IS

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[2] Calvo, Leiderman and Reinhart (1993) indicate that foreign factors accounted for 30 to 60 per cent of the variance in real exchange rates and reserves in a sample of ten Latin American countries. Similarly, Chuhan, Claessens and Mamingi (1993) find that external variables account for about one third of bond and equity flows in Asia.

curve depicts equilibrium in the goods market and is determined by the rate of interest and by the real exchange rate, or terms of trade. Other variables that might enter the aggregate demand function include government spending and wealth. The upward-sloping LM curve describes equilibrium in the money market where real money demand depends on real income and the rate of interest. At every point along the curve the quantity demanded of money (L) equals the fixed money stock (M/P). At points to the right of the LM curve, the quantity demanded of money exceeds the money stock; at points to the left, the opposite holds. Other variables that may influence the demand for money include expected depreciation of the domestic currency, the stock of bonds and other assets, and the expected rate of inflation.

4.1 Consequences of Capital Inflows under conditions of Imperfect Capital Mobility.

The assumption of perfect capital mobility in the capital market is rarely observed. Investors do respond to international changes in interest rates by altering the compositions of their portfolios. However, the responses may not be instantaneous, many investors may prefer assets denominated in certain currencies, and government policies may partially restrict mobility. Capital mobility may also be less than perfect due to transactions costs, default risk, foreign exchange risk, or perceived risk of future capital controls. This case is probably the more realistic one for most newly industrializing countries, despite financial liberalization.

Figure 1 illustrates the case of imperfect capital mobility. When capital is imperfectly mobile, a question arises concerning the relative slopes of the LM and BP curves. In this case the BP curve is an upward-sloping relation between income and the interest rate. An increase in income draws in imports; if the overall balance of payments is to be zero, the interest rate must rise to attract capital to offset the deficit on the current account. The more mobile capital is, (that is, the more sensitive capital flows are to the interest rate) the smaller the required rise in the interest rate and the flatter the BP curve. We will examine the case in which the BP curve is flatter than the LM curve, that of fairly high capital mobility.

We now consider four possible sources of a reserve inflow. Firstly, the exogenous fall in world interest rates. At point S in Panel A, the reserve inflow is sterilized. As long as the central bank is prepared to sell bonds to sterilize the inflow, the interest rate is kept above the world level. Eventually, the authorities would have to let the money supply increase. When this happens the economy begins to move to the right until it reaches point M. If the central bank chooses to let the currency appreciate, the outcome is A. As would be expected, the increase in demand for domestic bonds lowers the domestic interest rate, regardless of the degree to which the authorities respond by allowing the currency value or money supply to increase.

Next comes the improvement in the trade balance, shifting the IS and BP curves to the right. This can arise from an exogenous commodity boom or an increase in exports engendered by a devaluation. Once again, sterilization can succeed in holding the interest rate up at point S in Panel B for a while. The central bank will once again be forced to give up on its attempt to hold the money supply fixed, and the money inflow moves the economy toward the equilibrium at M. If the central bank chooses instead to give up on its exchange rate target, the appreciation moves the economy to A, which in this case is the same as the starting point. (The attempt to devalue, if that is what shifted the IS curve outward in the first place, is not successful.)

The third experiment, a deliberate contractionary monetary policy to fight inflation moves us to point S in Panel C. Because capital mobility is merely high, but not perfect, sterilization of the inflow so as to remain at point S for a while is a viable option. As long as the central bank continues to sterilize, it can maintain the interest rate at the higher level. If it chooses to stop the sterilization, money will flow in through the balance of payments and the economy will move down the IS curve toward the starting point M. If the central bank chooses to abandon the exchange rate peg, the currency appreciates, rendering producers less competitive on world markets and reducing net exports. The result is to shift both the IS curve and the BP curve to the left, until all three curves intersect at point A.

The final experiment, the increase in demand for money, can be examined under conditions of imperfect capital mobility in Panel C. The sterilization point S entails

needlessly high interest rates and a contraction of economic activity. It is better in the circumstances not to attempt sterilization, but rather let the money that residents want to hold gradually flow in so as to return the economy to M. It would be better still to increase domestic credit deliberately to return the economy to its starting point right away.

