CAPITAL FLOWS IN A SMALL OPEN ECONOMY: THE CASE OF KENYA

By

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DECLARATION

I **Moses Chesang Kiptui**, hereby declare that this thesis is my original work and has not been submitted for a degree in any other university

Signed _____

Declaration by Supervisors

This thesis has been submitted with our approval as the university supervisors

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DEDICATION

To my dear wife, Mary

and

My two daughters: Mercy and Marion

ABSTRACT

Capital inflows have been shown to have a major impact on macroeconomic variables, most of which in turn are considered as the determinants of capital inflows. This study goes further than previous studies to examine the determinants and impact of private inflows (short and long-term) in Kenya. Two VAR models are applied to Kenyan data; namely, Granger causality and impulse response models of capital inflows.

We start with a comparison of patterns of capital inflows in Kenya, Uganda and Tanzania in an effort to assess existence of spillover inflows into Kenya from the neighbouring countries. Our results show that there is no evidence, to suggest that, capital inflows into either Tanzania or Uganda also encourage capital inflows in Kenya. Thus, investors are concerned with country characteristics rather than with East Africa region in general. We then compare short-term and long-term capital inflows into Kenya. It is found that short-term flows are more volatile as expected. However, contrary to our expectations, short-term flows are more persistent than long-term flows. We also show that the relationship between the two types of flows is that of substitution and not complementarity.

Kenya is currently experiencing a major economic instability, worsened by volatile short-term capital inflows. The response of capital inflows to macroeconomic changes on one hand, and the response of macroeconomic variables to changes in inflows of capital on the other had become almost instantaneous in the 1990's, complicating further macroeconomic environment.

It is shown that, in order to attract more private long-term capital inflows the external debt burden problem must be resolved and the investment climate in general must be improved. In particular, the country's economic growth must pick up and remain sustainable to encourage long-term inflows.

We have traced the source of recent short-term capital inflows to budget deficits, high interest rates and current account deficits. And since budget deficits have a positive effect on interest rates and, to some extent, on current account deficits, budget deficits are responsible to a large extent for recent short-term capital inflows. Hence, it appears that short-term capital inflows have financed recent budget deficits and are being used to finance the country's growing interest payments and to service debt. Consequently, monetary authorities see capital inflows as means for reducing the upward pressure on domestic interest rates. In light of results from this study, policy makers should concern themselves with realigning economic fundamentals rather than trying to use artificial means to bring down interest rates.

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CHAPTER 1: INTRODUCTION

1.1 Capital Flows to Developing Countries

Under the International Monetary Fund (IMF) and World Bank structural adjustment programs many developing countries are in the process of opening up their domestic economies to the world economy through the liberalization of trade and capital movements either across-the-board or selectively. There has been a move towards greater stress on the role of market forces in the functioning of the economic system leading to a revival of the proposition associated with the well-known theory of the gains from trade. Briefly, according to this theory, international trade is believed to contribute to the development process in the following ways: trade allows a country to follow the ruote indicated by the theory of comparative advantage; it offers greater opportunities to exploit economies of scale; it increases the supply capacity of the economy through imports of capital goods, raw materials, and other inputs in the production process; and finally, by providing competition for tradable goods, it is a source of both stimulus and pressure for domestic production and, depending on the exchange rate policy being pursued, can set limits to the domestic inflation rate. In a similar vein, in so far as liberalization of capital movements is concerned, proponents argue that capital flows can increase the supply of financial savings, augment the stock of capital, and induce competition and efficiency in the domestic financial system (Khan and Zahler, 1983).

The three major forms of capital flows to less developed countries are official foreign aid, foreign direct investment(FDI) and more recently, portfolio and bank lending. While there is likely to be a continuing role for official (chiefly multilateral) capital flows at commercial interest rates (at least till the debt crisis unwinds), the economic and political case for official concessional capital flows, has become weaker than it was in the 1960's and 1970's, mainly because as an instrument of political leverage, economic aid has been unsuccessful. And now with the collapse of communism, there is likely to be no pressure from third world countries seeking bribes from the west (in the form of foreign aid) not to go communist or to dissuade them from forming anti-western coalitions. On the other hand, direct foreign investment is today increasingly found in

manufacturing industry where its virtues and vices are seen to stem from the associated attributes it brings of managerial expertise, new technology and modern marketing methods, including advertising and foreign marketing connections. Portfolio and bank lending became the principal source of external capital for less developed countries in the 1970's. Despite the current debt crisis, the future flow of capital to the third world is most likely to be private (Deepak lal, 1990).

During the last decade, there have been limited private capital inflows to developing countries. However, recent statistics indicate that there is a resurgence of private capital inflows to these countries raising questions over the behavior of capital flows. One major question has been whether these flows represent reduced "home bias" of portfolio of industrial countries or just reduction of capital flight claims on industrial countries through an increase in the "home bias" of residents of developing countries (Dooley and Kletzer, 1994).

Studies on capital flows in the case of developing countries were mainly concerned about "capital flight". Capital flight was viewed as a problem arising from repressive financial policies (Cuddington, 1986). Empirical evidence on the selected debtor countries of Latin America indicate that residents of a country prefer to hold a large share of their financial assets in a form that is outside the control of the domestic authorities due mainly to the inflation tax, political risk and financial repression (Dooley, 1980). Apart from being scanty, studies on capital flows in developing countries have been mainly cross-country in nature. Thus, they cannot account for country-specific differences. Moreover, they may not be very useful in deriving-country-specific policy conclusions.

1.2 Overview of Kenyan Macroeconomic situation

Following independence, the Kenyan economy experienced high growth rates with stable prices. For instance, economic growth in the 1970-73 period averaged about 7.0% p.a. Since 1974, inflation began to bite the economy and the rate of growth began to fluctuate, generally remaining at low levels over much of the period (see table 1.1). The exchange rate remained fixed during the 1965-1972 period. However, owing to the instability, which beset the economy following the oil

crisis in 1973, the shilling had to be devalued. However, this devaluation remained moderate until 1981. Afterwards, the Kenya shilling underwent high annual devaluations, with the highest devaluation of 80% occurring in 1993. Gross fixed capital formation increased in real terms during the 1965-1971 period. However, fluctuations have occurred since 1973, leading to periods of decreasing investment. Therefore, it can be argued that since 1973, the economy went through various macroeconomic changes as policy makers tried to grapple with the problems apparently created by external shocks, at least, in the initial stages.

Table 1.1: Selected Macroeconomic Indicators, 1967- 97

Year	Inflation * %	Growth ** (%)	Gross capital Formation (% of GDP)**	Change in exchange rates (%)*
1967	1.8	3.7	20.3	
1968	0.4	8.6	19.2	0
1969	-0.2	5.5	19.6	0
1970	2.2	7.4	21.9	0
1971	3.8	6.9	25.3	0
1972	5.8	9.5	22.1	0
1973	9.3	6.8	19.9	-1.7
1974	17.8	1.5	28.5	1.7
1975	19.1	1.2	18.2	2.8
1976	11.4	6.1	20.2	14.0
1977	14.9	8.8	23.7	-1.1
1978	16.9	6.6	29.7	-6.6
1979	8.0	3.1	22.7	-3.2
1980	13.8	3.3	30	-0.7
1981	11.8	5.5	28.4	21.9
1982	20.4	3.3	21.8	20.7
1983	11.5	3.1	20.8	21.9
1984	10.2	0.9	20.7	8.3

1985	10.7	4.1	25.5	14.0
1986	5.7	5.5	21.8	-1.2
1987	8.7	4.9	24.3	1.4
1988	12.3	5.1	25	7.9
1989	13.3	5.0	24.7	15.9
1990	15.8	4.3	24.3	11.4
1991	19.6	2.1	21.3	20.0
1992	27.3	0.5	16.9	17.1
1993	45.8	0.2	17.6	80.0
1994	29	2.6	19.3	-3.4
1995	0.8	4.4	21.8	-8.2
1996	8.8	4.1	20.4	11.1
1997	12.	2.1	19.1	

Source: *IMF; **International Financial Statistics** (IFS)
Kenya Government; **Economic Surveys, various issues

1.3 The Capital Account

Immediately after independence, the private long-term capital account registered poor performance. Annual net inflows were on average a negative 1.4% of gross domestic product (GDP) in the 1964-66 period (see table 1.2). There was an improvement in the 1967-72 period when inflows remained relatively constant, as it was not less than 2.0% over the entire period and averaged 2.3% of GDP. Despite the oil price shocks of 1973-74 and 1979-80, and the deep recessions of 1974-75 and 1980-82, and the capital flight problems experienced in developing countries in the 1970's and 1980's, there was greater improvement in private long-term capital flows in the 1973-81 period when inflows were on average 3.39% of GDP. There was a reversal in the performance of private long-term capital account since 1982. In the 1982-91 period, inflows were only 0.4% of GDP. The deterioration worsened in the 1990's as net inflows remained negative (–0.3% of GDP) in the 1992-95 period.

The private short-term capital account shows almost a similar pattern as the private long-term capital account. The former account registered relatively good performance in the 1972-81 period when inflows averaged 1.65% of GDP. This performance deteriorated in the 1982-91 period when inflows averaged only 0.59% of GDP.

Turning to the total capital account, it can be noted that the pattern of total capital inflows reflects the performance of the private long-term and short-term capital accounts. The total capital account registered dismal performance in the 1964-71 period. During this period, inflows averaged 0.8 % of GDP. However, an improvement was experienced on this account in the 1972-81 period, as inflows averaged 8.46% of GDP. During 1982-91 period, there was deterioration in the total capital account. Inflows were at low levels; just 3.6% of GDP. In the 1990's major swings in net total capital inflows occurred. For instance, the capital account balance swung from an equivalent of 1.7% of GDP in 1991 to a negative 2.4% of GDP in 1992. During 1993 the balance in the capital account was the equivalent of 7.3% of GDP. In 1994, the balance fell drastically to an equivalent of negative 0.2% of GDP. It again rose sharply, registering a balance equivalent to 3.3% of GDP in 1995 and 7.5% in 1996.

Table 1.2: Selected Capital Account Items

Year	Net private long-term capital (% of GDP)	Net private short-term capital (% of GDP)	Net total capital (% of GDP)
1964	-5.0	-	0.6
1965	0.5	-	2.5
1966	0.3	-	2.1
1967	2.0	-0.86	-1.2
1968	2.1	0.05	0.3
1969	2.5	0.17	3.5
1970	2.6	0.55	2.3
1971	2.6	-0.23	-3.8
1972	2.1	0.3	4.8
1973	4.3	0.7	7.3
1974	4.6	4.6	9.5
1975	1.4	1.2	6.7
1976	4.9	0.3	7.0
1977	2.9	0.9	6.2
1978	3.3	0.7	9.8
1979	3.9	3.3	12.9
1980	2.5	2.4	11.3
1981	2.7	2.1	9.1
1982	0.2	0.6	2.1
1983	0.1	-0.3	2.1
1984	0.2	1.2	3.5
1985	0.1	0.5	-0.1
1986	0.5	0.2	2.0
1987	0.7	0.6	5.4
1988	-0.3	0.6	5.0
1989	1.0	0.3	9.1
1990	0.9	2.0	5.0
1991	0.6	0.2	1.7
1992	-0.2	0	-2.4
1993	-0.2	6.0	7.3
1994	-0.7	4.1	-0.2
1995	-0.1	4.2	3.3
1996	-0.07	8.3	7.49
1997	-0.08	6.4	4.14

Source: Kenya Government: **Statistical Abstracts** and **Economic surveys**, various issues

In general, we can argue that the capital account registered poor performance following independence but tended to improve in the 1972-81 period. However, this improvement was short-lived as the account deteriorated in the 1982 - 95 period. Incidentally, this deterioration occurred during a period of major internal policy reforms such as interest rate adjustments and devaluation. At the same time, there were changes in the external environment, especially changes in interest rates in industrial countries (see table 1.3 below).

Table 1.3: Interest rates

Year	Domestic real interest rates (discount rate, %)*	Foreign real interest rates (US discount rate, %)
1967	4.7	1.5
1968	6.1	1.2
1969	6.7	1.3
1970	4.3	0.54
1971	2.7	0.04
1972	0.7	0.77
1973	-2.8	0.83
1974	-11.3	-3.1
1975	-12.1	-3.2
1976	-4.4	-0.71
1977	-8.3	-0.23
1978	-9.4	-0.38
1979	-0.5	-1.26
1980	-5.9	-1.88
1981	0.9	3.78
1982	-5.4	4.52
1983	3.6	5.42
1984	2.2	5.27
1985	-0.5	3.89
1986	7.7	4.07
1987	4.9	2.13
1988	4.82	2.67
1989	3.6	3.31
1990	3.83	2.11
1991	0.47	1.21
1992	-9.04	0.46
1993	-0.3	0.02
1994	-7.5	1.67
1995	23.7	2.71
1996	18.08	2.32

Source: * IMF; **International Financial Statistics** (IFS)

** Kenya Government; **Economic Surveys**

Notes: Domestic and foreign real interest rates are discount rates minus inflation for Kenya and United States respectively

Charts 1.1, 1.2 and 1.3 below show the trends for net total capital flows, private short-term capital flows and private long-term capital flows. It is shown that private long-term capital flows were relatively higher in the period before 1982. There was a major decline in the 1983-88 period. However, some improvement occurred in the 1989-91 period. Then, the greatest deterioration since independence occurred in the period after 1992. On the other hand, private short-term capital flows remained at very low levels till 1992, then rose sharply afterwards. As a result, net total capital account shows the greatest volatility in the period after 1992.

Chart 1.1 Total capital inflows

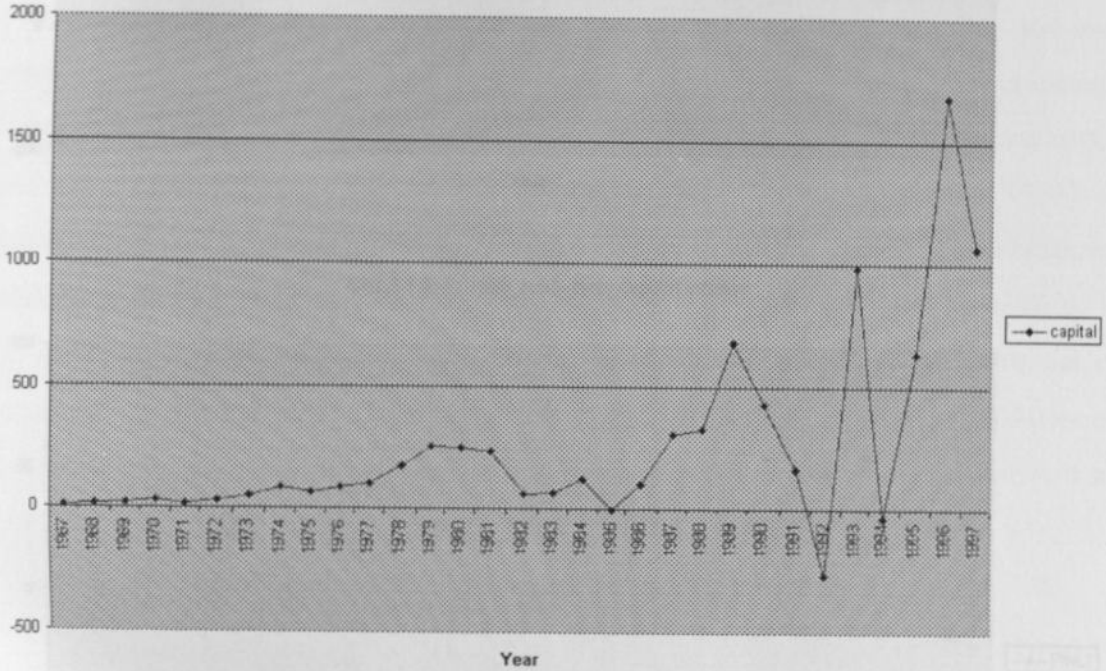


Chart 1.2. Private short-tem capital inflows

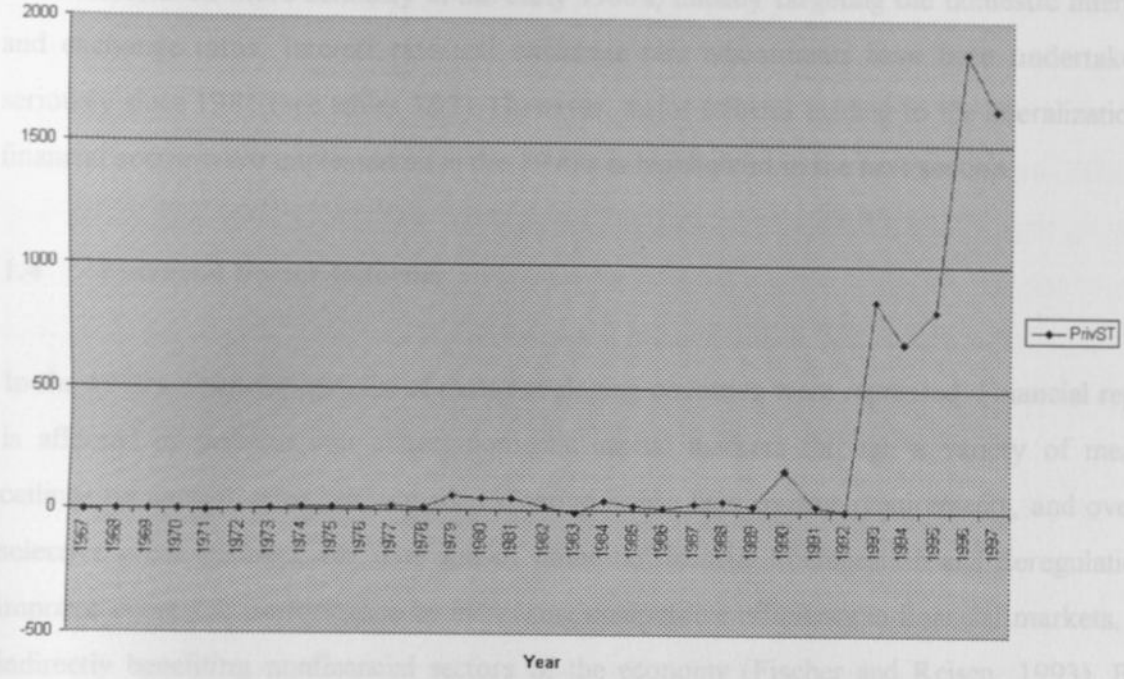
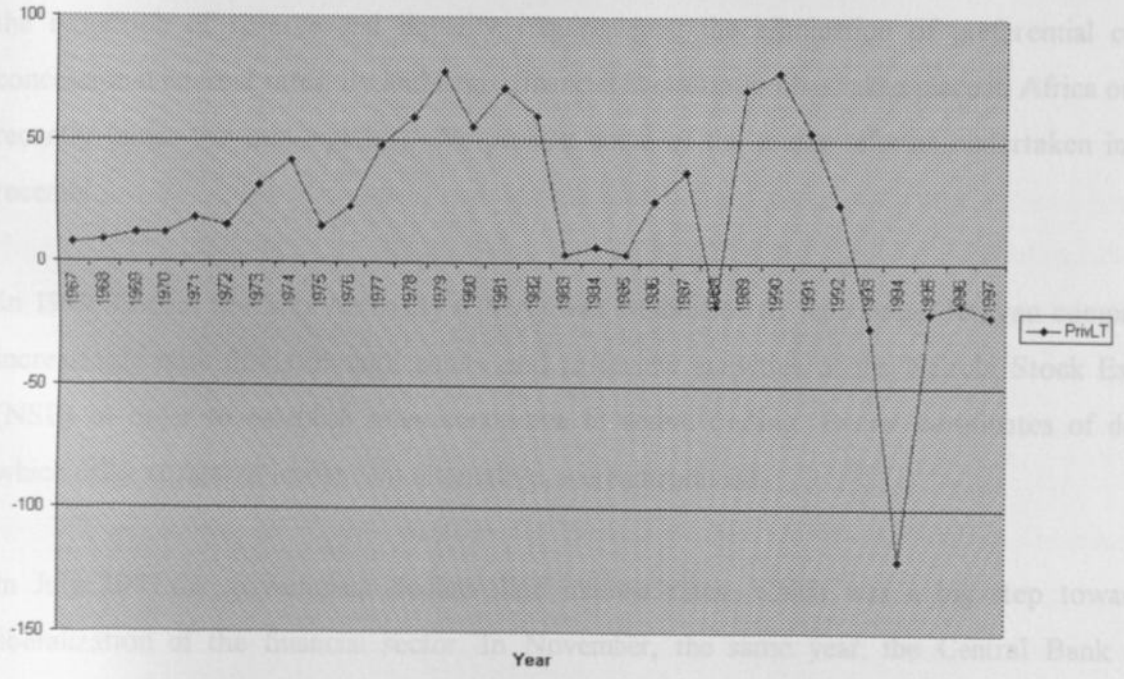


Chart 1.3: Private long- term capital inflows



Although financial reforms have been implemented gradually since independence, these reforms were undertaken more seriously in the early 1980's, initially targeting the domestic interest rates and exchange rates. Interest rate and exchange rate adjustments have been undertaken more seriously since 1981 (see tables 1&3). However, major reforms leading to the liberalization of the financial sector were implemented in the 1990's as highlighted in the next section.

1.4 Financial Sector Reforms

In the 1970's, financial markets of most developing countries were repressed. Financial repression is affected by policies that distort domestic capital markets through a variety of measures - ceilings on interest rates below market clearing levels; high reserve requirements, and overall and selective credit ceilings, etc. The aim of domestic financial liberalization and deregulation is to improve economic performance by increasing competitive efficiency in financial markets, thereby indirectly benefiting nonfinancial sectors of the economy (Fischer and Reisen, 1993). Financial liberalization can in principle include a variety of measures such as interest rate liberalization, the establishment of freedom of entry into and procedures for orderly exit from the banking industry, the reduction of reserve and liquidity requirements, the elimination of preferential credit at concessional interest rates. By and large, financial liberalization has taken place in Africa only very recently (since the mid-eighties). We present some of the major reforms undertaken in Kenya recently.