Although the simple open economy model is limited in a number of respects, it does suggests that a surge in capital inflows is likely to be accompanied by a rise in consumption and investment, an increase in real money balances and foreign exchange reserves, a real exchange rate appreciation, and a widening of the current account deficit. Including other assets into the model is likely to indicate that new inflows would be associated with higher equity and real estate prices. This very simple framework suggests that sterilization is not necessarily a better solution, and only under very particular conditions does sterilization result in an increase in domestic interest rates.
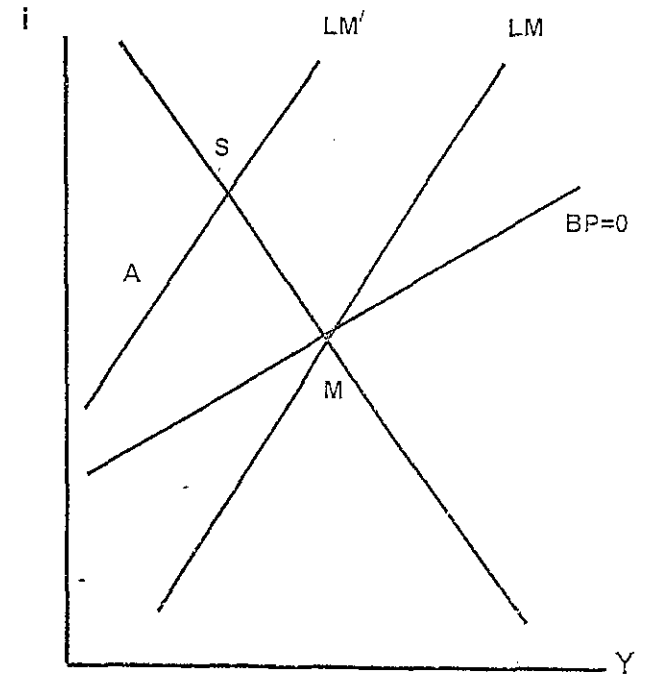
Figure 1. The Effects of a Capital Inflow : Imperfect Capital Mobility
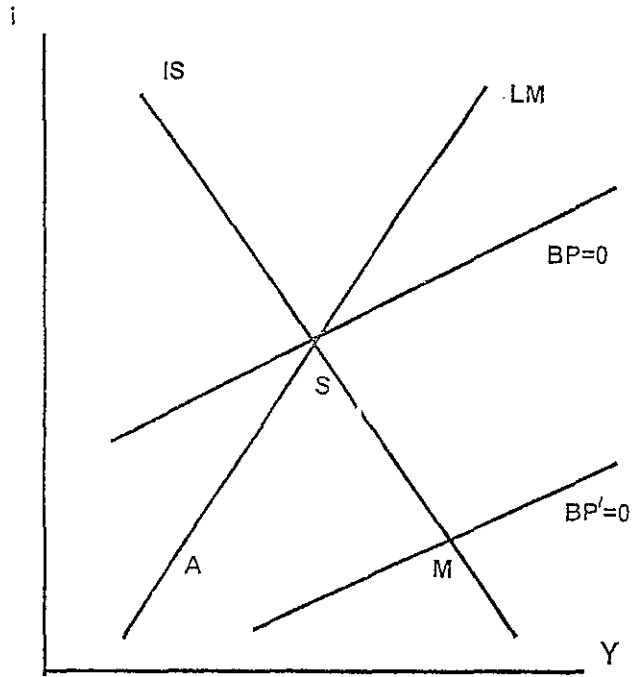
Panel A
Fall in Foreign Interest Rate
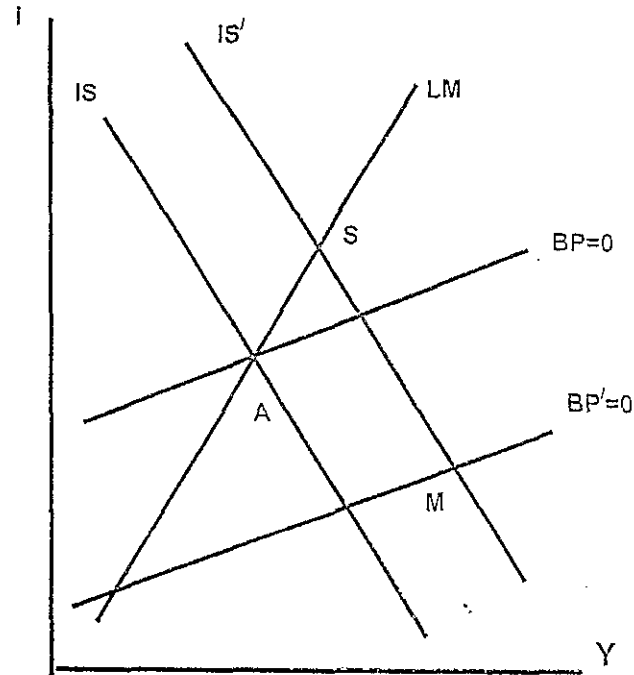
Panel B
Increase in Exports