In 1990, Capital Markets Authority (CMA) was established to encourage Kenyan companies to increasingly raise funds through equity and to review activities of the Nairobi Stock Exchange (NSE) in order to establish rules conducive to active trading. Bearer certificates of deposits, which offer attractive investment alternative, were introduced.

In July 1991,the government decontrolled interest rates, which was a big step towards full liberalization of the financial sector. In November, the same year, the Central Bank relaxed exchange control act by withdrawing the clause covering declaration of foreign currency held by incoming travellers. Credit restrictions, which had been in place since 1986 were relaxed. New

convertible foreign exchange Bearer Certificates (FOREX-C's) were introduced in the financial market. Also, enterprises engaged in domestic tourism operations were for the first time allowed by the government to accept payment for their services in foreign currency.

In April 1992 the first secondary market for the foreign exchange bearer certificates (FOREX-'s) was established. In August the same year, the government established a foreign exchange retention scheme for exporters of non-traditional exports. Under the scheme, exporters could retain 100 per cent of their export proceeds in foreign currency accounts at authorized banks in Kenya. Also for the first time, coffee and tea auctions were carried out in foreign currency.

In 1993, in order to approach total liberalization of the exchange control, the government extended the foreign exchange retention scheme to cover the service sector. More use was made of the inter-bank market as a source of foreign exchange needed by importers, restricting official source for government use only. In December 1993, monetary credit guidelines were abolished and the cash ratio of commercial banks, which remained fixed at 6% since 1986, was over the year increased four times to finally settle at 14%.

In 1994 as a further move towards total liberalization of the exchange control, foreign exchange retention account was raised from 50% to 100%. Both residents and foreigners were now allowed to open foreign currency accounts with banks in Kenya and residents further allowed borrowing from abroad with no limit to finance investment in the country. On the other hand, restriction on local borrowing by foreign controlled companies was removed and foreigners are allowed to pay hotel bills and air tickets in either foreign or local currency. Under the liberalization program, foreign investors for the first time were allowed to participate in the Nairobi stock exchange.

In 1995, the exchange control Act was finally repealed, thereby completing the liberalization of the foreign exchange market. Commercial banks were from July 1995 required to submit to the Central Bank a weekly foreign currency exposure return to minimize foreign currency exposure risk and enhance the stability of the financial system. In addition, thirteen foreign exchange bureaus were registered and became operational. And to strengthen the stability of the capital

markets, an investment compensation fund was established in July 1995. The fund, which is managed by both the CMA and NSE, aims at protecting investors against losses arising from equity trading.

These reforms were carried out as part of the structural adjustment programs recommended by the World Bank and IMF. As in other third world countries, these reforms were usually viewed as necessary for continued donor support and, therefore, did not receive the full backing of the political establishment. The reforms in Kenya were carried out more intensively in the 1990's and coincided with the introduction of multiparty politics, which since then have changed the political and economic orientation of the country. Poor financial management became evident by 1990 as inflation started to rise. This has been accompanied by worsening poverty levels, increasing crime rate and the potential for political instability. Political and economic crises in neighboring countries such as Somalia and Sudan exacerbated the problems of insecurity and political uncertainty. These and other problems are likely to have had adverse effects on the effectiveness of the financial reforms.

1.5 Relationship Between Capital Inflows and Macroeconomic Variables

We have already looked at the relationship between capital inflows and other macroeconomic variables. We now look at the relationship between capital inflows and proxies for returns to investment and that between capital inflows and proxies for investment risk. We examine the means and standard deviations of short-term and long-term capital inflows and compare these with proxies for returns to investment and investment risk. We split the 1967-96 period into three sub-periods; the period before the debt crisis (1967-82), the period just after the debt crisis (1982-1989) and the 1990's (1990-96). We also present the relevant graphs to demonstrate these relationships further.

Table 1.4: Means and (standard deviation) of selected variables overtime

Variable	Period		
	1967-81	1982-89	1990-96
Short-term capital	16.2(22.1)	22.3(17.4)	631.6(658.0)
Long-term capital	33.1(23.8)	23.7(30.4)	-3.90(65.0)
Total capital	96.4(89.3)	208.6(224)	513.5(664)
Economic growth (domestic)	6.3(2.6)	4.1(2.3)	2.3(2.1)
Economic growth (foreign)	2.6(2.2)	2.9(2.4)	1.9(1.5)
Growth differential	3.7(2.0)	1.2(3.1)	0.47(2.6)
Capital formation (% of GDP)	23.3(4.1)	23.1(1.99)	20.2(2.6)
IOCR	0.30(0.12)	0.21(0.11)	0.11(0.10)
Real discount rate (domestic)	-1.9(6.4)	2.6(4.1)	4.2(12.4)
Real discount rate (foreign)	0.16(1.6)	3.2(1.1)	1.0(1.3)
Interest rate differential	-2.1(5.6)	-0.6(4.1)	3.2(11.7)
Inflation	9.1(6.6)	11.5(4.6)	21.3(14.9)
External debt	15.8(4.3)	37.2(4.3)	59.2(18.0)
Current account balance	-245(276)	-277(220)	-200(241)
Budget deficits	-6.0(1.8)	-6.5(2.9)	-3.5(3.0)
Change in real exchange rates	0.14(8.4)	3.5(5.5)	0.24(15.3)
Change in net domestic assets	21.7(11.2)	15.6(10.7)	21.5(13.4)

The descriptive statistics show that Kenya registered the highest inflows of short-term capital in the 1990's. Short-term inflows were very low before 1990. In addition short-term capital inflows showed the greatest variability in the 1990's. Long-term capital inflows were high initially, became lower just after the debt crisis and plummeted in the 1990's. Variability of long-term flows was also greatest in the 1990's. On the other hand, total capital inflows have increased overtime. Total inflows are on average highest in the 1990's. The variability of total capital inflows also increases overtime, becoming highly volatile in the 1990's.

Foreign real interest rates were higher just before 1990's. These rates declined in the 1990's. On the other hand, domestic real interest rates were very low initially but went up in the 1990's. The variability of the domestic interest rates was greatest during the 1990's. Consequently, the interest rate differential (domestic minus foreign) increased overtime, reaching its highest levels in the 1990's.

Economic growth declined overtime and reached its lowest levels in the 1990's. Foreign growth rates also went down in the 1990's so that the GDP growth differential (domestic minus foreign) declines and became smaller in the 1990's. On the other hand, capital formation declined in the 1990's while returns to investment (as measured by IOCR) declined overtime, reaching its lowest levels in the 1990's.

A look at the graphs show that returns to investment (proxied by growth, incremental output-capital ratio (IOCR), capital formation and interest rates) and capital inflows are closely linked (charts 1.4 and 1.6 below and chart 1.5 in appendix I). This relationship is very clear for the periods 1967-72 and 1983-97. We also looked at the relationship between private long-term capital inflows and the deposit rate (chart 1.7 in appendix I). There appears to be a relationship but not a very strong one. When we relate capital formation to the two categories of capital inflows we find a very close relationship between total capital inflows and capital formation especially since 1986 (charts 1.8, and 1.9 in appendix I). Returns to investment or efficiency of investment is measured using the incremental output-capital ratio (IOCR). There is a relationship between total capital inflows and IOCR (chart 1.10 in appendix I). On the other hand, private long-term capital inflows also has a relationship with IOCR (chart 1.11).

Chart 1.4: Total capital inflows as % of GDP (TCr) and Economic Growth

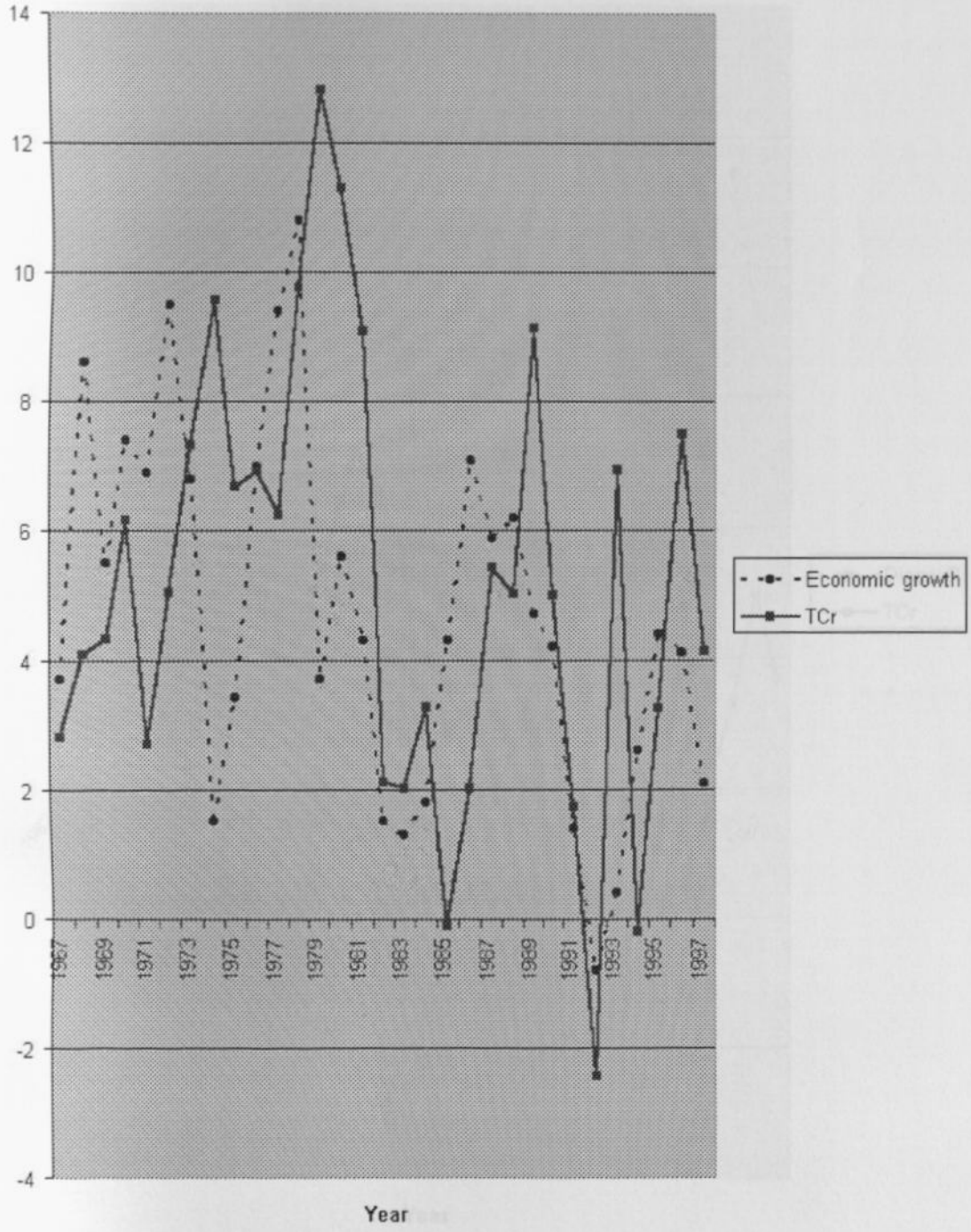


Chart 1.6: Total Capital Inflows as % of GDP (TCr) and the discount rate (DiscouR)

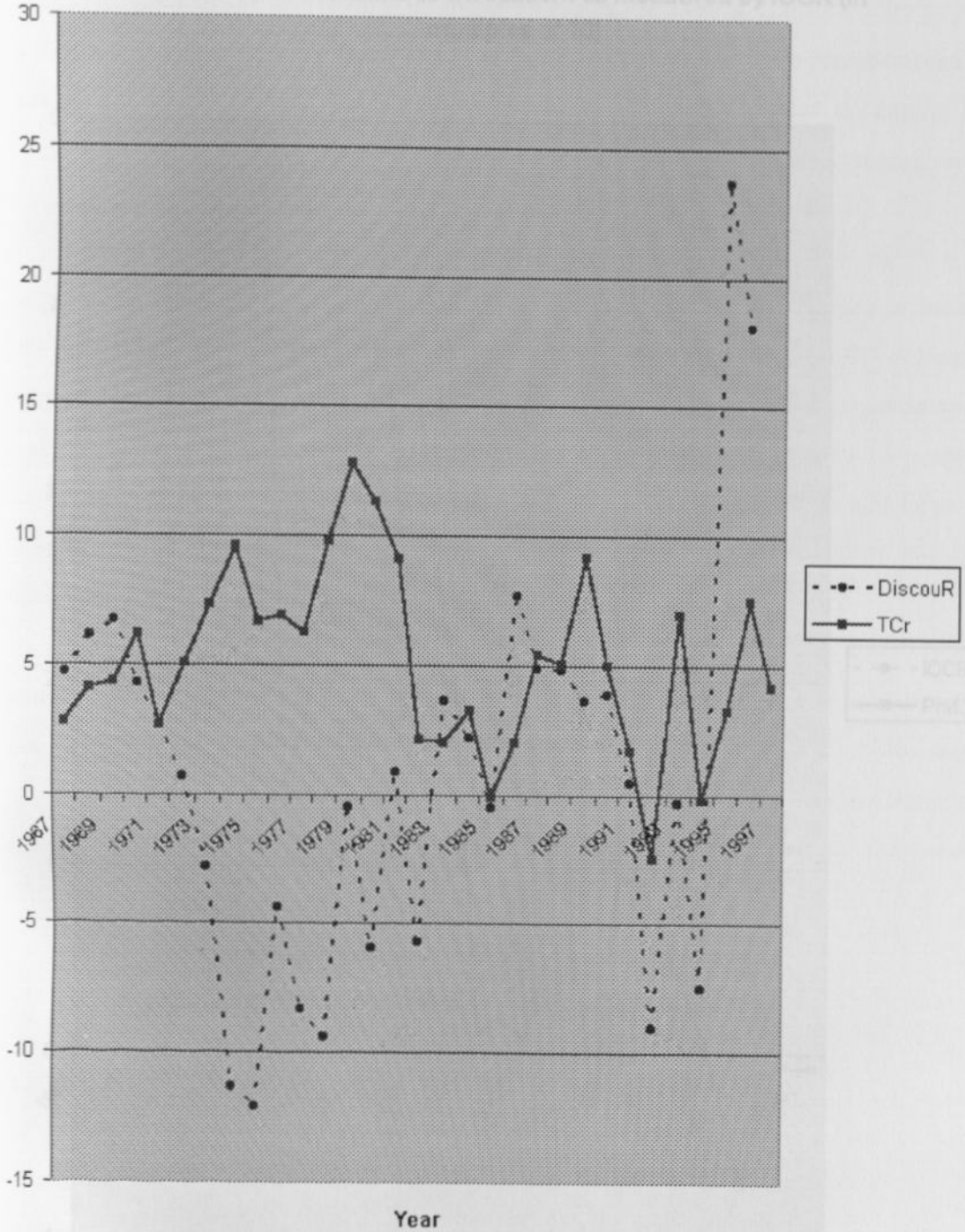
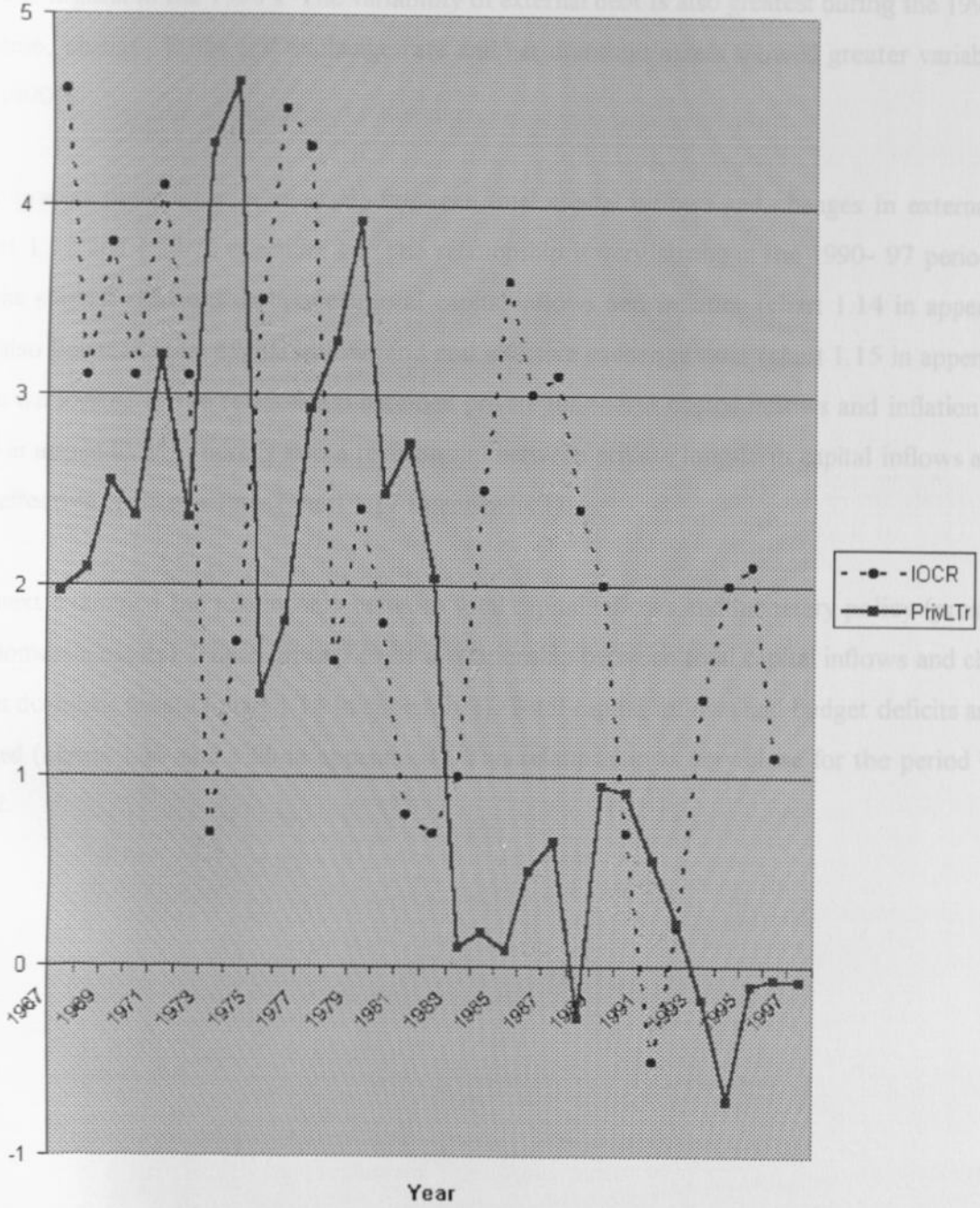


Chart 1.11: private Long-term Capital Inflows as % of GDP (PrivLTr) and Returns to Investment as measured by IOCR (in multiples of 10)

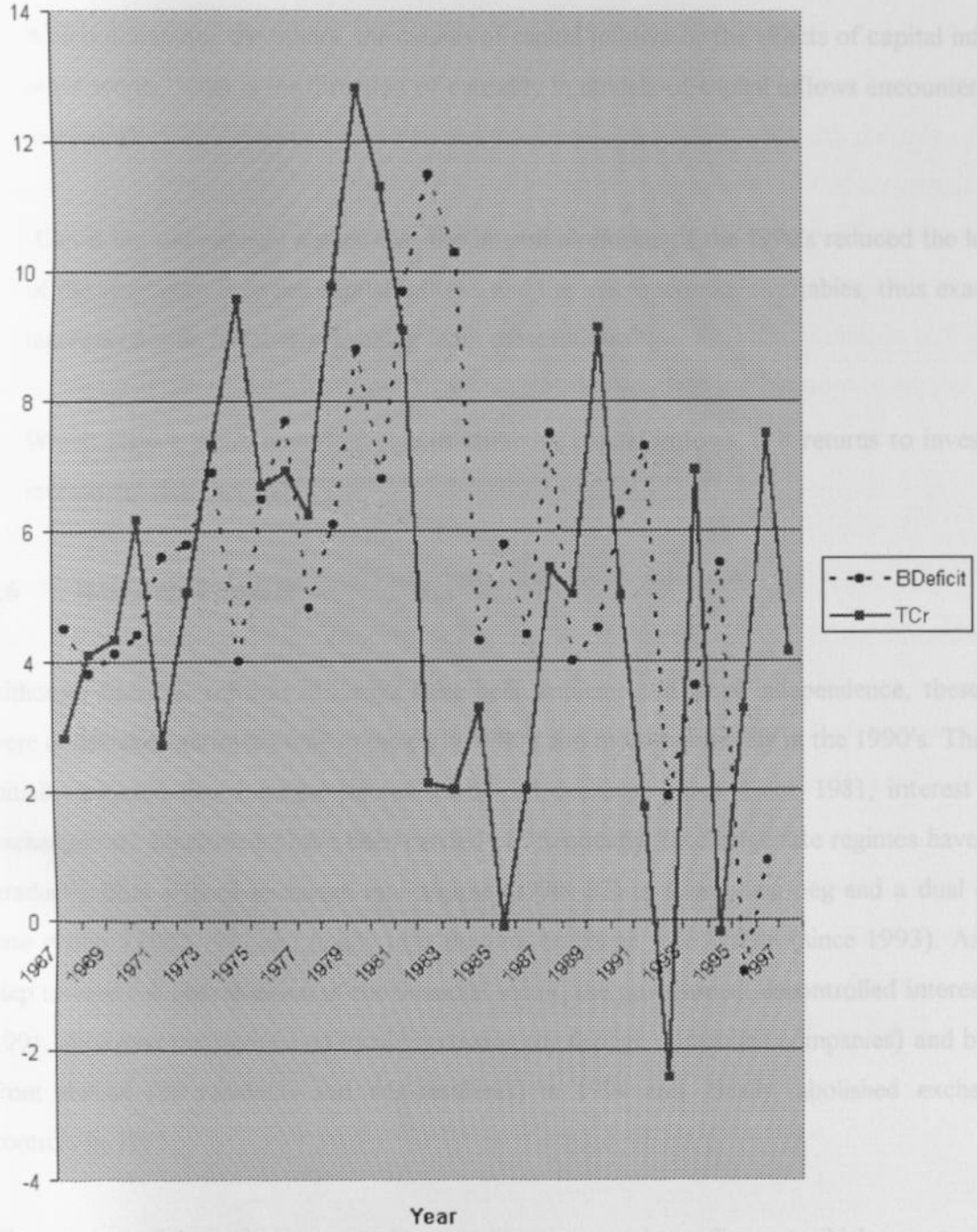


We then related private short-term capital inflows and private long-term capital inflows to the domestic economic climate and investment risk factors such as changes in external debt, inflation, the real exchange rate and the budget deficits. The descriptive statistics show that the rate of inflation increased overtime, reaching its highest levels in the 1990's. The variability of inflation is also highest in the 1990's. External debt (as % of GDP) has also been increasing and was on average highest in the 1990's. The variability of external debt is also greatest during the 1990's. In addition, changes in the real exchange rate and net domestic assets showed greater variability in the 1990's.