Panel C
Monetary Disturbance

5. EMPIRICAL INVESTIGATION AND RESULTS

This section attempts to gauge empirically the extent to which capital inflows have altered macroeconomic performance in Trinidad and Tobago. The main proposition of this study is that foreign capital inflows, if not properly managed, can have a destabilizing effect in a small open economy. In light of the above, a series of axioms has been set up and tested in the Trinidad and Tobago context. These include the following questions :

1. Do capital inflows lead to increased levels of private investment, employment and hence economic growth?
2. Do capital inflows lead to lower interest rates and higher levels of inflation?
3. Do capital inflows stimulate private consumption?
4. Do capital inflows lead to a real exchange rate appreciation and a deterioration in the reserves position?

The empirical work presented in this section addresses some of these concerns using data from Trinidad and Tobago for the thirty-year period 1969-1998.

5.1 MODEL SPECIFICATION

The theoretical framework seems to suggest that foreign capital inflows in Trinidad and Tobago should impact at least three sectors of the economy: the monetary sector, the external sector and the real sector. An examination of the impact on these three sectors is being undertaken with a Block-Recursive Simultaneous Equation System containing seven (7) behavioral equations and six (6) identities.

A. The Monetary Sector

$$r_{diff} = f (M^s, KF)$$
$$RER = f (ABSPT, ITT, BoP, KF)$$

where:

r_{diff} = Interest Rate Differential, Trinidad and Tobago's treasury bill rate minus US treasury bill rate.

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M^s	= Broad Money Supply, M-2.
KF	= Foreign Capital Inflows.
RER	= Real exchange rate index, (1990=100).
ABSPT	= Domestic Absorption, (C+I+G), const. 1985 prices, TT$Mn
ITT	= Implicit Trade Tariff (an indicator of trade policy).
BoP	= Overall Balance of Payments position, TT$Mn

B.   The External Sector

$$KF \equiv KF_p + KF_g$$

$$BoP \equiv CAB + NKF + Err$$

$$NKF \equiv KF - OK$$

$$X = f(GDP, RER)$$

$$M = f(GDP, RER)$$

where:

KF_p	= Private Foreign Capital Inflows.
KF_g	= Public Sector Foreign Capital Inflows.
CAB	= External Current Account Balance.
NKF	= Net Foreign Capital Flows.
Err	= Errors and Omissions in the BoP accounts.
X	= Exports of GNFS, constant 1985 prices, TT$Mn.
M	= Imports of GNFS, constant 1985 prices, TT$Mn.

C.   The Real Sector

$$I \equiv I_p + I_g$$

$$I_p = f(r_{diff}, GDP, KF_p, S_f)$$

$$GDP \equiv C_p + I + G + BoP$$

$$ABSPT \equiv C_p + I + G$$

$$EMP = f(GDP, Wages, KF)$$

$$C_p = f(GDP, r_{diff}, KF, C_p(-1))$$

where:

I	= Gross Capital Formation, constant 1985 prices, TT$Mn.
I_p	= Private Capital Formation, constant 1985 prices, TT$Mn.
I_g	= Government Capital Formation, const. 1985 prices, TT$Mn.
GDP	= Gross Domestic Product, constant 1985 prices, TT$Mn.
S_f	= US gross private savings, US$Mn.
C_p	= Private Consumption Exp., constant 1985 prices, TT$Mn.
G	= Govt Final Consumption Exp., constant 1985 prices, TT$Mn.
RER	= Real exchange rate index, 1990=100.
EMP	= Absolute level of employment.
Wages	= Index of Real Earnings, 1977=100.