The graphs show some relationship between total capital inflows and changes in external debt (chart 1.12 and 1.13 in appendix I). The relationship is very strong in the 1990- 97 period. The graphs show a relationship between total capital inflows and inflation (chart 1.14 in appendix I) and also between total capital inflows and real effective exchange rates (chart 1.15 in appendix I). Then we looked at the relationship between private long-term capital inflows and inflation (chart 1.16 in appendix I). There is also a relationship between private long-term capital inflows and the real effective exchange rates (chart 1.17 in appendix I).

We next examined the relationship between total capital inflows and monetary policy (proxied by net domestic assets). There appears to be a relationship between total capital inflows and changes in net domestic assets (chart 1.18 in appendix I). Total capital inflows and budget deficits are also related (charts 1.19 and 1.20 in appendix I). This relationship is very close for the period before 1982.

Chart 1.19: Total Capital Inflows as % of GDP (TCr) and Budget Deficits as % of GDP



In this study, we attempt to examine the following issues:

- Which dominates the others, the causes of capital inflows or the effects of capital inflows? In other words, what is the direction of causality in models of capital inflows encountered in the literature?

- Can it be convincingly argued that the intensive reforms of the 1990's reduced the lag length of the responses between capital inflows and the macroeconomic variables, thus exacerbating macroeconomic instability resulting from these inflows?

- Which plays a more important role in attracting capital inflows; is it returns to investment or investment risk factors?

1.6 Research Problem

Although financial reforms in Kenya have been implemented since independence, these reforms were undertaken seriously only in the early 1980's and more intensively in the 1990's. The reforms initially targeted the domestic interest rates and exchange rates. Since 1981, interest rate and exchange rate adjustments have been carried out frequently. Exchange rate regimes have changed gradually from a fixed exchange rate regime (1970- 82) to a crawling peg and a dual exchange rate system (1982- 93) and finally to a floating exchange rate system (since 1993). As a major step toward full liberalization of the financial sector, the government decontrolled interest rates in 1991, abolished restrictions on local borrowing (by foreign controlled companies) and borrowing from abroad (by residents and non-residents) in 1994 and, finally, abolished exchange rate controls in 1995.

The purpose of the reforms was to improve macroeconomic performance; high economic growth rates, price level stability, balance of payments equilibrium, etc. It was expected that investment

levels would rise and the country would attract foreign capital. This however did not materialize. It can be argued that in the 1970's and 1980's, investment levels, returns to investment and economic growth were at relatively high levels. Inflation was relatively low and real interest rates also remained low. Private short- term and long- term capital inflows remained at low levels. Net total capital inflows were also at low levels and showed little variability. There were major changes in the 1990's as investment levels and returns to investment declined. The country experienced very low levels of economic growth, high real interest rates and the rate of inflation rose to highest levels ever. At the same time, short- term capital flows showed an upward trend as long- term capital flows exhibited a downward trend. Net total capital flows showed major upswings and downswings, thus exhibiting greater variability during this period. This pattern of capital inflows poses an interesting question: Is the (in) stability of capital inflows a reflection of macroeconomic (in) stability or is it its cause? The thesis provides an answer to this question which till now has not been examined with Kenyan data.

1.7 Objectives

The major objective of the study is to analyze the macroeconomic and other determinants of capital inflows in the Kenyan economy and to examine the feedback effects from capital inflows to other macroeconomic variables. The specific objectives are:

(i) To study how relative rates of return on capital at home and abroad affect capital inflows

(ii) To examine the role of investment risk factors in the determination of capital inflows

(iii) To determine the effect of monetary policy on the capital account

(iv) To determine the nature of the interaction between structural features of the Kenyan economy and capital flows, such as between the current account balance and capital flows.

(v) To examine the interactions between capital inflows and other macro factors in an attempt to see if it is the causes of capital inflows or the effects of these inflows which are dominant.

(vi) To draw policy conclusions and recommendations from study findings

1.8 Justification of the Study

Past studies have mainly focused on the effective degree of capital mobility and the notion of an integrated global capital market (Ghosh and Ostry, 1995), theoretical and practical implication of the increased mobility of capital (Mundell, 1963), capital flows in industrial countries (Kouri and Porter, 1974); capital flight, and capital effects of controls (Dooley and Isard, 1980). The empirical studies have not been conclusive with regard to these issues. In the case of developed countries, it is still not well understood why the results are incompatible with the assumption of perfect capital mobility while in the case of developing countries it is not possible to explain why some countries exhibit little or no capital mobility while others exhibit very high capital mobility. Thus, international capital flows have not been fully understood, and more needs to be done in this area.

While it might be thought that capital flows are induced by various factors including changes in other items of the balance of payments, changes in exchange rates, political risk, domestic fiscal and monetary policies, it is necessary to understand the actual behavior of capital flows in specific countries so as to be able to anticipate capital flows and adopt the necessary stabilization policies. This research is mainly concerned with understanding international capital flows to Kenya and it is done at a time when the country has undergone major financial reforms which have increased the interaction of the domestic capital market with the foreign capital markets.

Kenya's membership in the Common Market for Eastern and Southern Africa (COMESA), East African Co-operation (EAC), among others makes it a special case for the study since Kenya is known to have a relatively more developed private capital market than most members of these groupings.

It is important to understand the sources of capital inflows especially whether or not they are perceived as temporary or permanent so as to be in a position to determine appropriate policy responses to these flows. Failure to take appropriate action may lead to a run on domestic banks and a full- blown financial crisis.

CHAPTER 2: LITERATURE REVIEW

2.0 The Capital Account Once Again

The capital account has traditionally been analyzed using three approaches, the flow theory, stock theory and the monetary approach to capital movements. According to the flow theory of capital movements, an increase in domestic interest rate relative to the foreign interest rate will increase an inflow of foreign capital. The stock theory, based on portfolio theory, is a theory of how rational individuals would distribute their wealth between different assets in order to maximize their utility. Asset holders would be influenced by both the expected return to an asset and the uncertainty of the actual return. Therefore, a change in the interest rate differential will lead to an adjustment in portfolio of assets.

The monetary approach explains balance of payments as a whole rather than attempting to construct separate models of its components. The approach concentrates on the factors that may cause a change in foreign currency reserves (and hence money supply). It is based on assumptions of stable money demand, full employment and purchasing power parity of currencies.

2.1 Volatility, Persistence and Sustainability of Capital Flows

Claessens, Dooley and Warner (1995) analyze data on components of capital flows in five industrial and five developing countries. They investigate whether volatility and persistence match up with categories of capital flows as expected and whether the data reveal systematic relationships among the flows, as well as the extent to which the available categorization of data provides useful information for forecasting total capital inflows. The results indicate a systematic pattern of volatility (as measured by the coefficients of variation), of various types of flows across countries. Long -term flows have the highest coefficient of variation (CV) for four countries; FDI for four countries and portfolio equity flows for two countries. Perhaps surprising to those claiming that short-term flows are hot, is the fact that short-term flows have the lowest CV in

seven countries. High relative volatility is one of the notions that has been associated with hot money. A related notion is that a hot-money inflow is likely to disappear or reverse itself in the near future, whereas a cold-money inflow is more likely to persist. Degree of persistence and level of volatility are two complementary measures: hot flows are associated with low persistence and high volatility. The results show that the Foreign Direct Investment (FDI) and portfolio equity flows display much less volatility over short periods than do the short-term flows and that the long-term flows are somewhere in between.

Claessens *et al* summarize the idea of persistence by calculating the autocorrelations for each type of capital inflow. A persistent series will be positively autocorrelated, whereas a transitory series will have a low or negative autocorrelation. In general, the classic case of a cold-money flow could be a flow that is highly positively autocorrelated whereas a hot-money flow would exhibit zero or even negative autocorrelations. The autocorrelations for Japan conform to these expectations. The main findings for other countries is in contrast to that of Japan and, hence, contrary to expectation. The autocorrelations for Germany, for example, confirm that FDI flows are the least stable and long-term flows the most stable.

As an alternative, the authors computed half-lives from impulse response functions. To do this, they estimated a univariate fourth-order autoregressive AR (4) model for a given flow and then examined how a given shock to the error term in the estimated equation propagated itself through time. If a series is highly positively autocorrelated, it will take a long time for a shock to die out; if the autocorrelations are low, the shock would vanish quickly. The half-life in this context is simply the number of quarters it takes for the shock to lose half or more of its initial value. The results provide little support for persistence. With the exception of Japan, most of the half-lives are 1, that is, more than 50% of the shock has dissipated before even one quarter has elapsed. There is little evidence, from the case of Japan, that the allegedly persistent flows - such as FDI and long-term flows - exhibit more memory than the other flows.

In order to test for predictability, Claessens *et al* employ a simple measure of the goodness of predictive power: the residual mean square error (RMSE). They estimated again a univariate (AR (4) model for all flows and then performed out-of-sample forecasts for the next four quarters on the level of the flows. Using the new data, they updated the AR (4) model each year and performed another out-of- sample forecast for the next year - repeating this procedure for each year. They then standardized the out-of-sample forecasting RMSE with the standard deviation of the respective flow to get a measure of the relative ability to forecast the various flows; finally they compared the ability to forecast the various flows with the ability to forecast short-term flows. Short-term flows are commonly assumed to be the most volatile and least predictable type of flow. The evidence on this issue is that, compared with the benchmark (short-term flows), other flows cannot systematically be predicted more accurately. For about half of the countries, the forecasts for the other flows were actually worse than the forecast for short-term flows. Altogether, only about half of the other flows were more predictable than short-term flows.

In order to see how the flows interact, the authors started by calculating the simple correlation matrices between the various categories of flows for all countries. The correlations showed some degree of substitution (that is, negative correlations) between most flows for almost all countries. Then they performed an analysis on the marginal source of financing the current account by running regressions of the changes in the various types of flows on the change in the total capital account. Slope coefficients provide a measure of the degree to which a particular flow "finances" at the margin the country's overall financing requirements or surplus (under the assumption that the current account movements drive capital flows). Long-term flows appear to be the most sensitive; for all countries except one the slope coefficient for long-term flows is the highest. Dadush, Dhareshwar and Johannes (1994) used techniques, which are commonly applied to assess the sustainability of government deficits. They defined the "asymptotic liabilities/export ratio" (ALE) as the ratio to which foreign liabilities/exports will converge on the basis of existing trends in exports and the current account. Dadush *et al* measure trends over a five-year interval to iron out the effects of the business cycle and other short-term disturbances. ALE may also be computed as the ratio of current account deficit to the change in exports.

The reasonable level of ALE, one that does not imply excessively difficult problems in servicing foreign liabilities is taken to be 2.0. This is roughly equivalent to a rule that the cost of servicing foreign liabilities should amount to no more than 40% of exports, assuming that the foreign investors expect a 10% annual return and turnover their capital every 10 years.

Using the ALE to track sustainability of private flows to large recipients, they observed that the median rate of growth of exports of the 18 large recipients has risen markedly since the debt crisis and the median current account deficits has declined. As a result, the median asymptotic liability/export (ALE) ratio of the 18 large recipients of private capital flows has improved markedly. The median current account deficit, expressed as a ratio to exports is lower than at any time since 1960, and less than half that during the run - up to debt crisis in 1982. The recovery in export growth rates in the second half of the 1980s and its persistence in recent years is especially noteworthy. It has occurred against the background of recession in the industrial countries and weakness in commodity prices. Given a target liability/export ratio, the sustainable capital inflow is directly proportional to the difference between the export growth rate and the interest rate. If the target ALE is 2.0, then the following relationship holds, sustainable net transfers are equal to 2*(growth of exports minus interest rate)*exports (Dadush et al, 1994).

Until about 1989, sustainable net transfers were negative reflecting the fact that the average export growth rate of these countries was below the interest rate. Actual net transfer was in fact negative though still higher than the sustainable level. Since 1989 actual net transfers were below sustainable net transfers, though they have converged recently, reflecting a deceleration in exports. Overall, the model - generated sustainable net transfers tends to track actual transfers fairly well in overall trend, though deviations are often large.

Dadush *et al* also distinguished among cases where the current account deficit is thought to be sustainable or not, and where the current account is over-or under financed. The current account is said to be underfinanced if long-term capital flows are less than the current account deficit, that

is the basic balance is in deficit. Implicitly, therefore, short-term capital flows are viewed as "hot money" and/or as compensating for the financing shortfall. An important observation is that countries whose current account deficit is defined as unsustainable (ALE > 2.0) were generally not able to finance sizeable deficits with long-term capital inflow alone, Hungary being a clear exception and India to some extent. More than 20 countries whose current account deficit is defined as sustainable (ALE < 2) on the other hand, were able to attract long-term capital in excess of their current account deficit, nine of them being large recipients. Countries such as Peru, Cote d'Ivoire, and Poland represent extreme cases of under-financed and unsustainable current account deficits.

Hernandex and Rudolf (1995) address the sustainability problem particularly that of identifying the driving forces behind the surge in private flows. Because the surge in private capital inflows since 1989 has coincided with a period of low international interest rates and domestic policy reform in the developing world, there is a debate about whether the surge is driven primarily by domestic (pull) or external (push) factors. Under the pull hypothesis, successful domestic policies are the key to ensuring sustainable capital inflows in the future, while under the push hypothesis an increase in international interest rates would cause a reversal of these flows (back to the industrialized world). The results show evidence that domestic factors play a significant role in explaining private capital flows. Thus countries may expect to continue to receive capital flows as long as domestic policy reforms remain on the right track : that is, as long as they increase domestic savings, use the capital flows to improve their long-term prospects by increasing investment rates and increase the growth rate of exports. In other words, economic fundamentals must be improved to attract foreign investors.

Other observers have argued that the recent flows are inherently unsustainable because they have short-term maturities. For example, Reisen (1993) concludes that the majority of flows to Latin America are hot rather then cool. Nunnenkamp (1993) employs a similar approach and points out that the composition of inflows varies considerably among developing countries. His conclusion is that hot money transactions have been relatively small in the Chilean case but significantly large

in Brazil. And Turner (1991), in his review of capital flows for industrial countries ranks short-term bank lending as most volatile and long-term bank flows as least volatile, followed by foreign direct investment (FDI) as the next to least volatile.

2.2 Determinants of Capital Flows: Theoretical Literature

Fernandez-Arias and Montiel (1996) assess the causes and likely sustainability of capital inflows. Building on Fernandez - Arias (1995), they assume that capital flows occur in the form of transactions in n types of assets, indexed by S, where S = 1,.... n. The domestic return on an asset of type S is decomposed into a project expected return $Đ_s$ and a country credit-worthiness adjustment factor C, which is bounded by zero and one. The project return depends inversely on the vector F of net flows to projects of all types (based on a diminishing marginal productivity argument), and the credit worthiness factor is a negative function of the vector of the end-of-period stocks of liabilities of all type, denoted $S = S_{-1} + F$. Voluntary capital flows (components of the vector F) are determined by the following arbitrage condition:

$$Đ_s(d, F)C_s(c, S_{-1}+F) = W_s(w, S_{-1}+F)$$

Where W_s is the opportunity cost of funds of type s in the world economy, assumed to depend on the stock of liabilities S to reflect the portfolio diversification considerations of external creditors. The shift factors d, c, and w are associated, respectively, with the domestic economic climate, country credit worthiness and any creditor - country financial conditions relevant for developing - country investment (such as financial return and capital market regulations). Explicitly the above equation may be written as: $F = F(d,c,w, S_{-1})$

Thus, changes in capital flows may be determined by any combination of changes in d, c, or w for given values of S_{-1}, that is, by changes in domestic factors operating both at the project and country levels, as well as in factors relating to the external environment. The assumptions made imply that the components of the vector F are increasing in d and c but decreasing in w and S_{-1}. Initial stocks S_{-1} are dynamically endogenous, overtime the sequence of flows F depends on the

path of the underlying factors d, c, and w as well as the initial value of S. Increases in d and c or decreases in w could generate a sustained surge in inflows.

We can interpret the country creditworthiness C as depending on the expected present value of resources available for external payments relative to the country's liabilities. One way to conceptualize this present value measure is to express the component c in the form.

$$c = Y/(R-g)$$

Where Y is some current measure of available resources, assumed to grow at the rate of g, and the discount rate R (relevant to claim holders) reflects world financial return available at comparable maturities.

By total differentiation of $F = F(d,c,w,S_{-1})$ and holding S_{-1} constant (subscripts denote partial derivatives) we get:

$$dF = F_1\, dd + F_2 dc + F_3\, dw$$

Because the F_i are functions of the country - specific variables d and c (as well as of the non specific variable w), changes in the external variables w that are uniform across countries may differ in their impacts on individual countries. Thus, differences in levels of capital inflows across countries confirm the relevance of country- specific characteristics, but they do not imply that changes in such country - specific factors caused the inflows.

Fernandez-Arias and Montiel (1996) identify the main domestic factors which influence capital inflows at the project level, and the country level and the exogenous factors which affect the opportunity cost of funds. Domestic factors operating at the project level (underlying d) include the following:

- Improved policies that increase the long run expected rate of return or reduce the perceived risk on real domestic investment, such as major domestic structural and

institutional reforms (improved domestic macroeconomic policies, particularly successful inflation stabilizations accompanied by fiscal adjustment widely perceived as sustainable, would also have this effect)

- Short-run macroeconomic policies - such as tight monetary policy - that increase the expected rate of return on domestic financial instruments, resulting in ex ante positive interest rate differentials, for given values of the structural determinants of the marginal product of capital.
- Policies that increase the openness of the domestic financial market to foreign investors, such as removal of capital controls and liberalization of restrictions on Foreign Direct investment.
- Structural or macro economic policies that because of their lack of credibility, distort intertemporal relative prices, that is, incredible trade liberalizations and price stablization programs: Tariff cuts under domestic price rigidities, for example, may create expectations that the relative price of imports will rise overtime when tariff levels are restored.

The domestic factors operating at the country level (through c) that they identified include:

- Debt-equity swaps and sustainable debt and debt service reduction agreements as in Brady agreements.
- Stabilization and structural policies that affect the aggregate efficiency of resource allocation
- Shocks to national income in the form of changes in international terms of trade.
- Policies that affect the level of domestic absorption relative to income

For exogenous factors affecting the external opportunity cost of funds, w, they identified the following factors:

- Foreign interest rates and recessions abroad
- Easing of regulations affecting the cost of access to capital markets in creditor countries
- Bandwagon effects in international capital markets, either resulting from the efficient signaling of information on fundamentals or from speculative bubbles.

UL Haque, Mathieson and Sharma (1997) argue that the causes of capital inflows can be grouped into three major categories: autonomous increases in the domestic money demand; increases in the domestic productivity of capital; and external factors, such as falling international interest rates. The first two are usually referred to as "pull" factors, the third as "push" factors.

Financial indicators that may help policy-makers differentiate between inflows caused by a shift in the money demand function and those driven by exogenous factors include asset prices, monetary and credit aggregates, balance of payments data, and key international variables such as interest rates. In countries with established financial and equity markets, relative asset price movements many be particularly helpful in identifying causes. An upward shift in the money demand function is likely to drive down prices of domestic bonds, equities and real estate as asset holders reallocate their portfolios. In contrast, when inflows are fuelled by lower international interest rates or increases in the domestic productivity of capital, prices of real and financial assets will probably go up. Table 2.1 illustrates the behavior of these financial indicators.

Table 2.1: Relationship between Financial Indicators and capital Inflows

Indicator	Upward shift of Money Demand Curve	Increase in productivity of domestic capital (sustained inflows)	External factors e.g. falling international interest rates (temporary inflows)
Asset Prices Interest rates	Increase	Increase	Decrease
Yield curve	Flattens	?	Becomes steeper
Exchange rate	Appreciates	Appreciates	Appreciates
Equity prices	Decrease	Increase	Increase
Real Estate Prices	Decrease	Increase	Increase
Inflation	Decreases	Increases	Increases
Monetary and credit aggregates			
Real money balances	Increase	Likely to decrease	Increase
Base money	Increases	Increases	Increases
International Reserves	Increase	Increase	Increase
Bank credit	Likely to increase	Increase	Likely to increase
Foreign currency deposits	Decrease	?	May decrease
Balance of Payments			
Foreign Direct Investment	?	Increases	?
Portfolio investment	Increases especially in short-term flows	Increases in both short and long-term flows	Increases especially in short-term flows

Source: Ul Haque, Mathieson and Sharma (March,1997)

Interest rates can be useful for determining whether capital inflows are caused by "pull" or by "push" factors. Other things being equal, inflows driven by "pull" factors will be associated with upward pressure on domestic nominal interest rates, while inflows due to "push" factors such as a

decline in international interest rates will tend to put downward pressure on domestic interest rates. In general, an increase in money demand is likely to attract short-term portfolio investment, whereas other changes such as an increase in the domestic rate of return on capital will tend to attract longer -term foreign direct investment. There may be long delays such that an increase in domestic productivity of capital may initially lead to larger portfolio inflows and only later attract greater amounts of foreign direct investment.