There are seven (7) behavioral equations (hereafter referred to as equations 1 through 7, respectively) in the model. The linear representation of the behavioral equations can be represented as follows:

$$I_p = a0 + a1*r_{diff} + a2*GDP + a3*KF_p + a4*S_f \qquad (1)$$

$$EMP = b0 + b1*GDP + b2*Wages + b3*KF \qquad (2)$$

$$C_p = c0 + c1*GDP + c2*r_{diff} + c3*KF + c4*C_p(-1) \qquad (3)$$

$$r_{diff} = d0 + d1*M^s + d2*KF \qquad (4)$$

$$RER = e0 + e1*ABSPT + e2*ITT + e3*BoP + e4*KF \qquad (5)$$

$$X = f0 + f1*RER + f2*GDP \qquad (6)$$

$$M = g0 + g1*RER + g2*GDP \qquad (7)$$

5.2 DATA STRUCTURE AND SOURCES

The model was estimated using annual data for the period 1969 to 1998. Data for all foreign variables were compiled from the International Financial Statistics (IFS) published by the International Monetary Fund (IMF), except US gross private savings which was obtained from the website of the US Department of Commerce, Bureau of Economic Analysis (BEA). The domestic data were obtained from various Statistical Reports of the Central Bank of Trinidad and Tobago (CBTT) and the Central Statistical

Office (CSO). The Balance of Payments statistics, which dates back to 1955, and the records of the Debt Monitoring Unit of the Central Bank dating back to 1986 were the primary sources of data. The Central Bank's record of sources and uses of foreign currency also proved to be very useful. The implicit trade tariff index (ITT) used in Equation (5) in the monetary sector is used as an indicator of trade policy and is calculated as the value of duty collected on imports less subsidies on imported items divided by the Dutiable Import Bill[3]. Data for this index was sourced from CSO Overseas Trade Report Part B, Various Issues.

A key issue in this research is the determination of the definitional, conceptual and measurement problems related to capital flows. The current state of the art as suggested in the fifth edition of the IMF's Balance of Payments Manual (BPM5) was employed. According to this Manual, capital flows in the balance of payments are divided into two main categories: the **capital account** and the **financial account**. This study is particularly concerned with the financial account which is defined as all transactions associated with changes of ownership in the foreign financial assets and liabilities of an economy. Increases in financial assets and decreases in financial liabilities are recorded as debits; decreases in financial assets and increases in liabilities are recorded as credits in the accounts. Items in the financial account are classified according to type of investment or by functional category (*direct investment, portfolio investment, other investment, reserve assets*). In the Trinidad and Tobago system further distinctions are made between public and private flows and the maturity structure of some of these flows. As regards the public sector a relatively comprehensive database exists at the Central Bank so that coverage and measurement are quite complete. However, with respect to the private sector measurement problems were compounded when restrictions on capital flows were removed in 1993. However, foreign direct investment flows are calculated on the basis of a fairly comprehensive enterprise survey. Portfolio investments are small at present and are limited to cross-border trading on the Stock Exchange but have the potential to assume far greater significance as mutual funds and other investment instruments are developed.

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[3]See Ramkissoon (1999)

5.3 MODEL ESTIMATION AND ANALYSIS OF RESULTS

The entire model consists of thirteen (13) equations of which seven (7) are behavioral and six (6) are identities. The model was solved using the TSP (Time Series Processor) programme (version 4.4). Given the fact that the system of simultaneous equations was block recursive, the parametric estimates were derived using the OLS estimator. This estimator is consistent and unbiased for recursive systems.

The results of the regression are presented in Table 5 below:

Table 5

Coefficient Values from OLS Estimation of Macroeconomic Impacts of Foreign Capital Inflows in Trinidad and Tobago.