There exists vast amounts of theoretical literature on capital inflows, though not specifically on determinants of capital inflows. For instance, the classic framework for evaluating the implications of capital mobility and the effects of limiting capital mobility is the Mundell-Fleming models of a small open economy. The Mundell-Flemming model is a good place to start an assessment of what the literature has to offer in evaluating policies that affect international capital movements. In the Mundell-Fleming model, under floating exchange rates, fiscal policy is rendered completely powerless in its influence over income. On the other hand, monetary policy influences income by altering the exchange rate rather than the interest rate. Under fixed exchange rates, only fiscal policy can affect income. The normal potency of monetary policy is lost because the money supply is dedicated to maintaining the exchange rate at the announced level. Therefore, if capital is free to move across national borders and the nominal exchange rate is fixed or heavily managed, the government loses control over domestic monetary conditions. If the exchange rate is not managed, monetary policy might still be constrained by incipient capital movements because changes in domestic interest rates can generate large changes in nominal and real exchange rates. While this flexibility ensures a powerful transmission mechanism for monetary policy, governments might consider the resulting large changes in relative prices as a constraint on monetary policy.

Taylor M. (1994) focuses on market integration as measured by flows. The main contribution of the paper is to show that the Feldstein-Horioka correlation, so often replicated, might be an artifact of omitted variable bias, since a common set of variables does influence national savings and investment rates, and sufficiently so to explain much of the correlation. Cross-section saving-

investment correlations might just be a figment of a lack of control for common determinants of both saving and investment.

Mathieson D. J. (1979) presents a simple macroeconomic model of a developing economy which focuses on the linkages between capital flows, exchange rate movements, financial reform, growth and inflation. The analysis indicates that financial reform must be carefully coordinated with exchange rate policy if large-scale capital inflows are to be avoided. It indicates that substantial capital inflows will develop wherever a large exchange rate depreciation is combined with too sharp an increase in domestic interest rates.

Krugman (1979) and Flood and Garber (1984) provide models of speculative attacks against inconsistent policy regimes when capital is internationally mobile. In order to finance a fiscal deficit a government might set a rate of growth for the domestic assets of the central bank that is inconsistent with the fixed and nominal exchange rate and the growth in the demand for money. With perfect capital mobility and purchasing power parity, the demand for real money balances is predetermined so that increases in the domestic part of the monetary base are instantly offset by changes in international reserves. When the central bank's international reserves fall to a certain level it is known that the central bank will withdraw from the foreign exchange market and the currency will float freely. This regime comes to an end when speculators calculate that a successful attack will generate a discrete depreciation of the currency. Competition among the speculators will force the speculative attack to occur at a point where no expected profit is possible.

Arellano J. P. (1982) examines the relationship between capital mobility and the short run stability of employment and of prices. It looks at the question of what degree of capital mobility would make employment and prices more stable.

Aizeman J. (1995) uses a model characterized by gains from a greater division of activities where shocks are persistent. It is shown that non-linearities attributed to financial autarky explain the

adverse welfare effects of volatility. The conclusion is that persistence of shocks and limited integration of capital markets leads to non-linearities, where volatility affects investment adversely, and the resultant costs are of a first order magnitude. The persistence of shocks implies that in good times we wish to invest more, as the future seems bright. Yet, with limited integration of capital markets, we realize only a fraction of the desired investment. In bad times, we wish to cut investment. Unlike in the good times case, however, financial autarky does not inhibit the cut in investment. Hence, with financial autarky the downward adjustment is larger than the upward one, leading to non-linearities and adverse effects of uncertainty on investment.

2.3 Determinants of Capital Flows: Empirical Literature

Kouri and porter (1974) developed a portfolio equilibrium model, which provides the framework for analyzing the effect of stabilization policies (incomes and monetary policies) on the capital account and the relationship between the capital account and the current account. Among their findings was that changes in incomes were highly significant in explaining capital flows. Capital flows accommodate resultant fluctuations in money demand. On the other hand, current account balance tends to induce offsetting capital flows thereby stabilizing the Balance of Payments.

Calvo, Leiderman and Reinhart (1992) discuss the characteristics of recent capital inflows into Latin America. They used monthly data for the Latin American countries covering the period January 1988 to December 1991 to analyze in more detail key features of the current episode of capital inflow. The analysis begins by establishing the content of co-movement of official reserves and real exchange rates between these countries, as these proxy for capital inflow. They constructed principal component indices for the period from January 1988 to November 1991. In addition, for comparative purposes two sub-periods are considered: 1988-89 and the capital inflows episode of 1990-91. Having assessed the degree of cross-country co-movement in reserves and the real exchange rate they examine the dynamic interaction between these two variables in each country. They performed Granger causality tests for each of the ten countries

using monthly data from January 1988 to November 1991. The tests were performed on the logarithms of the levels of the variables and each equation included a constant and a time trend.

The empirical results show that the causal patterns are not uniform across countries, which is not surprising since the countries in the sample have different exchange rate regimes and the policy response to the capital inflows has varied considerably across countries. The most common pattern that prevails is one in which reserves Granger-cause the real exchange rate (four countries). For three countries the causal relationship runs both ways. For one country the real exchange rate causes reserves, while for two countries there is no evidence of a causal relationship between reserves and the real exchange rate. There is evidence of a unidirectional causal link from the direct principal component of reserves to the first principal component of the real exchange rate. In seven of the ten countries, there is a causal link from reserves to the real exchange rate, but only in four countries is the reverse true. It appears reserve accumulation preceded the real exchange rate appreciation.

After the system was estimated using monthly data, the null hypothesis that the foreign variables do not affect reserves and the real exchange rate was tested. In eight of the ten countries, one can reject the null hypothesis at the 75% level of confidence or higher. By examining variance decomposition and the impulse responses of the real exchange rate and official reserves, two observations arise: first, for most countries, a sizeable fraction of about 50% of the monthly forecast error variance in the real exchange rate is accounted for by foreign factors. Second, foreign factors explain the greatest share of the variance of the real exchange rate in countries that experienced no major changes in domestic policies in the period under consideration. Foreign factors explain the least for countries where significant changes in domestic policies took place. Foreign factors also account for a sizeable fraction of the monthly reserves forecast error variance in most of the countries considered. In sum, the evidence from the impulse responses indicates that a negative shock to U.S. interest rates would ceteris paribus generate an accumulation of official reserves and a real exchange rate appreciation in most of the countries considered, although puzzling exceptions remain.

Ishrat Hussein and Kwang W. Jun (1992) replicate the Feldstein - Horioka regression equation to investigate how responsive international private capital flows are to domestic savings rates in South Asia and ASEAN countries and whether major implications of Feldstein and Horioka's (1980) study are applicable to these developing countries. The regression takes the following simple form:

$$(I/Y)_i = a + b\,(s/y)_i + e_i,$$

Where $(I/Y)_i$ is the ratio of gross domestic investment to GDP in the country i and $(s/y)_i$ is the corresponding ratio of gross domestic savings to GDP. Since the excess of gross domestic investment over gross domestic savings is equal to the net inflow of foreign investment a regression of the ratio of net foreign investment inflow to GDP on the domestic savings ratio would have a coefficient of (b - 1). Therefore, testing the hypothesis that b equals one is equivalent to testing the hypothesis that the international capital flows do not depend on domestic savings rates. By using average ratios for the sample period 1968 - 1988, regression results for nine countries yielded an average gross savings ratio (0.169) for Asian and ASEAN countries much lower than the OECD figure (0.250) reported by Feldstein and Horioka(1980). Likewise, developing countries in the region had, on average, a lower investment ratio (0.205), compared with the OECD figure 0.254. The estimate of b in the regression equation is 0.54 (SE = 0.075) and it is thus significant at the 0.01 statistical level of significance. The result indicates that investment yield differential is insufficient for international capital mobility in these countries; the normative implication is that there are non-market factors that are important in facilitating capital inflows to them.

Hernandez and Rudolph (1995) specified and estimated a capital flow regression model. The results suggest the robustness of the model parameters. The findings support the importance of domestic factors in explaining the recent wave of private capital inflows in developing countries. Capital flows respond to increases in domestic investment (in previous periods) and most

importantly, that foreign savings tend to complement rather than substitute for private domestic savings. Both the investment and private consumption coefficients are significant. Also as expected, the partial adjustment coefficient of total indebtedness net of foreign reserves, is negative and statistically significant. Results are not significantly different when the total stock of foreign liabilities is used. The measure of instability (volatility of the real exchange rate) also has a negative and statistically significant effect on net- long -term private capital inflows. Exchange rate volatility probably affects capital inflows by jeopardizing the development of the export industry. The parameter of the real export growth rate is surprisingly low (with the correct sign) although not statistically significant. Most striking is the result that capital inflows do not seem to be sensitive to the 12 month U.S. Treasury Bill rate. Even more, the parameter associated with the interest rate has the opposite sign than expected. This result contradicts the findings in all the papers cited. Three explanations are offered for this result: use of a different sample period, interest rate misspecification and a different specification of capital flows.

Asea and Reinhart (1995) discuss recent macroeconomic developments and the role of recent structural, monetary and exchange rate policies in influencing the behavior of nominal and real interest rates in four African countries - Ghana, Kenya, Uganda and Zimbabwe. They analyze a simple two-country equilibrium asset pricing model and then conduct a non-parametric investigation of the relationship between interest differentials and risk. Finally, they examine the interaction between domestic and foreign real interest rates and deviations of the real exchange rate from its steady state value using trend-cycle decompositions and impulse response functions. In their discussion of macroeconomic and financial sector developments, they note that a large proportion of the surge in capital is short-term and channeled through the domestic banking system. In addition, because of the relatively small size of domestic capital markets, portfolio investment, which has played a key role in the larger Asian and Latin American countries, is of limited importance. The return of formerly Asians residents appears to have been an important factor in recent capital flows to Uganda. They highlight a common element of capital inflow episodes - a portion of the inflows has a counterpart in reserve accumulation. The evidence

suggests that the sharp rise in domestic real interest rates may have been a key factor behind recent surge in capital inflows.

As an alternative to the GARCH parametric specification (for estimating risk) they adopt a flexible non-parametric estimator introduced in Pagan and Ullah (1988). The pattern of predicted values of δ^2_t that emerges is consistent with financial sector developments in these countries. There is a significant increase in variability after 1992 in Kenya and the variability of risk has been much lower in Zimbabwe. The estimates suggest that risk is a statistically important factor in explaining cyclical variations in capital mobility.

Asea and Reinhart further investigate the relationship between the cyclical component of the real exchange rate and interest rates (domestic and foreign). The key observation is that in periods of heavy reserve accumulation and rising capital inflows - Ghana: 1991, mid 1993 – 94; Kenya: Mid 1993-94; Uganda: 1993 - 94 and Zimbabwe: 1993 – 94; domestic real interest rates increased and in some instances remained well above 10%. Furthermore, the results suggest that high domestic real interest rates are responsible for attracting foreign capital. The real exchange rate tends to appreciate relative to its permanent, steady- state component and the ratio tends to exceed unity during periods of heavy reserve accumulation. Hence, real interest rates and fluctuations in capital flows would appear to be linked to cycles of the real exchange rate rather than its underlying trend.

Turning to impulse response functions, increases in foreign real interest rates (which would be associated with a capital outflow) tend to depreciate the real exchange rate for a period of about a year, before the real exchange rate returns to its initial level. On the other hand, increases in domestic real interest rates (which would be associated with a capital inflow) lead to a real exchange rate appreciation. In both countries, the effects of a domestic shock tend to be much more persistent. There are substantial effects lasting up to two years and even after months the real exchange rate does not return to its initial level. The impulse responses also attest to the importance of foreign interest rate shocks. An increase in real short-term U.S. interest rates

translates to a higher domestic real interest rate for a period of about a year; afterwards the domestic real rate tends to converge to its initial level. Thus, the impulse responses also indicate that domestic and foreign rates move in a common direction, indicating a high degree of capital mobility.

Bhattacharya, Montiel and Sharma (1996) provide an overview of trends in private flows to highlight both common features and differences within Sub-Saharan Africa region and then undertake an analysis of the macroeconomic factors that have influenced private flows to the region. They use panel data for the period 1980 - 95 to examine empirically the effect of domestic and external factors on the inflow of long-term private capital to 31 countries in Sub-Saharan Africa. The general theoretical model underlying the regression specifications is that long-term private capital flows into a particular country are determined by relative rates of return at home and abroad and the relative risks associated with such investments. Rates of return risk perceptions of foreign investors, and the climate for foreign investment are affected by certain domestic characteristics of the countries and the international environment. The domestic factors are proxied by the growth rate of the economy, the rate of investment, the openness of the economy, the ratio of external debt to GDP and volatility of the real effective exchange rate. The most important external factor is international interest rates, which provides a proxy for the opportunity cost of investing funds in developing countries.

Estimation results for private capital flows show that, the coefficients for the output growth rate, investment rate, openness index, and external debt ratio have the expected sign and are statistically significant at the 5% level. The coefficient for real effective exchange rate variability is not statistically significant.

The estimation results for the foreign direct investment show that the key factors influencing FDI are the GDP growth rate, the openness of the economy and the variability of the real effective exchange rate. The first two factors exert a positive influence while real exchange rate

fluctuations have a negative effect. The domestic investment ratio and the external debt ratio do not seem to have statistically significant effects.

The regressions on private loans component of private flows show that, in addition to a growing economy, the pivotal factors for obtaining private loans are the domestic investment rate and the ratio of external debt to GDP - both have coefficients that are statistically significant at the 1% level. The coefficients have the expected signs with an increase in the investment rate and a lowering of the external debt ratio making it easier to borrow abroad.

When international interest rates is included in the regression specifications for private flows as well as its two main components, the coefficient on the three-year U.S. Treasury bond yield is not statistically significant (U.S. Treasury bond yield is proxy for international interest rates). Experimentation with other proxies led to similar results. They conclude that in Sub-Saharan Africa, many borrowers are credit rationed (have not reached a minimum level of credit worthiness) such that portfolio flows are not likely to be interest sensitive.

World Bank (1997) adopts a historical perspective and examines the factors stimulating capital flows to emerging markets. By using an index of capital account restriction, they illustrate the weakening of capital controls in developing countries. The index is based on information on 163 countries and constructed using the methodology of Bartolini and Drazen (1997). Three dummy variables for each country were constructed corresponding to whether a country restricted capital account transactions, used multiple exchange rate practices or enforced surrender requirements for export proceeds. An index for each country for each year is obtained by summing its dummy variables and dividing by three. It varies between zero and one, with zero representing a complete lack of controls and one the existence of all the restrictions.

The loosening of capital controls in emerging markets since the mid-1980s is clearly brought out by the index. The figure suggests that the decline in capital account restrictions may have contributed to the recent boom in capital flows to emerging markets. The correlation between the

index and capital inflows is -0.3 over the period and provides some simple collaboration for the claim that liberalization of external transactions has been instrumental in attracting foreign capital.

The World Bank also cites the growing importance of portfolio flows (both bond and equity) in the 1990s as reflecting two fundamental structural changes in international financial markets, namely, the growing role of institutional Investors and securitization. Institutional investors, including mutual funds, insurance companies, pension funds and hedge funds have become increasingly important purchasers of emerging market securities. Securitization has involved a greater use of direct debt and equity markets - in which the lender or investor holds a tradable direct claim on the borrower or firm and a shift away from indirect finance - in which an intermediary holds a nontraded loan asset and the saver holds a liability (which may be tradable) on the intermediary. Another form of securitization has involved the creation of exchange- traded futures and options contracts. A facilitating factor has been the revolution in information technologies, which has increased the ability of investors and creditors to better manage their portfolios and to undertake more robust analyses of credit and money risks.

It is shown that the correlation between U.S. interest rates and total flows to emerging markets, which was negative over the 1990 - 93 period, is close to zero over the period 1990-96. The lower correlation between total flows to emerging markets and U.S./industrial country interest rates is seen as reflecting the fact that FDI, which is largely unresponsive to (moderate) changes in international interest rates, has increased as a proportion of total capital flows to developing countries.

A study that illustrates the importance of distinguishing between long and short- term capital movements is by Larrai'n, Lab'an and Chumacero (1997), who analyzed the determinants of short-term and long- term net private capital inflows to Chile during the period 1985- 94. They found that each category of flows respond to different determinants.

Frankel and Okongwu (1996), in an analysis of the determinants of portfolio capital flows in nine Latin American and East Asian countries (Argentina, Chile, Mexico, the Philippines, Korea and Taiwan) using quarterly data covering the period 1987- 94, found that U.S. interest rates had a major influence on these flows. As pointed out by Fernandez (1996) and Fernandez- Arias and Montiel (1996), this effect may have been an indirect one; in addition to improving relative rates of returns in favor of developing economies, low world interest rates appeared to have improved the credit worthiness of debtor countries.

However, not all studies found a strong effect of world interest rates. For instance, Motaal (1995) examined the determinants of capital movements in some middle- Eastern countries (including Jordan, Egypt, Morocco and Tunisia) and Asian countries (Bangladesh, India, Pakistan, and Sri Lanka). His analysis suggested that external factors (reductions in world interest rates) played a less important role in the increase in capital inflows to these countries; more important were internal factors (the momentum for reform) which led to improvements in longer- term economic prospects. In practice, it is fiscal adjustment (a reduction in the share of government expenditure in output and budget deficits) that has been identified as a "pull factor" in some countries. In countries like Argentina, Thailand, Mexico and Chile, significant reductions in fiscal deficits preceded the surge in capital inflows and were associated with important changes in public expenditure policies, reductions in government subsidies and tax reform. Improved fiscal balances helped to lower inflationary expectations and conveyed a signal regarding the policymaker's commitment to achieve and maintain macroeconomic stability. However, there are also instances where it is large fiscal imbalances, coupled with a relatively tight monetary policy stance (and consequent upward pressures and domestic real interest rates) that have led to massive short-term speculative capital inflows. Notable examples are Brazil and Turkey (Ag'enor, McDermott and Ucer (1996). Among domestic factors, there is evidence that the removal of capital controls on outflows may have led to an increase in net inflows of capital in several countries in the early 1990's, including Chile, Colombia, and Egypt. An analytical explanation of this apparent paradox was provided by Laban and Larrai'n (1997). A reduction in the minimum repatriation period is likely to increase, not decrease, net capital inflows.

2.4 Macro economic Impact of Capital Inflows

In a study of fourteen developing countries in Asia, Latin America, and Africa (in 1989-1992), Montiel (1996) reports that foreign exchange reserves rose in all countries and the increase was largest in those countries that relied most heavily on sterilized intervention. By contrast, the current account offset to capital inflows was largest in Argentina, Bolivia, and Costa Rica (in 1992- 93), all of which sterilized either weakly or not at all. However, surges in money growth- the key channel of transmission do not appear to have been as universal or as persistent. Base money growth tended to accelerate on impact in several countries (for instance the Philippines, Colombia, Costa Rica and Mexico) before sterilization was undertaken in earnest. Once monetary policy adapted to the persistence of inflows, however, recipient countries were largely successful in keeping base money growth in check. In spite of the limited expansion in the monetary base, stock prices surged during the early phases of the episodes both in Asia and Latin America. And, in spite of what appears to be widespread boom in asset markets, there were no instances in which inflation accelerated drastically during the inflow episode.

Increases in current account deficits have been common during inflow episodes. Larger deficits were registered by Korea, Malaysia, the Philippines, Thailand, Argentina, Bolivia, Costa Rica, Mexico and Egypt. Despite some increase in investment in most Latin American countries, the current wave of capital inflows does not seem to have been associated with an investment boom (private or public) in the region. Thus, the increases in current account deficits have accommodated a reduction in domestic saving. Several Latin American countries appear to have experienced consumption booms led by private sector consumption.

Significant real exchange rate appreciation was widespread outside East Asia. In Latin America, Chile experienced a mild appreciation but the degree of appreciation was strong in Argentina and Mexico. Fiscal restraint appears to have played a role in avoiding stronger real appreciation as well as more rapid inflation, particularly in several East Asian countries (Indonesia, Malaysia, the Philippines and Thailand). However, the experience suggests that fiscal policy has not proven to

be a very flexible instrument in responding to inflows. Not many countries found it possible to engage in additional fiscal tightening in response to inflows and where additional fiscal tightening took place the changes in the fiscal stance were not typically large compared with previous fiscal adjustments in the countries concerned. The experience of real appreciation elsewhere supports the implication of theory that in the presence of capital inflows, the avoidance of real appreciation requires a fiscal contraction to free up the requisite supply of nontraded goods without a relative price change. Nonetheless, tighter fiscal policy was not sufficient to avoid real appreciation.

Yenturk (1999) examines the behavior of short- term capital inflows in Turkey and their impact on macroeconomic structure in the 1990's. The study concludes that a surge in speculative capital inflows after financial liberalization played an important role in aggravating the macro economic conditions of Turkey's current account and public deficit and in the appreciation of the real exchange rate, the increase in interest rates and in the growth of the money supply and stock of credit. Along with these, the government's mishandling of the inflow of hot money and the mismanagement of the crisis played a crucial part in the financial crisis of 1994. The distinguishing feature of the Turkish case is that the public sector used the growing liquidity provided by speculative inflows to finance public expenditures. Labor, in turn, benefited from higher wages both in the public and private sector. The appreciation of the exchange rate was another factor benefiting industry as it lowered the input cost of imports and compensated for rising wage in industry.

Regarding the mismanagement of the crisis, the Turkish case shows that an attempt to decrease interest rates without correcting fundamentals will produce a jump in the interest rates and a drop in international reserves. An attempt to artificially lower interest rates brought on the external reaction of international institutions reducing the country's credit rating. The counterpart internal reaction was the rush to foreign currencies. The consequences were numerous: interest rates that were even higher than before, triple -digit devaluation and inflation, an erosion in real wages and an increase in unemployment.