Dependent Variables	Constant	R_{diff}	GDP	KF_p	S_f	Wages	KF	$C_p(-1)$	M^s	ABSPT	ITT	BoP	RER
I_p	-0.230E+04 (-3.73)	18.5 (0.474)	0.373 (6.97)	0.531E-02 (0.084)	-2.35 (-4.95)								
EMP	243.0 (12.3)		0.747E-02 (3.91)			-0.065 (0.212)	0.011 (4.33)						
C_p	-0.175E+04 (-2.25)	-97.0 (-2.2)	0.65 (6.37)				-0.235 (-2.28)	-0.012 (-0.088)					
r_{diff}	-3.73 (-2.96)						0.118E-02 (2.13)		0.706E-04 (0.277)				
RER	30.2 (0.96)						-0.675E-03 (-0.798)			0.234E-02 (5.34)	25.5 (1.02)	-0.520E-02 (-2.96)	
X	0.477E+04 (2.27)		0.308 (2.70)										-41.8 (-1.69)
M	-0.333E+04 (-3.86)		0.368 (7.86)										12.0 (1.18)

(T-Statistics are in Parentheses)

The diagnostic statistics from the regression are presented in Table 6 below:

Table 6
Diagnostic Statistics from the Estimated OLS Regressions

Dependent Variables	R^2	Adjusted R^2	DW	F-Statistics
I_p	0.874	0.854	1.44	279.30
EMP	0.860	0.844	1.31	221.11
C_p	0.946	0.938	1.71	315.71
r_{diff}	0.372	0.325	0.454	88.841
RER	0.644	0.586	1.72	179.27
X	0.215	0.157	0.145	304.79
M	0.792	0.776	0.853	292.99

*5.3.1   The Impact of Capital Flows on Investment in Trinidad and Tobago,
Equation 1.*

In the equation for private investment with the capital inflow variable (Equation 1),
we get the expected positive effect of real GDP on the change in investment. In fact,
increases in GDP have a positive impact on private investment. The change in the interest
rate differential shows a near zero effect on the change in investment. This is hardly
surprising and entirely consistent with the results of previous studies on the corporate
financing behavior of firms in Trinidad and Tobago, including the work of Farrell et al
(1986). One of the main findings of these researchers was that internal funds were the
preferred means of financing capital investment in Trinidad and Tobago. Entirely
surprising though is the negative (but significant) relationship between gross private
savings in the US and private investment in Trinidad and Tobago. The private capital
inflow variable shows no clear effect on investment, perhaps suggesting that private
inflows of capital have not been an important determinant of investment in Trinidad and
Tobago. This result is consistent with a widespread view that capital inflows financed

consumption rather than investment in many other developing countries. However, these results are too preliminary to be deemed conclusive.

5.3.2 *The Impact of Capital Flows on Employment in Trinidad and Tobago, Equation 2.*

The a priori expectation that increases in real GDP would impact positively on the level of employment in Trinidad and Tobago was confirmed in this study. The results suggest that the index of real earnings (wages) is an insignificant variable in the determination of employment in Trinidad and Tobago. There may be two plausible explanations. Firstly, the Trinidad and Tobago labour market can hardly be described as a competitive market as wage rates tend to be sticky downwards. In this scenario, wage rates do not fall sufficiently to clear the market when unemployment is high. Secondly, the 1977 base year for the index of real earnings may be clearly inappropriate. The results confirm that foreign capital inflows do have a significant and positive impact on the employment generation process in Trinidad and Tobago. Indeed, the central government, being the largest single employer, can increase employment opportunities as its foreign finances increases.

5.3.3 *The Impact of Capital Flows on Consumption in Trinidad and Tobago, Equation 3.*

Theoretically, consumption demand will be negatively affected by the cost of funds (proxied by the change in the interest rate, r_{diff}) and will be positively affected by income (real GDP). The results show that the income variable has a strong positive relationship with consumption while as expected consumption and interest rates have an inverse relationship. In addition, to the extent that consumption is constrained by the availability of credit (as distinct from the cost of credit), consumption may also depend indirectly, on capital inflows (KF). Different types of capital flows might have different effects on consumption. Many observers believe that foreign direct investment (FDI) should have less impact on consumption, because most FDI is thought to finance investment spending and the purchase of capital goods imports. In this context FDI may be less likely to be intermediated through the domestic banking system, and hence less likely to increase consumption, than would other types of capital inflows, such as portfolio investment.

According to the results, capital inflows are inversely related to consumption in Trinidad and Tobago possibly because FDI has tended to dominate these flows particularly in the latter years of the survey.