Evidence of the post- crisis period shows that Turkey continues to be highly dependent on capital inflows, but rather than being used to pay for growing current expenditures they are being used to finance the country's growing interest payments and debt servicing. The panorama of the Turkish economy in the post- crisis period, especially after the second half of 1996 exhibits big macro economic instabilities with a high public deficit coupled with falling interest rates, a high current account deficit coupled with real appreciation of the Turkish Lira, a high currency substitution, inadequate reserves and a lending boom.

2.5 Overview of the Literature

Past studies have focused on various issues of capital flows, including the effective degree of capital mobility and the notion of an integrated global capital market; theoretical and practical implication of the increased mobility of capital; behavior of capital flows; capital flight and the effect of capital controls.

These earlier studies have mainly been concerned with the theoretical and practical implications of the increased mobility of capital (see for example Mundell, 1963). These studies emphasized the effect of capital mobility on monetary policy. Under fixed exchange rates, it is argued, a change in the money supply alters the interest rate, which, in turn, induces international capital flows. Central bank intervention (buying and selling reserves at the exchange parity) to stabilize the exchange rate eventually restores the money supply to its original level. Thus, attempts to use monetary policy to influence aggregate demand is frustrated by international capital flows.

Some studies have suggested that the effective degree of capital mobility in developing countries has been increasing in recent years (Mathieson and Rojas-Suarez, 1992 and Montiel, 1994). Although the majority of developing countries continue to maintain some forms of restriction such as exchange controls and quantitative restrictions, for example, on capital movements, these restrictions were not very successful in stemming the large capital outflows (capital flight) that took place in the 1970s and 1980s. When developing countries have resorted to capital controls

to stem occasional surges of inward capital flows these controls have been largely ineffective and evasion has been widespread through parallel capital channels (Ghosh and Ostry , 1995).

On the other hand, studies on developed economies have generated unexpected results. The surprise findings of Martin and Horioka (1980) that nearly all incremental savings remain in the country of origin generated greater research interest because these results are quite incompatible with the assumption of complete arbitrage in a perfect world capital market. Further research (for example Dooley, 1984) still found that changes in the propensity to save or to invest on the part of the residents of an industrial country result in changes in that country's investment share or saving share, while current account balances act as temporary shock absorbers.

There have been attempts to carry out empirical studies on capital flows. Initially, the focus was on capital flows in industrial countries. Among the findings is that changes in incomes are highly significant in explaining capital flows. Capital flows accommodate resultant fluctuations in money demand. On the other hand, current account balance tends to induce offsetting capital flows thereby stabilizing the balance of payments (see Kouri and Porter, 1974). There has also been concern over the effect of capital controls. Drawing on experiences from the German economy, Dooley and Isard (1980) conclude that given the prospect of controls on capital flows into a particular country, the interest differential due to political risk depends on the gross stock of outside claims against residents of that country and on the distribution of world wealth between residents and non-residents. Increase in claims subject to political risk raise the exchange risk premium that portfolio managers can expect to earn.

Studies on capital flows in the case of developing countries were mainly concerned about 'capital flight'. Capital flight is viewed as a problem arising from repressive financial policies (see for example Cuddington, 1986). Empirical evidence on the selected debtor countries of Latin America as presented by Dooley (1980) indicates that residents of a country prefer to hold a large share of their financial assets in a form that is outside the control of the domestic authorities due mainly to the inflation tax, political risk and financial repression. Capital flight refers to capital

outflows that respond to economic or political crises. It is the subset of capital outflows that are propelled by source country policies. On the other hand normal capital flows refer to flows that correspond to ordinary portfolio diversification of domestic residents. Normal portfolio diversification takes place on the basis of differentials in economic returns.

These empirical studies have not been conclusive. In the case of developed countries it is still not understood why the results are incompatible with the assumption of perfect capital mobility while in the case of developing countries it is not possible to explain why some countries exhibit little or no capital mobility while others exhibit very high capital mobility. These and other questions thus call for further research. And since studies on developing countries have mainly been cross-country in their approach, they cannot account for country-specific differences. Moreover, they may not be very useful in deriving country-specific policy conclusions. It is in light of this that the present study focuses on the Kenyan economy.

Past studies have led to conflicting views over the determinants of capital flows. As reviewed in the past section, Kouri et al (1974), Hernandez and Rudoph (1995), Bhattacharya (1996) and World Bank (1997) emphasize the role of domestic factors or what has come to be known as "pull" factors. These include fluctuations in money demand, current account balance, changes in incomes, improvement in economic conditions and financial markets, changes in domestic investment, total indebtedness net of foreign reserves/external debt ratio, volatility of the real exchange rate, real exports growth rate, etc. Others have supported the view that external factors or what has come to be known as the "push" factors are important in influencing the level of capital flows. Calvo, et al (1992), Asea and Reinhart (1995), and others find empirical evidence that foreign/international interest rates (proxied by U.S/Industrial country interest rates) affect capital flows to a much greater extent. Other studies emphasize the importance of both "push" and "pull" factors. Most studies have concerned themselves with recent capital inflows to Latin America, South Asia and much recently, Africa.

As already mentioned, most of the studies were cross- country in nature and used regression analysis to identify the determinants of capital flows. However, the view that capital inflows has a major effect on foreign reserves, money growth, the real exchange rate, the current account, domestic savings and investment, consumption, public debt, interest rates, public deficits and inflation makes it inappropriate to treat some of these variables as exogenous in regression analysis. The problem concerns the assumption of no feedback from capital inflows to the macroeconomic variables. If the assumption is unrealistic, as it appears in this case, then the coefficient estimates of the impact effects of the macroeconomic variables on capital inflows will be biased. Therefore, when we are not confident that the macroeconomic variables are actually exogenous, then we have to let capital inflows to be affected by the macroeconomic variables and let the macroeconomic variables to affect capital inflows. This is what we do in this study. Indeed, some researchers have recognized the importance of these feedback effects such as Calvo, Leiderman and Reinhart (1992) who performed causality tests for each of the ten Latin American countries covering the period 1988-1991. However, they were mainly concerned with the dynamic interaction between official reserves and the real exchange rate, because they proxy for capital inflows. In this study, we examine the feedback between total capital, short-term capital and long-term capital inflows on the one side and each of the selected macroeconomic variables on the other.

CHAPTER 3: METHODOLOGY

3.1.0 Analytical Framework

Hernandez and Rudolph (1995) and Bhattacharya, Montiel and Sharma (1996), among others, use regression analysis to examine the determinants of capital inflows. On the other hand, Montiel (1996) and Yenturk (1999), among others, demonstrate the significant impact of capital inflows on macroeconomic variables. For convenience, we shall refer to the former as determinants models and the latter as impact models. The expected direction of the relationship between capital inflows and their determinants will in most cases differ depending on the analytical framework used. We present theoretical arguments on the pattern of causality for both a determinants model and an impact model of capital flows.

Following the findings of Larrain, Laban and Chumacero (1997) that each category of capital flows responds to different determinants, thus demonstrating the importance of distinguishing between long and short-term capital movements, we categorise capital inflows as follows:

- Total net capital inflows comprising the different components; foreign direct investment, private loans and portfolio equity
- private long-term capital
- Private short-term capital

3.1.1 Determinants of Capital Inflows

- Real growth of domestic GDP; a rapidly or steadily growing economy is likely to offer higher rates of return and lower risks on investment. The expected sign on the coefficient is positive. In addition, fluctuations in money demand caused by income are a source of capital flows.

- Real growth of foreign GDP; the expected sign on the coefficient is negative. Foreign growth rate is proxied by US growth rate.

- Capital formation as a percentage of GDP; high investment rates serve as a proxy for expected future growth of an economy and hence higher expected returns. The expected sign on the coefficient is positive. And to the extent that foreign savings finance domestic investments; there will be a positive contemporaneous correlation between high investment rates and capital inflows. This simultaneity issue is handled by using lagged investment rates as a proxy for future returns.

- Domestic consumption as a percentage of GDP; foreign investors may see savings as a signal of confidence on the performance of the economy. Consumption is negatively related to savings so that the expected sign is negative.

- Domestic real deposit rate, treasury rate, discount rate; the expected sign on the coefficients is positive.

- Real foreign rates of interest (U.S. discount rates and Treasury bill rate); foreign interest rate changes need not directly be a major source of fluctuations on the capital account as long as domestic interest rate is allowed to adjust. The expected sign on the coefficient is negative.

- Change in net domestic assets of the central bank; the extent to which monetary policy is offset by capital flows is estimated by the coefficients on the change in net domestic assets. The expected sign is negative.

- Domestic inflation; it is a proxy for macroeconomic instability. Domestic inflation is interpreted as measuring the extent to which the government has resorted to taxing domestic financial assets through money creation. It is considered a proxy for the difficulty the government is experiencing in generating revenue. The expected sign on the coefficient is negative.

- Real exchange rate; it is a proxy for macroeconomic instability. Large structural fiscal deficits, erratic monetary and exchange rate policies and weaknesses in the financial system contribute to a high degree of volatility in the exchange rates. A highly variable exchange rate is likely to affect the country's traded goods sector adversely as well as make the returns to foreign investors more uncertain. The expected sign on the coefficient is negative.

- Exports growth rate; it is a proxy for commercial openness. A large traded goods sector signals increased ability to compete in the international market place and a greater capacity to repay external debt obligations. The expected sign on the coefficient is positive.

- Total external debt as a percentage of GDP; the larger the burden of external debt the greater the debt-service obligations and the greater the vulnerability of the economy to increases in international interest rates. The expected sign on the coefficient is negative.

- Budget deficits are a proxy for macroeconomic instability; the expected sign on the coefficient is negative.

- Current Account Balance; capital inflows finance (offset) the current account balance. The expected relationship is negative.

3.1.2 Impacts of Capital Inflows

- Capital inflows lead to the accumulation of reserves and an increase in money supply (greater intervention by the Central Bank leads to greater accumulation of reserves). The expected relationship with net domestic assets or base money is positive.

- Capital inflows increase external debt as it raises the burden of interest payments, especially when capital inflows are associated with high interest rates. The expected relationship with external debt is positive.

- Capital inflows increase imports, worsen the current account and precipitate an appreciation of the exchange rate (stronger effect if the Central Bank pursues a non-intervention policy). The expected relationship with real exchange rates is negative.

- Capital inflows worsen the current account as it appreciates the real exchange rate, thus increasing the country's dependency on imports (strongest effect if the Central Bank pursues a non- intervention policy). The expected relationship with the current account balance is negative.

- Capital inflows increase external debt resulting in a sharp growth of public expenditure (as it raises the burden of interest payments). High external debt raises interest rates and creates a vicious cycle continuously pushing up the public deficit. The expected relationship with budget deficits is positive.

- Capital inflows raise interest rates and appreciate the real exchange rate. This trend leads to a vicious cycle by displaying a continuous need for capital inflows in order to carry on interest payments and an appreciation of the real exchange rate. The expected relationship with domestic interest rates is positive.

- Speculative capital inflows are associated with high interest rates which discourage real investment decisions. The expected relationship with capital formation is negative.

- Capital inflows increase domestic consumption as residents rely on foreign savings to finance consumption and imports of consumer goods. Capital inflows reduce domestic savings. Domestic savings are used instead to finance transfers abroad as a result of excessive external debt and the increased burden of external interest

payments. The expected relationship with consumption is positive while it is negative for savings.

- Capital inflows leads to the accumulation of reserves and, consequently, an increase in money supply and inflation (strongest effect if the Central Bank intervenes). In addition, sterilization leads to quasi-fiscal deficits since the Central Bank is placing paper in the domestic market at higher interest rates than it collects in the international markets. When these capital inflows are used for public expenditure, they in turn push up inflation. The expected relationship with inflation is positive.

- Capital inflows lead to an appreciation of the real exchange rate which in turn discourage exports. The expected relationship with exports is negative.

Table 3.1 Summary of expected directions of relationships between capital inflows and selected macro economic variables in determinants and impact models

Variable (VARI)	Determinants model (effect of VARI on inflows)	Impact model (effect of inflows on the VARI)
Capital formation	Positive(+)	Negative(-)
Consumption	Negative(-)	Positive(+)
Domestic real interest rates	Positive(+)	Positive(+)
Net domestic assets	Negative(-)	Positive(+)
Inflation	Negative(-)	Positive(+)
Real exchange rates	Negative(-)	Negative(-)
Exports growth	Positive(+)	Negative(-)
External debt	Negative(-)	Positive(+)
Current account balance	Negative(-)	Negative(-)
Budget deficits	Negative(-)	Positive(+)
Real foreign interest rates	Negative(-)	Uncertain
Real growth of foreign GDP	Negative(-)	Uncertain
Real growth of domestic GDP	Positive(+)	Uncertain

3.2 VAR (Vector Autoregression) Analysis

The above relationships show that the determinants of capital inflows are affected by capital inflows so that we expect feedback between capital inflows and the selected macroeconomic variables. Therefore, we adopt VAR (vector autoregression) analysis, which allows us to examine the response of capital inflows to each of the macroeconomic variables and also the response of each of the macroeconomic variables to capital inflows (Anders, 1995).

The methodology involves estimating the different categories of capital inflows and each of the macro economic variables in a VAR framework. If the capital inflow series is denoted by y_t and the macroeconomic variable series is z_t then the following is the expression of structural VAR or the primitive system :

$$y_t = b_{10} - b_{12}z_t + \varnothing_{11}y_{t-1} + \varnothing_{12}z_{t-1} + \varepsilon_{yt}$$

$$z_t = b_{20} - b_{21}y_t + \varnothing_{21}y_{t-1} + \varnothing_{22}z_{t-1} + \varepsilon_{zt}$$

where it is assumed that both y_t and z_t are stationary; ε_{yt} and ε_{zt} are 'white-noise' disturbances with standard deviations of δ_y and δ_z, respectively; $\{\varepsilon_{yt}\}$ and $\{\varepsilon_{zt}\}$ are uncorrelated white-noise disturbances. The parameter $-b_{12}$ is the contemporaneous effect of a unit change of z_t on y_t; $\varnothing_{21}$ is the effect of a unit change in y_{t-1} on z_t; ε_{yt} and ε_{zt} are pure innovations (shocks) in y_t and z_t respectively.

The time path of $\{y_t\}$ is affected by current and past realizations of the $\{z_t\}$ sequence, and the time path of the $\{z_t\}$ sequence is affected by current and past realizations of the $\{y_t\}$ sequence. If $b_{21} \neq 0$, ε_{yt} has an indirect contemporaneous effect on z_t; if $b_{12} \neq 0$, ε_{zt} has an indirect contemporaneous effect on y_t.

Using algebra, it is possible to rewrite the primitive system in standard VAR form as follows:

$$y_t = a_{10} + a_{11}y_{t-1} + a_{12}z_{t-1} + e_{1t}$$

$$z_t = a_{20} + a_{21}y_{t-1} + a_{22}z_{t-1} + e_{2t}$$

In this case, the error terms are composites of the two shocks ε_{yt} and ε_{zt}

$$e_{1t} = (\varepsilon_{yt} - b_{12}\varepsilon_{zt})/(1 - b_{12}b_{21})$$

$$e_{2t} = (\varepsilon_{zt} - b_{21}\varepsilon_{yt})/(1 - b_{12}b_{21})$$

Since ε_{yt} and ε_{zt} are white-noise processes, it follows that both e_{1t} and e_{2t} have zero means, constant variances and are individually serially uncorrelated.

The primitive system is not identifiable. One way to identify the model is to impose a restriction on the primitive system such that the coefficient $b_{21} = 0$. Consequently, we can decompose the residuals in a triangular fashion, that is, using Choleski decomposition as follows:

$$e_{1t} = \varepsilon_{yt} - b_{12}\varepsilon_{zt}$$

$$e_{2t} = \varepsilon_{zt}$$

Therefore, estimates of $\{\varepsilon_{yt}\}$ and $\{\varepsilon_{zt}\}$ sequences can be recovered. The residuals from the second equation (i.e the e_{2t} sequence) are estimates of the ε_{yt} sequence.

3.3 Granger- Causality

In the two-variable case, we can let the time path of $\{y_t\}$ be affected by current and past realizations of the $\{z_t\}$ sequence and let the time path of the $\{z_t\}$ sequence be affected by current and past realizations of the $\{y_t\}$ sequence. Following Granger (1969), we adopt a simple causal model as follows:

$$y_t = \beta_1 + \sum_{j=1}^{j=m} a_j y_{t-j} + \sum_{j=1}^{j=m} b_j z_{t-j} + e_{1t}$$

$$z_t = \beta_2 + \sum_{j=1}^{j=m} c_j y_{t-j} + \sum_{j=1}^{j=m} d_j z_{t-j} + e_{2t}$$

where $ß_1$ and $ß_2$ are constants

y_t = the different categories of capital inflows

z_t = the selected macro economic variables

e_{1t}, e_{2t} are taken to be two uncorrelated white-noise series;

m equals infinity but in practice, of course, due to the finite length of the available data, m will be assumed finite and shorter than the given time series.

The definition of causality given above implies that z_t is causing y_t provided some b_j is not zero. Similarly y_t is causing z_t if some c_j is not zero. If both of these events occur, there is said to be a feedback relationship between y_t and z_t.

A test of causality is whether the lags of one variable enter into the equation for another variable. The direct way to determine Granger causality is to use a standard F- test. We have added a constant to the system of equations. Sims (1980) and Doan (1992) recommend against the use of a deterministic time trend.

If all the coefficients of c_j are zero, then knowledge of the capital inflows series does not reduce the forecast error variance of the macroeconomic variable. Formally, capital inflows would not Granger cause the macro economic variable. Unless there is a contemporaneous response of the macroeconomic variable to capital inflows, the macroeconomic variable series evolves independently of capital inflows. If all the coefficients of b_j are zero, then, the macroeconomic variable does not Granger cause capital inflows. The absence of a statistically significant contemporaneous correlation of the error terms would imply that the macroeconomic variable cannot affect capital inflows. If instead, any of the coefficients differ from zero, there are interactions between the two series. In case of (positive) negative coefficients of b_j the macroeconomic variable would have a (positive) negative effect on capital inflows.

3.4 The Impulse Response Functions

Our VAR in standard form is:

$y_t = a_{10} + a_{11}y_{t-1} + a_{12}z_{t-1} + e_{1t}$

$z_t = a_{20} + a_{21}y_{t-1} + a_{22}z_{t-1} + e_{2t}$

The above VAR can be rewritten in matrix form as follows

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} a_{10} \\ a_{20} \end{bmatrix} + \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} y_{t-1} \\ z_{t-1} \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \end{bmatrix}$$

Alternatively, we can express y_t and z_t in terms of the $\{e_{1t}\}$ and $\{e_{2t}\}$ sequences:

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} \bar{y} \\ \bar{z} \end{bmatrix} + \sum_{i=0}^{\infty} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}^i \begin{bmatrix} e_{1t-i} \\ e_{2t-i} \end{bmatrix}$$

We can also write the vector of errors as follows:

$$\begin{bmatrix} e_{1t} \\ e_{2t} \end{bmatrix} = [1/(1-b_{12}b_{21})] \sum_{i=0}^{\infty} \begin{bmatrix} 1 & -b_{12} \\ -b_{21} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{zt} \end{bmatrix}$$

Combining the last two equations above we have:

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} \bar{y}_t \\ \bar{z}_t \end{bmatrix} + [1/(1-b_{12}b_{21})] \sum_{i=0}^{\infty} \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}^i \begin{bmatrix} 1 & -b_{12} \\ -b_{21} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{zt} \end{bmatrix}$$

To simplify this, one can define another matrix ϕ_i with elements ϕ_{jk} as follows:

$$\phi_i = [(A_1^i/(1-b_{12}b_{21})] \begin{bmatrix} 1 & -b_{12} \\ -b_{21} & 1 \end{bmatrix}$$

where,

$$A_1 = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

Therefore, the moving average representation of the variables can be written in terms of ε_{yt} and ε_{yt} sequences:

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} \bar{y}_t \\ \bar{z}_t \end{bmatrix} + \sum_{i=0}^{\infty} \begin{bmatrix} \phi_{11}(i) & \phi_{12}(i) \\ \phi_{21}(i) & \phi_{22}(i) \end{bmatrix} \begin{bmatrix} \varepsilon_{yt-i} \\ \varepsilon_{zt-i} \end{bmatrix}$$

Or in compact form,

$$x_t = \mu + \sum_{i=0}^{\infty} \phi_i \varepsilon_{t-i}$$

$Ø_{11(i)}$, $Ø_{12(i)}$, $Ø_{21(i)}$, $Ø_{22(i)}$ are the impulse response functions. When we plot the impulse response functions, we will be able to see the behavior of the y_t and z_t series in response to shocks. And since the primitive VAR system cannot be identified, we use the Choleski decomposition. We decompose the error terms as follows:

$e_{1t} = \varepsilon_{yt} - b_{12}\varepsilon_{zt}$

$e_{2t} = \varepsilon_{zt}$

In this case z_t is prior to y_t since an ε_{zt} shock directly affects e_{1t} and e_{2t} but an ε_{yt} shock does not affect e_{2t}.

3.5 Data Sources and Data Types

Data were obtained from Central Bureau of statistics (CBS), Central Bank of Kenya (Statistical Bulletins and Monthly Economic Reviews), Ministry of Finance, and IMF/World Bank offices. As already noted by Mwau (1984), the various sources of capital account data yield different data and so to get more accurate and reliable data all sources need to be made use of. We shall use both annual and monthly data. Annual data includes total capital inflows, private short-term capital inflows, private long-term capital inflows, the domestic real GDP growth rate, capital formation, incremental output-capital ratio, consumption, the deposit rate, the treasury rate, the discount rate, net domestic assets, narrow money (M1), inflation, real exchange rates, exports growth, external debt, foreign exchange reserves, foreign reserves, net foreign assets, budget deficits, current account balance, U.S. discount rate, U.S treasury rate, U.S. GDP growth rate, and the domestic-foreign GDP differential and interest rate differential.