5.3.4 *The Impact of Capital Flows on Interest Rates in Trinidad and Tobago, Equation 4.*

Increases in capital inflows in the form of short-term portfolio flows would induce the authorities to lower interest rates because (1) they bolster the monetary authorities' reserve position and hence reduce the need for additional inflows, and/or (2) capital inflows are costly to sterilize, and lowering interest rates both implies less sterilization and smaller future inflows. If, however, the flows are deemed permanent, (FDI and long-term bank lending) as is the case in Trinidad and Tobago, the authorities are less inclined to change the interest rates in response. The study found that increases in capital inflows are positively correlated with changes in the interest rates. Changes in the money supply (M2) were found to be an insignificant explanatory variable in the determination of interest rates in Trinidad and Tobago. This finding is corroborated by other studies done in the Caribbean, (see Bourne and Worrell (1989)).

5.3.5 *The Impact of Capital Flows on the Real Exchange Rate in Trinidad and Tobago, Equation 5.*

Theoretically, capital inflows are likely to cause an appreciation of the exchange rate, either (1) by causing the nominal exchange rate to appreciate in a floating exchange rate regime, or (2) by boosting the money supply, aggregate demand, and hence non-tradeables prices in a fixed exchange rate regime. For a significant period of this study Trinidad and Tobago operated a fixed exchange rate system. However, capital inflows have had no effect on the determination of the real exchange rate in Trinidad and Tobago. In addition, the ITT variable which was used as a proxy for foreign trade policy also proved to be insignificant. Domestic absorption and the outcome of the balance of payments were the two most important variables in the determination of the real exchange rate. Increases in domestic absorption tend to increase the demand for foreign exchange which would ultimately put pressure on the real exchange rate. Persistent deficits on the overall balance

of payments position has also led to a series of devaluations of the Trinidad and Tobago dollar prior to 1993 and somewhat mild depreciations since then.

5.4   DISCUSSION OF MODEL PERFORMANCE

The results of the estimation phase are somewhat disappointing though not entirely surprising. Several theorists dispute the superiority of time series techniques and the poor simulation performance of structural models. This thesis can advocate several probable reasons for poor model performance while suggesting ways for improvement and avenues for future work.

Firstly, the exclusion of relevant explanatory variables in model estimation could be responsible for poor model performance. Low values for coefficients of determination and adjusted coefficients of determination are suggestive of this type of model mis-specification. Political and socio-economic variables that also impact significantly on the levels of private capital inflows in Trinidad and Tobago have not been explored in this study. For example, relatively generous and attractive fiscal incentives, the enactment of proper legislation governing foreign investment and a stable political climate may have contributed significantly to investment decisions in favour of Trinidad and Tobago. The inclusion of these and other explanatory variables and an extension of the model may therefore yield better results.

Secondly, reliable and sufficient data are absolutely crucial in econometric modeling. Most of the data for the monetary and external sector are denominated in foreign currency and were converted to Trinidad and Tobago dollars. Consequently, growth in some of the variables may have been due to purely valuation changes. In April 1993 the government of Trinidad and Tobago abolished exchange controls and floated the currency. As Coker and Seepersad (1993) pointed out, serious data problems arose as a result of this action. A number of statistical sources were automatically discontinued, causing a loss of some data series and a deterioration in the quality of others. In this regard, some capital transactions of the private sector may be outside the scope of the statistical agencies and therefore go largely unreported. This study recommends that the authorities devote sufficient resources into the collection and processing of private sector

external capital transactions. A number of new enterprise surveys must be introduced to compensate for the loss of data previously gathered from the now defunct exchange control records.

The functional form of the model presented in this section is linear in specification. Linear models are generally favoured in econometric analysis because they are easy to interpret, and easily generate solutions to an equation system. The poor performance of this linear model may be indicative of the presence of non-linear relationships in the model's variables. Perhaps a non-linear specification of the system may present better results.

The fact that some of the variables may be non-stationary may have implications for the validity of the estimation results. The OLS estimator need not be a BLUE estimator and a separate literature, that is, the literature on cointegration, has been developed to deal with the question of non-stationarity in single equation econometric models. The literature on non-stationarity in simultaneous equation models is not as well developed although the Johansen technique can be employed for parsimonious models. One form of the model for further research is extending the model to make all the variables admit I(0) properties so that the question of stationarity can be properly dealt with. The order of integration would have to be established for each variable through the application of a standard Dickey-Fuller test. One may also want to establish the existence of cointegration in the various equations of the model.

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