Not all the information is available on a monthly basis. Therefore, our monthly data includes total capital inflows, private short-term capital inflows, the discount rate, the treasury rate, the deposit rate, current account balance, exports, imports, official foreign reserves, net foreign exchange reserves, net foreign assets, net domestic assets, budget deficits, base money (M0), real exchange rates, inflation, U.S. treasury rate, U.S discount rate, and the domestic-foreign interest rate differential. Foreign interest rates and foreign growth rates will be proxied by the U.S. interest rates and U.S growth rates. We shall also use monthly data for the period 1993 – 1996. This is a crucial period because during this period, the country experienced an upsurge in private short-term capital inflows.

3.6 Estimation Problems with Non-stationary Data Series

One problem that may arise when performing regression with clearly non-stationary data series is the problem of nonsense regression, so named by Yule (1926) or spurious regression, in the terminology of Granger and Newbold (1974) . Another problem is that of inconsistent regression which arises because the non-stationary series will have a time-dependent mean so that the value of the coefficient of the regression will not itself be constant. Given two completely unrelated but integrated series, regression of one on the

other will tend to produce an apparently significant relationship. Yule also used the term "spurious relationship," referring to a correlation induced between two variables that are casually unrelated, but are both dependent on other common variables. The realization that such things could occur led to the interest in transformations to induce stationarity. Differencing data was one of these; removing a deterministic trend from a series was another.

The idea that variables hypothesized to be linked by some theoretical economic relationship should not diverge from each other in the long run is a fundamental one in time series econometric analysis. Such variables may drift apart in the short run or because of seasonal effects, but if they were to diverge without bound, an equilibrium relationship among such variables could not be said to exist. The divergence from a stable equilibrium must be stochastically bounded at some point, diminishing overtime. Informally, a series is said to be integrated if it accumulates some past effects; such a series is non-stationary because its future path depends upon all such past influences, and is not tied to some mean to which it must eventually return. To transform an integrated series to achieve stationarity, we must difference it at least once. However, a linear combination of series may have a lower order of integration than any one of them has individually. In this case the variables are said to be co-integrated.

Regressions involving levels of time series of non-stationary variables make sense if and only if these variables are co-integrated. A test for co-integration then yields a useful method of distinguishing meaningful regressions from those that Yule (1926) called "nonsense" and Granger and Newbold termed "spurious". Spurious regression is a non co-integrated case where there was no relationship but the unit root in the error term process leads to a low durbin watson, a high R^2 and apparently high significance of the coefficients. A bivariate co-integrated system must have a causal ordering in at least one direction. An informal description of the problems encountered in modeling non-stationary variables in a single equation framework would identify at least five effects. First, the presence of unit roots induces non-standard distributions of the coefficient

estimates. Second, the error process may not be a martingale1 difference sequence. Third, the explanatory variables may be generated by processes that display autocorrelation, taken in conjunction with the second effects, this gives rise to "second-order" biases. Fourth, there may be more than one co-integrating vector. Finally, the explanatory variables in the single equation may not be weakly exogenous for the parameters being estimated.

Weak exogeneity can fail if, say, a co-integrating vector enters more than one equation in the system generating the variables. Static regressions can be affected by all five of the problems listed above, while dynamic models may be able to accommodate the first three effects. However, estimates derived from single equation dynamic models are not optimal if weak exogeneity fails to hold.

Granger's Representation Theorem (adapted from Engle and Granger, 1987 and Johansen, 1991) proves that a co-integrated system of variables can be represented in three main forms; the vector autoregressive (VAR), the error-correction, and moving - average forms.

3.7 Dickey- Fuller t- tests

Dickey and Fuller (1979) consider three different regression equations that can be used to test for the presence of a unit root:

$\Delta y_t = \Upsilon y_{t-1} + \epsilon_t$

$\Delta y_t = a_o + \Upsilon y_{t-1} + \epsilon_t$

$\Delta y_t = a_o + \Upsilon y_{t-1} + a_2 t + \epsilon_t$

The first equation is a pure random walk; the second adds an intercept or drift term and the third includes both a drift and a linear time trend. The parameter of interest in all the

1 A Martingale difference sequence can be defined by $\{y(t) = x(t) - x(t-1),\ t\epsilon T\}$. It follows that $E(/y(t)/) < \infty \forall\ t\epsilon T$ and that $E\ (y(t)/\vartheta_{t-1}) = 0 \forall\ t\epsilon T$ where E (.) is the expectations operator and ϑ_{t-1} represents a particular information set of data realized by time t-1.

regression equations is Υ; if $\Upsilon = 0$, the $\{y_t\}$ sequence contains a unit root. We test, estimating the equations above using OLS in order to obtain the estimated value of Υ and associated standard error. Comparing the resulting t- statistic with the appropriate value reported in the Dickey- Fuller tables allows us to determine whether to accept or reject the null hypothesis $\Upsilon = 0$.

3.8 Limitations of the Study

The main limitation of this study concerns the availability of data and the accuracy of this data. As we have already noted, different sources give different data. Some data is available on annual basis only. Not all data is available on monthly basis. However, despite these problems, we were able to achieve the objectives of the study.

CHAPTER 4: DATA ANALYSIS AND EMPIRICAL RESULTS

In this section, we compare total capital flows into Kenya, Uganda, and Tanzania to see if total capital flows into East African countries have followed a similar pattern. Next, we compare private short-term and private long-term capital inflows in Kenya, in terms of volatility, persistence, and whether they are complementary or substitutes of each other. We then test for unit roots and difference the variables accordingly to make them stationary. In our main analysis, we apply two VAR techniques; Granger-Sims methodology for detecting causality and estimating impulse response functions. We also used correlation analysis to see how these capital inflows are related for the three East African countries. In the end, we report our results.

4.1 Comparison of Total Capital Inflows in Kenya and Total Capital Inflows in Other East African Countries

We tabulated average total capital flows to the three East African countries; Kenya, Uganda and Tanzania for the periods 1970-81, 1982-89 and 1990-97. Next, we present in charts the trend of these flows. Afterward, we report pearson correlation coefficients of the flows.

Table 4.1 Capital inflows in Kenya, Uganda and Tanzania (figures in million U.S. $)

Period	Kenya	Uganda	Tanzania
1970- 81	251.4	32.3	162.6
1982- 89	294.5	47.5	70.1
1990- 97	209.7	201.4	393.6

Source: IMF; **International Financial Statistics**, various issues

Chart 4.4: Total Capital Inflows; Kenya (Kcapital), Uganda (Ucapital) , Tanzania (Tcapital)

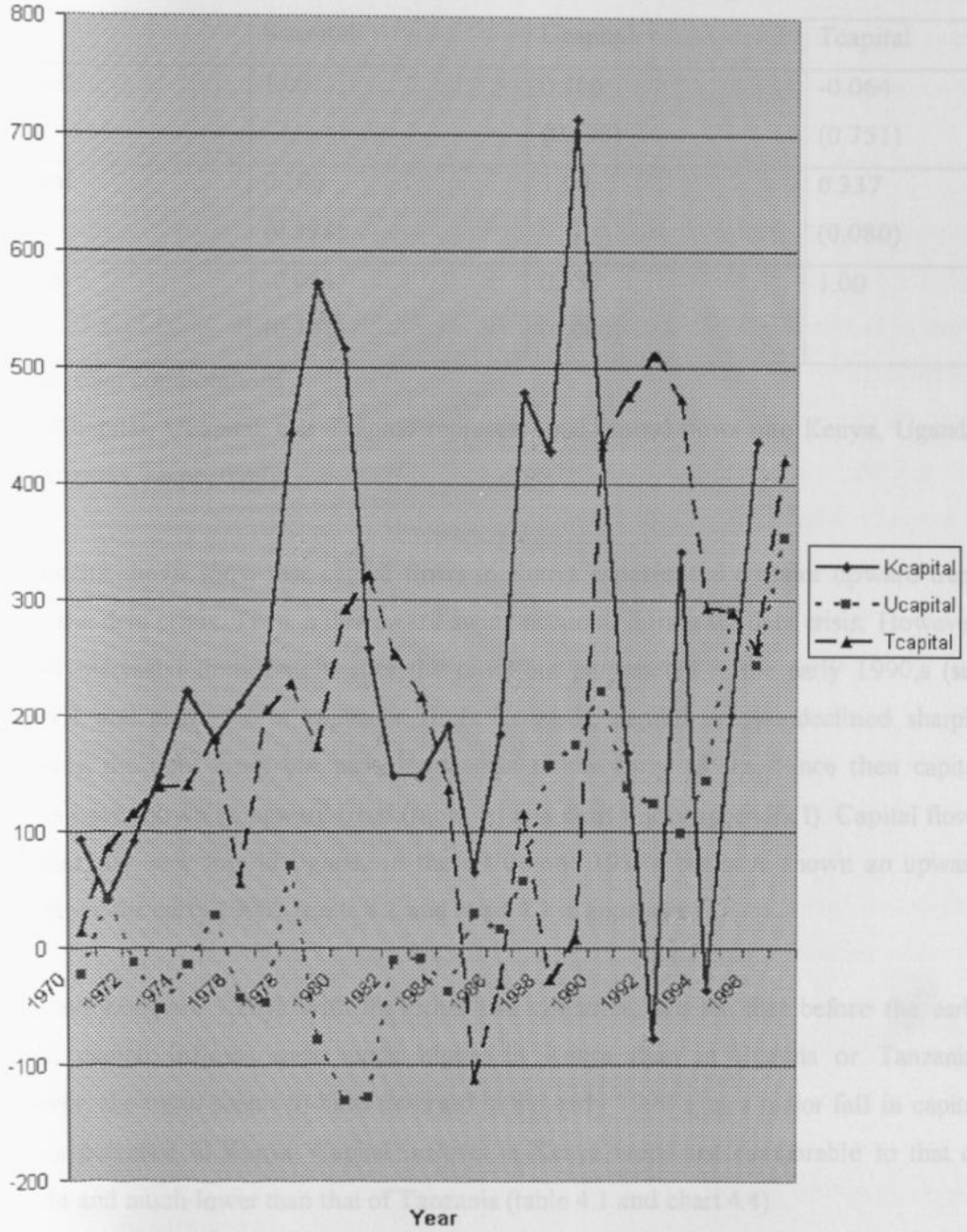


Table 4.2 Pearson correlation coefficients of Capital Flows into Kenya, Uganda and Tanzania

	Kcapital	Ucapital	Tcapital
Kcapital	1.00	0.106 (0.598)	-0.064 (0.751)
Ucapital	0.106 (0.598)	1.00	0.337 (0.080)
Tcapital	-0.064 (0.751)	0.337 (0.080)	1.00

Source: own computations

Note: Kcapital, Ucapital, and Tcapital represent total capital flows into Kenya, Uganda, and Tanzania, respectively.

The results above show that capital flows in Kenya experienced a major upward trend before the debt crisis. Then, a downward swing occurred during the debt crisis. However, inflows increased immediately after the crisis but plummeted in the early 1990,s (see table 4.1 and chart 4.1 in appendix I). In Tanzania, capital inflows declined sharply following the debt crisis but picked up again in the early 1990,s. Since then capital inflows have shown an upward trend (table 4.1 and chart 4.2 in appendix I). Capital flows were initially very low in Uganda in the 1970's and 1980's but have shown an upward trend since the early 1990's (table 4.1 and chart 4.3 in appendix I).

When we compare Kenya with the other two countries, we see that before the early 1990's, capital inflows were much higher in Kenya than in Uganda or Tanzania. However, the trend seems to have reversed in the early 1990's, as a major fall in capital inflows occurred in Kenya. Capital inflows in Kenya were just comparable to that of Uganda and much lower than that of Tanzania (table 4.1 and chart 4.4).

In addition, inflows of capital in Kenya have been subject to major swings, especially during the debt crisis and in the early 1990's, suggesting greater volatility of these flows. Tanzania experienced also some swings before and immediately after the debt crisis, though of a lower magnitude than that of Kenya. In contrast, capital inflows in Uganda have not been subject to major swings. These inflows remained very low until early 1990's and since then have shown a consistent upward trend, though it has not risen above that of Kenya and Tanzania.

The correlations show that there is some positive relationship between capital inflows in Kenya and inflows in Uganda, though not significant. There appears to be some negative relationship between capital inflows in Kenya and Tanzania. There is, however, a major positive relationship between capital inflows in Uganda and capital inflows in Tanzania. Therefore, we can argue that there is very little relationship between capital inflows in Kenya and inflows in the other two East African countries. It appears that country characteristics play a more important role in influencing capital inflows. Owners of foreign capital seem to target individual countries and not East Africa in general.

4.2 Private Long- term and Private Short- term Capital inflows in Kenya

We compared private long-term and private short-term capital flows in terms of volatility, persistence and their relationship overtime, that is, whether there is complementarity or substitution between these two different flows. We used the coefficient of variation to measure volatility and autocorrelation coefficients to measure persistence. Simple correlation coefficients are used to ascertain whether there is complementarity or substitution (in Claessens, Dooley and Warner, 1995).

The coefficient of variation of private long-term capital inflows turns out to be 194.7 while that of private short-term capital inflows is 226.7. The coefficient of variation of total capital inflows is 156.6. Therefore, the results show that private short-term capital inflows are of greater volatility than private long- term flows, just as is usually expected.

We took the sum of 25 squared autocorrelations to measure persistence. The sum of squared autocorrelations is 111.5 for private long-term capital inflows and 285.9 for private short-term capital inflows. It is 154.8 for total capital inflows. Therefore, all types of flows turn out to be persistent. And contrary to our expectations, private short–term capital inflows turn out to be the most persistent series compared to private long-term capital. It implies that short-term inflows are more stable than private long-term capital inflows.

We compared private long-term and private short-term capital inflows to see if they are complementary or substitutes in nature, using the pearson correlation coefficients. The results show that the correlation between private short-term capital inflows and private long-term capital inflows is –0.507. This is significant at the 1 % level (two-tailed test). In addition, the correlation between total capital inflows and private short-term capital inflows is 0.855. This is also significant at the 1 % level. The correlation between total capital and private long-term capital inflows is –0.153, and this is insignificant. The results therefore show that total capital inflows have been mainly short-term.

The strong negative correlation between private short-term and private long-term capital inflows shows that the relationship between short-term flows and long-term inflows is that of substitution and not complementarity. The growing importance of short-term flows implies lower long-term flows. Private long-term capital inflows have shown a downward trend since the debt crisis of 1982. On the other hand, private short-term inflows have remained very low and quite close to long-term inflows until 1992. Thereafter, short-term inflows have been on an upward trend, rising to very high levels than it has done before. This coincides with the recent political and economic reforms.

4.3 Stationarity Tests (Unit Roots)

We computed unit roots for the various variables shown in the empirical models in an earlier section. The Dickey- Fuller t-tests for annual data series are presented in table 4.3, below;

Table 4.3 Dickey-Fuller t-tests (annual series)

Variable	No constant or time trend	Constant	Constant + time trend
Total Capital	-1.49	-2.52	-3.97*
Sort-term Capital	2.33	1.89	0.84
Long-term capital	-2.36*	-2.69	-2.86
Domestic growth	-1.28	-2.75	-3.47
Capital formation	-0.42	-3.94**	-3.93*
Foreign growth rate	-2.49*	-4.33**	-4.24*
Consumption	-0.32	-5.35**	-5.14**
Net Domestic Assets	8.51	6.37	2.85
Current Account Balance	-2.06*	-3.10*	-3.04
External debt	-0.19	-1.39	-3.54
Inflation	-1.39	-2.64	-2.76
Budget deficits	-1.25	-2.79	-2.97
Exports growth	-2.99*	-4.67**	-4.72*
Real exchange rates	0.04	-1.96	-2.38
Domestic discount rates	-2.66**	-2.63	-2.86
Domestic deposit rates	-2.41*	-2.63	-2.49
Domestic treasury rates	-2.58*	-2.61	-3.49
Foreign treasury rates	-1.60	-1.91	-2.16
Incremental output-capital Ratio (IOCR)	-1.68	-2.75	-2.87
Net foreign assets	-1.70	-1.91	-2.20
M1 money	7.05	4.89	1.56
Imports	5.99	4.48	1.87
Foreign reserves	-0.26	-2.35	-2.70
Foreign exchange reserves	-0.19	-2.20	-2.56
Foreign discount rates	-1.92	-2.30	-2.54
Interest differential	-3.00**	-2.93	-3.04
GDP growth differential	-2.54*	-3.55*	-4.42**

Source: own computations

Next, we confirm whether the differenced series is stationary or not. Dickey- Fuller t-tests for the differenced annual data series is given in table 4.4 below:

Table 4.4 Dickey- Fuller t-tests (annual differenced series)

Variable	No constant or time trend	Constant	Constant + time trend
Change in total capital	-7.33**	-7.37**	-7.50**
Change in short-term capital	-3.71**	-3.96**	-4.72**
Change in long-term capital	-6.21**	-6.10**	-6.04**
Change in domestic growth	-5.86**	-5.76**	-5.65**
Change in capital formation	-7.86**	-7.72**	-7.65**
Change in foreign growth rates	-6.15**	-6.03**	-5.91**
Change in consumption	-6.89**	-6.75**	-6.68**
Change in net domestic assets	-1.82	-2.52	-4.30*
Change in current account balance	-6.33**	-6.21**	-6.09**
Change in debt	-7.06**	-7.11**	-6.97**
Change in inflation	-5.11**	-5.01**	-4.99**
Change in budget deficits	-7.53**	-7.41**	-7.61**
Change in exports growth	-8.17**	-8.01**	-7.86**
Change in real exchange rates	-6.83**	-6.72**	-6.59**
Change in domestic discount rates	-8.14**	-8.04**	-8.51**
Change in domestic deposit rates	-5.43**	-5.33**	-5.39**
Change in domestic treasury rates	-8.81**	-8.71**	-9.18**
Change in foreign treasury rates	-5.20**	-5.11**	-5.01**
Change in incremental output-capital ratio	-4.82**	-4.72**	-4.62**
Change in net foreign assets	-6.21**	-6.19**	-6.31**
Change in M1 money	-1.35	-2.04	-3.36
Change in imports	-2.76**	-3.37*	-4.86**
Change in foreign reserves	-5.88**	-5.90**	-5.77**
Change in foreign exchange reserves	-5.70**	-5.73**	-5.60**
Change in foreign discount rates	-5.55**	-5.44**	-5.35**
Change in interest rate differential	-8.71**	-8.61**	-9.15**
Change in GDP growth differential	-7.55**	-7.41**	-7.26**
Rate of change of net domestic assets	-8.66**	-8.67**	-8.64**
Rate of change in M1 money	-6.19**	-6.12**	-5.99**

Source: own computations

The significance of our t-tests reported in tables 4.3 and 4.4 is based on the following critical values;

5% and 1% Critical values for Unit Root Tests for a Sample Size of 25 Observations

Significance level	No constant or time trend	Constant	Constant + time trend
5%	-1.95	-3.00	-3.60
1%	-2.66	-3.75	-4.38

Source: Adam, Christopher (April, 1998)

* significant at 5%

** significant at 1%

A number of variables such as domestic- foreign GDP growth differential, export growth and foreign growth rates appear stationary while net domestic assets and narrowly defined money, M1, are I(2). However, most variables are I(1) and so we decided to difference all variables once except in the case of net domestic assets and M1 defined money which are differenced twice to make them stationary.

Now, we turn to monthly data series. We carry out Dickey fuller t-tests to establish stationarity of the data series. Our results are reported in table 4.5 below

Table 4.5 Dickey-Fuller t-tests(monthly series)

Variable	No constant or time trend	Constant	Constant + time trend
Total capital	-6.37**	-6.61**	-6.69**
Short-term capital	-6.19**	-6.58**	-6.61**
Current account balance	-4.60**	-4.72**	-4.64**
Budget deficits	-8.39**	-8.66**	-8.59**
Base money, M0	2.14	-0.83	-3.72*
Inflation	-1.04	-0.07	-1.64
Domestic treasury rate	-1.13	-1.30	-1.24
Domestic discount rates	-1.02	-1.40	-1.34
Domestic deposit rates	-0.85	-0.15	-1.44
Foreign treasury rates	-0.08	-1.78	-1.27
Foreign discount rates	0.12	-1.67	-1.47
Real exchange rates	0.031	-2.80	-2.82
Net foreign exchange reserves	0.50	-1.42	-1.43
Official foreign reserves	1.14	-1.53	-1.42
Net foreign assets	0.55	-1.25	-1.31
Net domestic assets	3.14	0.69	-2.11
Imports	-0.37	-2.24	-3.31
Exports	-0.34	-2.75	-5.01**
Interest differential	-1.08	-1.38	-1.33

Source: own computations

Since stationarity is rejected in most cases, we difference the monthly data series and carry out stationarity tests once again. We report our findings in table 4.6 below:

Table 4.6 Dickey- Fuller t- tests(monthly differenced series)

Variable	No constant or time trend	Constant	Constant + time trend
Change in total capital	-9.55**	-9.44**	-9.33**
Change in private short-term	-9.29**	-9.18**	-9.08**
Change in base money, M0	-6.89**	-7.72**	-7.64**
Change in inflation	-2.46*	-2.52	-2.42
Change in domestic treasury rates	-3.76**	-3.74**	-3.72*
Change in domestic discount rates	-4.41**	-4.39**	-4.35**
Change in domestic deposit rates	-3.98**	-4.14**	-4.06*
Change in foreign treasury rates	-8.20**	-8.35**	-8.76**
Change in foreign discount rates	-8.22**	-8.51**	-8.79**
Change in exports	-9.92**	-9.81**	-9.73**
Change in imports	-9.08**	-8.99**	-8.87**
Change in net foreign exchange reserves	-5.44**	-5.63**	-5.55**
Change in official foreign reserves	-3.86**	-3.40*	-3.98*
Change in net foreign assets	-5.49**	-5.69**	-5.61
Change in current account balance	-9.04**	-8.96**	-8.96**
Change in budget deficits	-11.42**	-11.30**	-11.17**
Change in real exchange rates	-5.88**	-5.84**	-5.93**
Change in interest differential	-4.39**	-4.37**	-4.33**
Change in net domestic assets	-4.94**	-5.78**	-5.91**
Change in interest differential	-12.38**	-12.25**	-12.24**

Source: own computations

The stationarity tests shown in tables 4.5 and 4.6 are based on the following critical values;

5% and 1% Critical values for Unit Root Tests for a Sample Size of 50 Observations

Significance level	No constant or time trend	Constant	Constant + time trend
5%	-1.95	-2.93	-3.50
1%	-2.62	-3.58	-4.15

Source: Adam, Christopher (April, 1998)

- * significant at 5%
- ** significant at 1%

Most of the variables turn out to be I(1) except total capital inflows, private short- term capital inflows, budget deficits, and the current account balance which are I(0), and domestic inflation which is I(2). Therefore, we differenced all the variables once to make them stationary, except inflation which is differenced twice.

4.4 The Causality Results

After initial experimentation and by observing the Schwarz criterion, we found five lags the most appropriate for most of our causality tests (for both annual and monthly data series). Only in a few cases did we adopt a different lag length as indicated in our results. We estimate two equations in each case; a constrained equation (C) and a non-constrained equation (NC). The results on the coefficient of multiple determination, R^2, Durbin Watson (DW) statistic, error sum of squares (ESS), the F-statistic, and the pattern of causality (whether negative or positive) are reported for each causality test. The F-statistic is calculated as:

$$F(Lags, DF) = \frac{(ESS_c - ESS_{nc})/Lags}{ESS_{nc}/DF}$$

Where ESS_c and ESS_{nc} are the sums of squared residuals in the constrained and non-constrained equations respectively. We report some of the causality results in table 4.7a

(using annual data) and table 4.8a (using monthly data) below. The rest can be found in appendix II.

Table 4.7a: Causality Results (annual data Series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in external debt to change in long-term capital	0.23	0.79	1.96	1.86	31440.9	8511.4	7.00***	-
Change in capital to change in domestic discount rate	0.26	0.68	2.03	1.77	1292.7	562.8	3.37**	-
Change in short-term capital to change in domestic discount rate	0.26	0.66	2.03	1.82	1292.7	596.3	3.04**	+/-
Change in GDP growth differential to change in long-term capital	0.23	0.70	1.96	1.56	31440.9	12269.7	4.06**	+
Change in interest rate differential to change in short-term capital	0.91	0.96	1.82	1.77	393869	169006	3.46**	+/-

Source: own computations

* significant at 10%

** significant at 5%

***significant at 1%

Table 4.8a The Causality Results (Monthly Data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in short-term capital to change in the interest rate differential	0.30	0.54	2.18	1.97	952.7	632.8	3.13 (0.02)**	-
Change in short-term capital to change in discount rate	0.31	0.54	2.18	2.00	936.9	620.7	3.16 (0.02)**	-
Change in budget deficits to change in short-term capital	0.49	0.62	1.97	2.31	917133355.9	687615762.7	2.07 (0.09)*	+/-
Change in budget deficits to change in discount rate	0.31	0.49	2.18	2.07	936.9	693.1	2.18 (0.08)*	+
Change in current account balance to change in short-term capital	0.49	0.63	1.97	2.03	917133355.9	674361682.9	2.23 (0.08)*	+/-

Source: own computations

4.5 Returns to Capital and Capital Inflows

The effects of economic growth on total capital inflows are indeterminate; sometimes they are negative and other times positive. Growth rates surprisingly have a negative effect on private short-term capital inflows, but a positive effect on private long-term capital inflows as expected. Economic growth has a greater effect on private long-tem capital inflows than does on private short-term and total capital inflows. As the causality tests show, the impact of private long-term capital inflows on economic growth is surprisingly negative while total capital and private short-term capital inflows have an indeterminate impact on economic growth.

Foreign growth rates have an indeterminate effect on total capital and private long-term capital inflows but a more pronounced, though insignificant, positive effect on private short-term capital inflows.

We also examined the effect of the domestic-foreign GDP growth differential on capital inflows. The results show that the GDP growth differential has an indeterminate effect on total capital and private short-term capital inflows. However, GDP growth differential has a significant positive effect on private long-term capital inflows as expected.

The effect of capital formation on total capital and private short-term capital inflows is indeterminate while the effect on private long-term capital inflows is positive as expected. On the other hand, the sign of impact of total capital inflows and private short-term capital inflows on capital formation is indeterminate while the impact of private long-term capital inflows is negative.

The effect of consumption on total capital, private short-term, and long-term capital inflows is indeterminate. On the other hand, the sign of impact of private short-term and long-term capital inflows on consumption is also indeterminate. However, the most pronounced impact is that of total capital inflows on consumption, which turns out to be positive as expected.

We examined the relationship between the incremental output-capital ratio (IOCR) and capital inflows. IOCR has an indeterminate effect on changes in total capital inflows. However, IOCR surprisingly has a negative effect on changes in private short-term capital inflows but a positive effect on private long-term capital inflows as expected. On the other hand, the impact of private short-term capital inflows on IOCR is indeterminate while the impact of total capital and private long-term capital inflows on IOCR is negative.

The discount rate has an indeterminate effect on total capital inflows and private short-term capital inflows. However, as expected, the discount rate has a positive effect on private long-term capital inflows. On the other hand, total capital and private long-term capital inflows have a significant negative impact on the discount rate. Th impact of private short-term capital inflows on the discount rate is also significant but

indeterminate. Results from the monthly data series show that the discount rate also has an indeterminate effect on private short-term and total capital inflows. On the other hand, the impact of total and private short-term capital inflows on the discount rate is negative and highly significant.

The treasury rate has an indeterminate effect on total capital inflows, private short-term and long-term capital inflows. On the other hand, total capital and private long-term capital inflows have a negative impact on the treasury rate while private short-term capital inflows have an indeterminate impact on the treasury rate. Results from the monthly data show that the treasury rate has an indeterminate effect on total capital and private short-term capital inflows. On the other hand, total capital and private short-term capital inflows have an indeterminate impact on the treasury rate.

The deposit rate has an indeterminate effect on total capital and private short-term capital inflows. Th effect of the deposit rate on private long-term capital inflows turns out to be positive as expected. On the other hand, the impact of private short-term capital inflows on the deposit rate is positive and significant while the impact of private long-term capital inflows is negative and also significant. There is also a significant impact of total capital inflows on the deposit rate, but in this case it is indeterminate. Results from the monthly data show a very weak relationship between the deposit rate and capital inflows. The deposit rate has an indeterminate effect on total capital and short-term capital inflows. On the other hand, private short-term capital inflows have a positive impact on the deposit rate while total capital inflows have an indeterminate impact.

The U.S treasury rate and U.S. discount rate have a negative effect on total capital inflows as expected. However, the effect of U.S. treasury rates and U.S. discount rates on private long-term and private short-term capital inflows is indeterminate. Results from the monthly data show that U.S. treasury rates have a positive effect on total capital inflows but an indeterminate effect on private short-term capital inflows. U.S discount rates have an indeterminate effect on total capital inflows but a positive effect on private short-term capital inflows.

The domestic-foreign interest rate differential has a significant effect on private short-term capital inflows and insignificant effect on total capital inflows and private long-term capital inflows; in all cases the effect is indeterminate. Results from the monthly data also show an indeterminate effect of the interest rate differential on total capital and short-term capital inflows. On the other hand, total capital and short-term capital inflows have a significant negative impact on the interest rate differential.

4.6 Capital Inflows and monetary Policy

There is a bi-directional causal relationship between total capital inflows and the change in net domestic assets. The change in net domestic assets has a significant positive effect on total capital inflows while total capital inflows have a significant positive impact on the change in net domestic assets. There is also a bi-directional causal relationship between short-term capital inflows and the change in net domestic assets. The change in net domestic assets has a significant positive effect on short-term inflows while short-term capital inflows have an indeterminate impact on the change in net domestic assets. In addition, the change in net domestic assets has a significant but indeterminate effect on private long-term capital. The impact of private long-term capital inflows on the change in net domestic assets is negative. Results from monthly data shows that changes in net domestic assets have an indeterminate effect on total capital and short-term capital inflows. The impact of total capital and short-term capital inflows on net domestic assets is also indeterminate .

The effect of the change in narrowly defined money (M1) on total capital inflows and long-term capital inflows is highly significant but indeterminate whereas it's effect on short-term capital inflows is positive and highly significant. On the other hand, the impact of total capital inflows on the change in M1 is highly significant but indeterminate . Therefore, there is a bi-directional causality between total capital inflows and the change in M1. In addition, the impact of private long-term capital and short-term capital inflows on the change in M1 is indeterminate. Using the monthly data, we examined the

relationship between total capital inflows and base money (M0). It turns out that base money has an indeterminate effect on total capital and short-term capital inflows. On the other hand, total capital and short-term capital inflows have an indeterminate impact on changes in base money.

4.7 Capital Inflows and Macroeconomic Instability

Domestic inflation has an indeterminate effect on total capital, private short-term capital and long-term capital inflows. On the other hand, total capital, private short-term and long-term capital inflows have a significant but indeterminate impact on inflation. Results from the monthly data show that the change in inflation has an indeterminate effect on total capital and private short-term capital inflows. On the other hand, total capital and short-term capital inflows have an indeterminate impact on the change in inflation.

The real exchange rates have an indeterminate effect on total capital, private short-term capital and private long-term capital inflows. On the other hand, private short-term and long-term capital inflows have a significant but indeterminate impact on the real exchange rates while the impact of total capital inflows is also indeterminate. Results from the monthly data show almost a similar pattern. The effect of real exchange rates on total capital and private short-term capital inflows is indeterminate. On the other hand, the impact of total capital and private short-term capital inflows is also indeterminate.

Budget deficits have an indeterminate effect on total capital and private long-term capital inflows while its effect on private short-term capital inflows is positive. On the other hand, the impact of total capital and short-term capital inflows on budget deficits is indeterminate while the impact of private long-term capital inflows is positive and significant. Results from the monthly data show that budget deficits have an indeterminate effect on total capital but a significant, though indeterminate, effect on short-term capital inflows. On the other hand, the impact of short-term capital and total capital inflows on budget deficits is positive.

4.8 Capital Inflows, the current account and external debt

The current account balance has an indeterminate effect on total capital, short-term capital and long-term capital inflows. On the other hand, total capital, short-term capital and long-term capital inflows have an indeterminate impact on the current account balance. Results from the monthly data show that the current account balance has an indeterminate effect on total capital inflows and a significant but indeterminate effect on short-term capital inflows. The impact of total capital and short-term capital inflows on the current account is indeterminate .

Export growth has an indeterminate effect on total capital and long-term capital inflows but a positive effect, as expected, on short-term capital inflows. On the other hand, the impact of total capital, short-term capital and long-term capital on exports growth is also indeterminate. Results from the monthly data show that exports have a positive effect on both short-term and total capital inflows. On the other hand, total capital and short-term capital inflows have a positive impact on exports.

We also examined the impact of capital inflows on imports. It turns out that total capital inflows have a highly significant negative impact on imports. Short-term and long-term capital inflows have an indeterminate impact on imports. Results from the monthly data show an indeterminate impact of total capital and short-term capital inflows on imports.

External debt has an indeterminate effect on total capital inflows but a highly significant, though indeterminate effect on short-term capital inflows. The effect of external debt on private long-term capital inflows is highly significant and negative as expected. On the other hand, the impact of total capital and private short-term capital inflows on external debt is highly significant, but indeterminate. The impact of long-term capital inflows is also indeterminate. Therefore, there is a bi-directional causality between short-term capital inflows and external debt. There is a uni-directional causality from total capital

inflows to external debt and another from external debt to private long-term capital inflows.

4.9 Expected Causal Relationships

Economic growth, the discount rate, the deposit rate, capital formation and returns to investment (as measured by IOCR), all have a positive effect on private long-term capital inflows as expected. In addition, external debt has a highly significant negative effect on private long-term capital inflows. It is also observed that the domestic-foreign GDP growth differential has a significant positive effect on private long-term capital inflows. On the other hand, private long-term capital inflows have a negative impact on capital formation. In addition, private long-term capital inflows have a significant positive impact on the budget deficit

As expected, the U.S. treasury and discount rates have a negative effect on total capital inflows. On the other hand, total capital inflows have a significant positive impact on the change in net domestic assets and also a positive impact on consumption. It is also observed that private short-term capital inflows have a significant positive impact on deposit rates.

Results from our monthly data shows that exports have a positive effect on total capital and short-term capital inflows as expected. In addition, Private short-term capital inflows have a positive impact on deposit rates.

4.10 Unexpected Causal Relationships

Some interesting results emerge from the analysis. Private long-term capital inflows have a negative impact on returns to capital (IOCR) and economic growth. Private long-term capital inflows also have a significant negative impact on the discount rate and the deposit rate. Its impact on the treasury rate is negative. In addition, private long-term capital inflows have a negative impact on the change in net domestic assets.

Total capital inflows have a negative impact on returns to capital (IOCR). Total capital inflows have a significant negative impact on the discount rate. Its impact on the treasury rate is also negative but insignificant.

Unexpectedly, changes in net domestic assets have a significant positive effect on total capital inflows while foreign growth rates have a positive effect on total capital inflows. On the other hand, total capital inflows have a negative impact on foreign reserves and foreign exchange reserves.

Returns to capital (IOCR) and economic growth have a negative effect on short-term capital inflows. Narrowly defined money, M1, and changes in net domestic assets have a highly significant positive effect on short-term capital inflows. Foreign growth rates have a positive effect on short-term capital inflows.

Results from the monthly data show that U.S treasury rate has a positive effect on total capital inflows while U.S. discount rates have a positive effect on private short-term capital inflows. On the other hand, total capital and short-term capital inflows have a significant negative impact on the discount rate and a positive impact on exports. In addition, total capital inflows have a negative impact on official foreign reserves.

The above results show that total capital, private long-term and private short-term capital inflows all have a negative effect on domestic interest rates. Capital inflows ease the upward pressure on domestic interest rates, especially in a situation in which the government borrows heavily from the domestic money market. Total capital inflows tend to increase money supply (net domestic assets), resulting in lower interest rates. On the other hand, the increase in budget deficit tends to push up interest rates which in turn attract capital inflows. But these inflows, in turn, tend to exert a downward pressure on interest rates.

The negative impact of capital inflows on economic growth and the incremental output capital ratio (10CR) may be a result of the positive effect of capital inflows on consumption, implying negative effects on savings and hence, investment. Capital inflows, which have become highly speculative in recent years have encouraged consumption, rather than investment. This contradicts the findings of previous studies which suggest a dominant complementarity between foreign direct investment and domestic investment (De Mello, 1996) Coe et al (1995) show that spillovers from R&D in industrial countries on productivity in developing countries increase with imports from the industrial countries so that imports are a vehicle for technological change. Nevertheless, the findings are supported by Blomstrom et al (1994) who finds that imports have no impact on growth and that the positive and statistically significant impact of FDI is stronger the higher the level of development of the host country.

4.11 Major Determinants of Capital Inflows

The most important causes of long-term capital inflows are external debt (negative effect) and domestic-foreign GDP growth rates differential (positive effect). Monetary expansion as measured by changes in net domestic assets and narrowly defined money, M1, turns out to be important also but the pattern of causality is indeterminate.

The major cause of total capital inflows is monetary expansion (measured by changes in net domestic assets and narrowly defined money, M1) but the pattern of causality is indeterminate. Since private short-term capital inflows are highly correlated with total capital inflows, monetary expansion also turns out to be the major cause of private short-term capital inflows but the pattern of causality is indeterminate, given the highly speculative nature of these flows. We have also shown that the domestic-foreign interest rate differential has a significant effect on short-term capital inflows but the pattern of causality remains indeterminate.

Results from the monthly data show that total capital and short-term capital inflows are mainly caused by budget deficits, current account balance and interest rates. However,

the pattern of causality is indeterminate. Nevertheless, budget deficits have a significant positive effect on the discount rate. Budget deficits also have a positive effect on net domestic assets which, in turn, is likely to dampen the impact of budget deficits on interest rates. Thus, the impact of budget deficits on interest rates would have been much greater.

4.12 Major Impacts of Capital Inflows

Private long-term capital inflows have a major impact on inflation, real exchange rates and net foreign assets but the pattern of causality is indeterminate. Long-term capital inflows have a negative impact on the discount rate and the deposit rate but a positive impact on budget deficits.

Total capital and short-term capital inflows have a notable impact on monetary expansion, although the pattern of causality is indeterminate. Total capital inflows have a significant negative impact on the discount rate and an indeterminate impact on the deposit rate, while short-term capital inflows have a significant positive impact on the deposit rate and an indeterminate impact on the discount rate. In addition, total capital inflows have a significant negative impact on imports.

Results from the monthly data show that total capital and short-term capital inflows have a significant negative impact on the discount rate. Another finding is that total capital and short-term capital inflows have a significant negative impact on the domestic-foreign interest rate differential.

4.13 Impulse Response Functions

Last, we analyze using impulse response functions, the relationship between private long-term capital inflows and its two most important determinants, domestic-foreign GDP growth differential and external debt. In the same manner, we examine the relationship between short-term capital inflows and the domestic-foreign interest rate differential, domestic discount rate, the current account balance, and budget deficits. We use annual

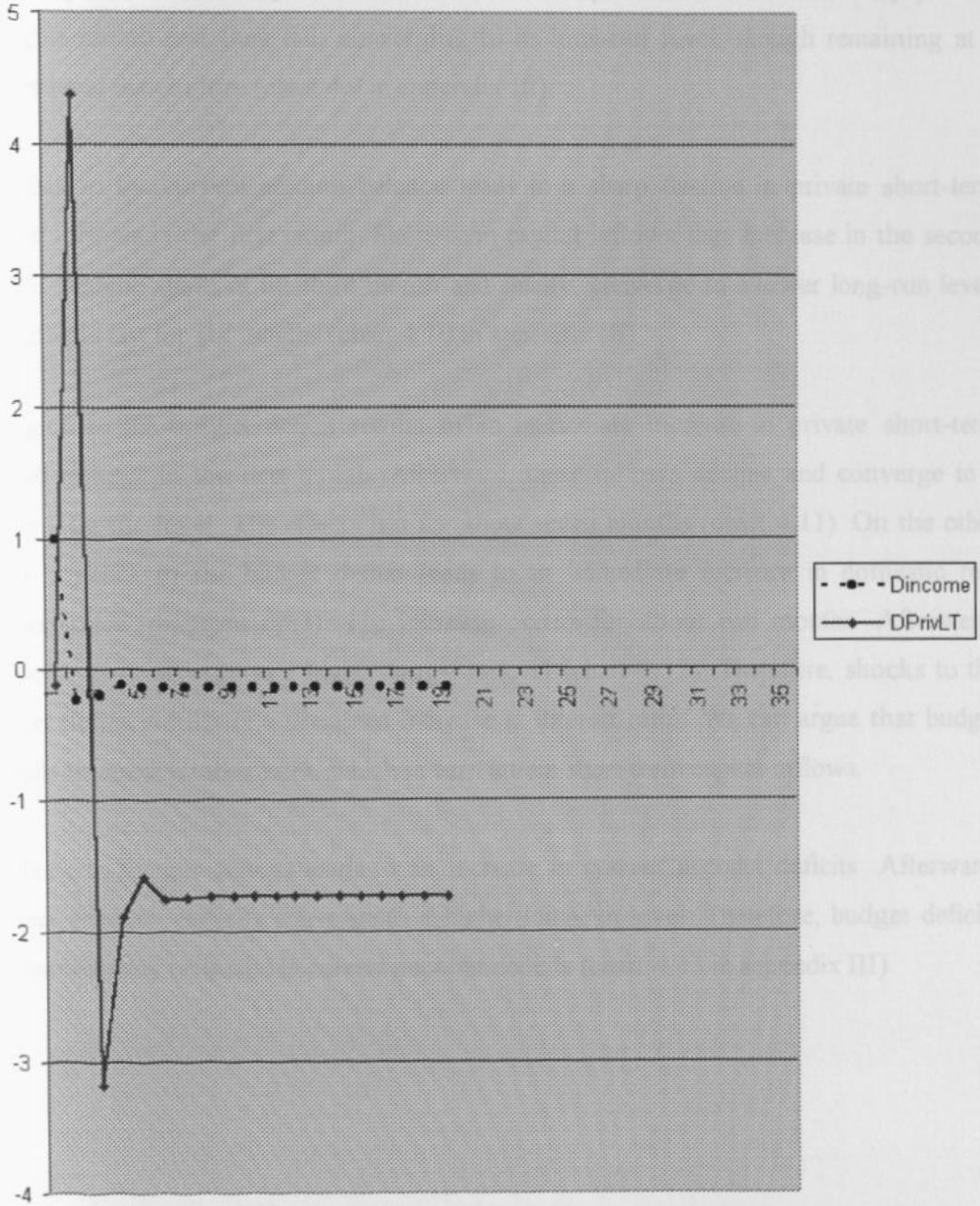
data in the former and monthly data in the latter. The horizontal axis represents the time period, starting with period t_1. In each case we examine the effect of a positive one-unit shock.

The impulse response functions show that a positive one-unit shock to the domestic-foreign GDP growth differential leads to an immediate increase in private long-term capital inflows, which occurs within the first one year. However, after the second year, these inflows decline drastically. Afterwards, long-term inflows converge to its long-run level after about five years, but remaining at a lower level than before the shock (chart 4.5 in appendix III).

A shock to domestic growth rates even gives a much clearer picture as it leads to a sharp increase in private long-term capital inflows in the first one year. Afterwards, these inflows decline and converge to its long-run level, though remaining at a lower level than before the shock. The effects last for about three years (chart 4.6).

A shock to external debt is associated with an initial increase in private long-term capital inflows, followed by a sharp decrease. The negative effect (of the shock to external debt) on private long-term capital inflows is felt in the third year. Afterwards, private long-term capital inflows tend to return to its initial level. The effects last for about four years (chart 4.7 in appendix III).

Chart 4.6 : Impulse Response Fuction of private long-term capital(DPrivLT) to a one-unit shock to domestic growth rates(Dincome)



A shock to the real interest rate differential results in a sharp increase in private short-term capital inflows, reaching its peak in the first one month. Afterward, private short-term capital inflows decline and remain at a higher level than before the shock. The effects last for seven months (chart 4.8). A shock to domestic interest rates (discount rates) depicts a similar response. Private short-term capital inflows increase sharply in the first one month and then fall, converging to its long-run level, though remaining at a higher level than before (chart 4.9 in appendix III).

A shock to the current account balance leads to a sharp decline in private short-term capital inflows in the first month. Short-term capital inflows then increase in the second month, decline again in the third month and finally, converge to a lower long-run level. The effects last for six months (chart 4.10 in appendix III).

A shock to the budget deficit results in an immediate increase in private short-term capital inflows in the first month. Afterward, these inflows decline and converge to a lower long-run level. The effects last for about seven months (chart 4.11). On the other hand, a shock to the budget deficit leads to an immediate increase in domestic real interest rates (discount rates). The increase occurs for about two months. Afterward, interest rates converge to a higher long-run level (chart 4.12). Therefore, shocks to the budget deficit results in a sustained increase in interest rates. We can argue that budget deficits increase interest rates, which in turn attract short-term capital inflows.

A shock to budget deficits leads to an increase in current account deficits. Afterward, current account deficits converge to a higher long-run level. Therefore, budget deficits are immediately reflected in current account deficits (chart 4.13 in appendix III).

Chart 4.8 : Impulse Response Function of private short-term capital inflows(DPrivST) to a one-unit shock to the domestic-foreign interest rate differential(Dintdif)

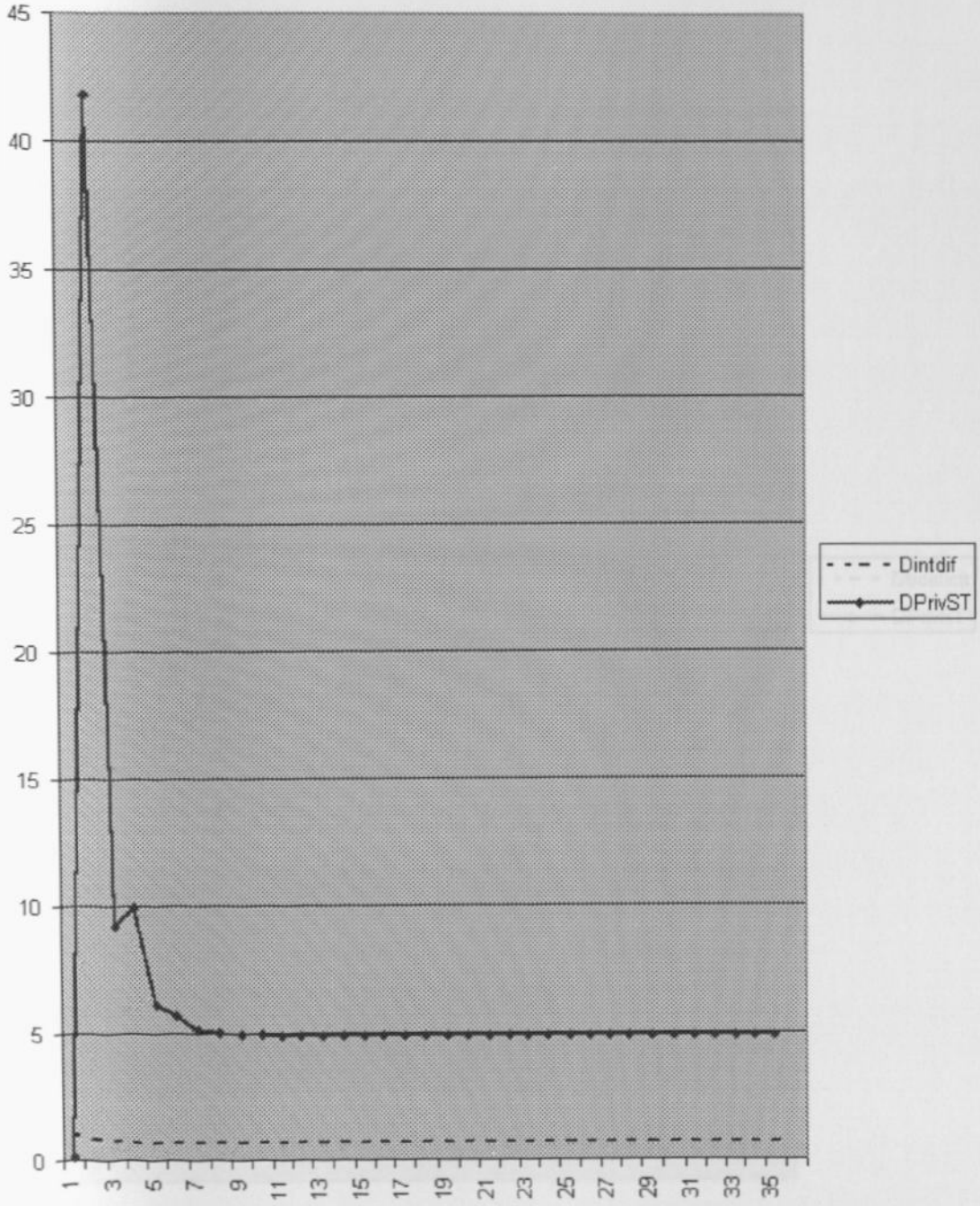


Chart 4.11 : Impulse Response function of private short-term capital inflows(DPrivST) to a one-unit shock to the budget deficit (DBDeficit)

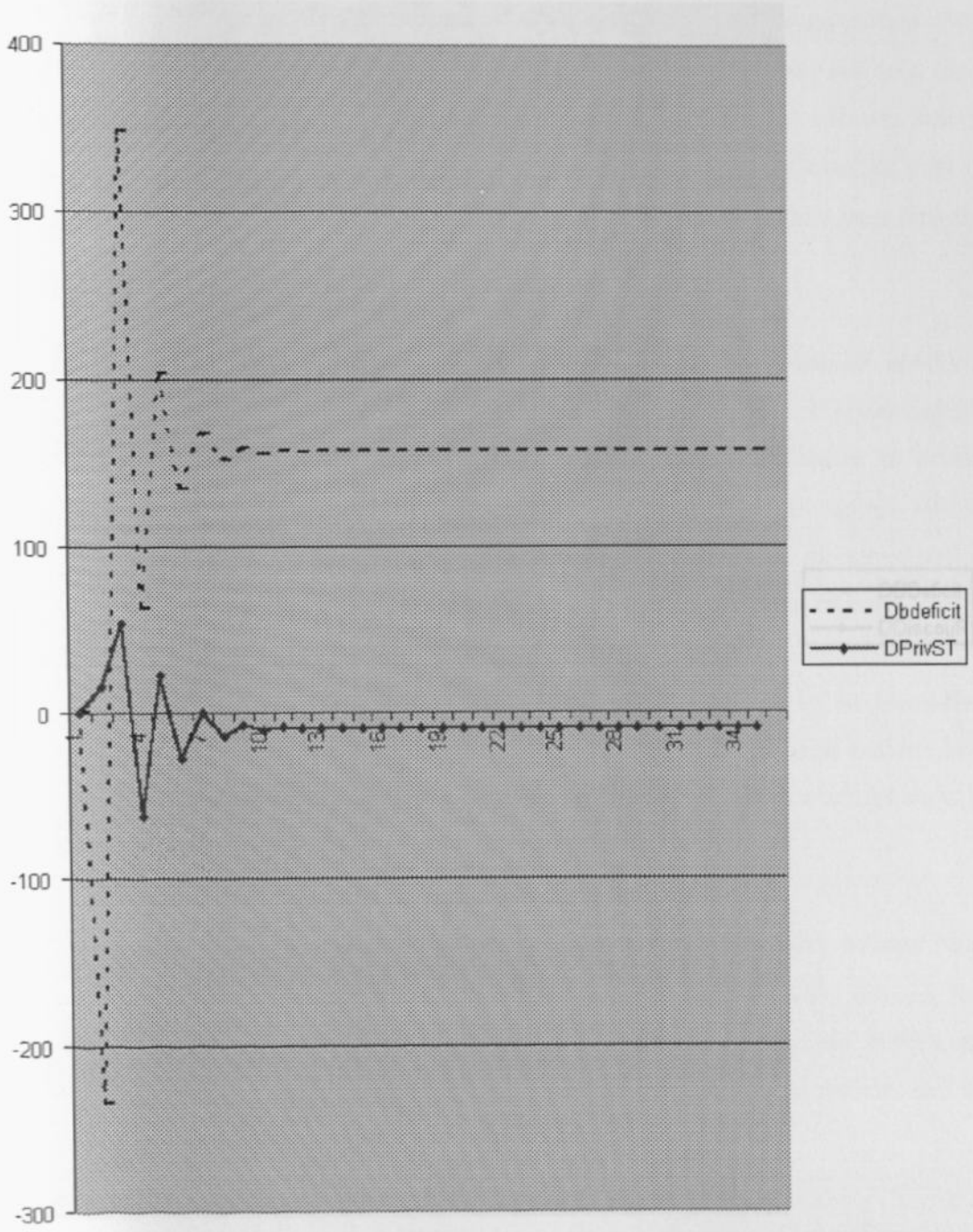
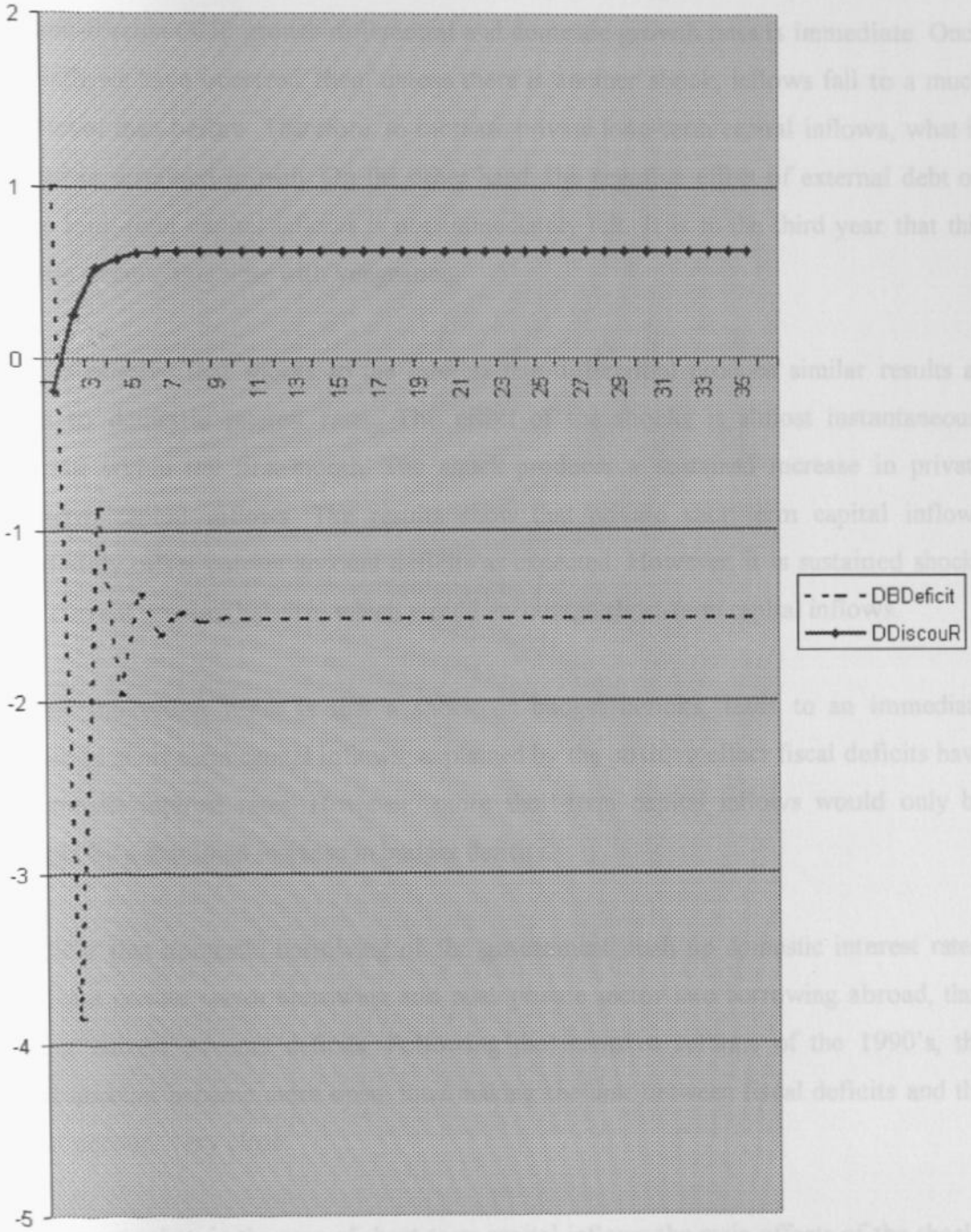


Chart 4.12 : Impulse Response Function of domestic interest rates(DDiscouR) to a one-unit shock to budget deficits(DBDeficit)



4.14 Observations from the impulse response functions

We observe that the response of private long-term capital inflows to shocks last for at least three years. The response of private long-term capital inflows to shocks on domestic-foreign GDP growth differential and domestic growth rates is immediate. Once these inflows have occurred, then, unless there is another shock, inflows fall to a much lower level than before. Therefore, to increase private long-term capital inflows, what is required is sustained growth. On the other hand, the negative effect of external debt on private long-term capital inflows is not immediately felt. It is in the third year that this response occurs, this time with vengeance.

We also observe that shocks to the interest rate differential produce similar results as shocks to domestic interest rates. The effect of the shocks is almost instantaneous, occurring within the first month. The shock produces a sustained increase in private short-term capital inflows. The results show that private short-term capital inflows immediately offset current account deficits as expected. However, it is sustained shocks to the current account balance, which would encourage short-term capital inflows.

Another interesting result is that a shock on budget deficits, leads to an immediate increase in short-term capital inflows, explained by the positive effect fiscal deficits have on domestic interest rates. However, more short-term capital inflows would only be attracted by a sustained increase in budget deficits.

It is clear that domestic borrowing of the government push up domestic interest rates, crowd out private sector borrowing and push private sector into borrowing abroad, thus creating current account deficits. Following the intensive reforms of the 1990's, the capital account became more open, thus making the link between fiscal deficits and the current account very close.

We have seen that, in the case of short-term capital inflows the main effects of the shocks are felt immediately, so that these effects die out in less than one year, usually between

six to seven months. In the case of private long-term capital inflows, we have shown that these effects take three to five years. Therefore, the effects of shocks to long-term capital inflows, do not die out quickly as in the case of short-term capital inflows. In the 1970's and early 1980's, private long-term capital inflows dominated, so that the composition of total capital inflows was mainly long-term. However, in the 1990's, private short-term capital inflows dominate so that the composition of total capital inflows became mainly short-term. As a result, the response of total capital inflows to changes in selected macroeconomic variables in the 1990's became almost instantaneous.

CHAPTER 5: CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Conclusions

When we compare capital flows into the three East African countries, we find that capital inflows have been much higher in Kenya than in the other East African countries until 1990. Since then, the trends seem to have changed with Tanzania attracting more capital than Kenya or Uganda. Uganda, which initially attracted very little capital, did very well in the 1990's, and attracted as much capital as Kenya. Capital inflows in Uganda and Tanzania have improved while Kenya's position has deteriorated. As a result, there is no evidence to suggest that capital inflows into either Tanzania or Uganda also encourage capital inflows in Kenya. Investors are more concerned with country characteristics rather than East Africa in general.

We have shown that private long-term capital inflows in Kenya have declined and remained very low since the debt crisis of 1982. Private short-term capital inflows in Kenya have remained very low and very close to private long -term capital inflows until 1992. It is important to note that this is the year when the first multiparty elections were held in Kenya. It represents the beginning of increased political, economic, and financial instability. The effect was felt in the capital account in the form of increased short-term capital inflows since 1992. The trend has been an upward one with little or no sign of a downward trend. Total capital inflows have followed almost a similar pattern with short-term flows, remaining at very low levels until early 90's when it starts rising but with major swings during this particular period.

When we compared the two flows, long- term and short- term, short- term flows turn out to be the most volatile as expected. Both flows are found to be persistent2 but contrary to our expectations, short-term flows are more persistent than long-term flows. We have also shown that the relationship between short- term flows and long- term flows is that of

2 persistence refers to the degree to which a flow tends to sustain itself at its current level.

substitution and not complementarity. The decline in long-term flows since the debt crisis has been associated with increased short- term flows.

We have shown that it is the domestic-foreign GDP growth differential and external debt which Granger-cause private long-term capital inflows. Therefore, relative returns to capital and the debt burden are the two key considerations to long-term investors. Monetary expansion also appears an important factor but its effect is ambiguous. The results also show that returns to capital (IOCR), capital formation, discount rates and deposit rates tend to have a positive effect on private long-term capital inflows.

We have established that total capital inflows and short-term capital inflows are highly correlated since recent capital inflows have mainly been short-term in nature. As a result, total capital and short-term capital inflows are closely related to monetary expansion. Monetary expansion Granger-causes total capital and short-term capital inflows. It is also shown that the domestic-foreign interest rate differential has a significant effect on short-term capital inflows.

We have also shown that for the period 1993(1) to 1996(12), private short-term capital inflows were mainly Granger-caused by budget deficits, interest rates and current account deficits. And since budget deficits are usually reflected in current account movements3, one can argue that it is budget deficits and it's effects on interest rates and current account deficits, which have influenced total capital and private short-term capital inflows. The most obvious is the effect of budget deficits on domestic interest rates. We have shown that budget deficits have a significant positive effect on the discount rate.

It is shown that private long-term capital inflows have a significant negative impact on the real discount rate, and deposit rate. The impact of private long-term capital inflows on the budget deficits is positive and significant. The impact on the treasury rate is negative

3 If saving and investment are constant, then changes in the budget would translate, one for one, into changes in the external balance: $(S_p–I) + (T-G) = X-M$, where $(S_p–I)$ is private saving minus actual investment, (T-G) is the budget surplus/deficit and X-M is the current account balance.

but statistically insignificant. Private long-term capital inflows have also had a statistically significant impact on the real exchange rate and the rate of inflation. The unexpected result is, that private long-term capital inflows have a negative impact on economic growth, which could be explained by its negative impact on investment and returns to investment (IOCR).

Total capital and private short-term capital inflows have significant impact on external debt, inflation, and monetary expansion. In addition, total capital inflows have statistically significant negative impact on the discount rate, and a significant but ambiguous impact on the deposit rate. Its impact on the treasury rate is also negative but insignificant. Total capital inflows also have a significant negative impact on imports. We have also shown that short-term capital inflows have a significant but ambiguous impact on the real exchange rate, and the discount rate. Short-term capital inflows have a significant positive impact on the deposit rate.

Results from the monthly data show that total capital and short-term capital inflows have a significant negative impact on the real discount rate and the domestic-foreign interest rate differential. In addition total capital inflows have insignificant negative impact on budget deficits, and returns to investment while its impact on exports and consumption is positive. Short-term capital inflows have a positive impact on both the budget deficit and the deposit rate.

The impulse response functions have clarified further the relationship between private long-term capital inflows and short-term capital inflows on the one hand and the selected macroeconomic variables on the other. It turns out that the positive effect of domestic growth rates on private long-term capital inflows occurs immediately while the negative effect of external debt occurs in the third year.

The impulse response functions show that a positive one-unit shock to budget deficits results in an immediate increase in domestic interest rates which, in turn, leads to short-term capital inflows. A positive shock to budget deficits also induce a corresponding

increase in current account deficits which, in turn, results in an offsetting inflow of short-term capital.

5.2 Policy Implications

What do we learn from these results? It has come out clearly that the relationship between private long-term capital inflows and macroeconomic variables is in most cases as expected. In particular, the determinants of private long-term capital inflows are well identified in our analysis.

Using impulse response functions, our conclusion is that in the 1990's, short-term capital inflows were mainly induced by budget deficits. However, the link between budget deficits and capital inflows is indirect. As already mentioned, it is through the effects of budget deficits on domestic interest rates and the current account deficit. Moreover, the link between budget deficits and short-term capital inflows is even strengthened by the positive impact of short-term capital inflows on budget deficits, suggesting that the public sector used the growing liquidity provided by speculative capital inflows to finance public expenditures.

The impulse response functions have also shown that the response of private long-term capital inflows to shocks to domestic growth rates and external debt take a longer period compared to the response of private short-term capital inflows to shocks to budget deficits, interest rates and current account deficits. And since private long-term capital inflows dominated in the 1970's and early 1980's, the response of total capital inflows to shocks occurred with lags of about 2-3 years. However, as short-term capital inflows became dominant in the 1990's, the response of total capital inflows to shocks occurs almost instantaneously.

Of particular interest is the finding that the domestic-foreign interest rate differential has a major effect on short-term capital inflows while short-term capital inflows, in turn,

narrows this differential. Thus, apart from encouraging short-term capital inflows, interest rates have become highly sensitive and dependent on capital inflows.

Our results show that different flows have different characteristics and different determinants. It is no longer wise to continue investigating the determinants of aggregated total capital inflows as it clearly helps to categorize these inflows. Our results point to the importance of domestic-foreign GDP growth rates and domestic-foreign interest rate differentials in attracting capital inflows. Therefore, 'push' and 'pull' factors are important. In particular, it is relative returns to capital and investment risk (associated with such factors as the increasing external debt) that are important.

It is clear from our analysis that total capital, private short-term capital and long-term capital inflows have significant impact on macroeconomic variables so that it becomes misleading if we treated capital inflows as the dependent variable and the macroeconomic variables as the independent variables in regression analysis. The significant impact of total capital, short-term and long-term capital inflows on macroeconomic variables may have exacerbated the poor macroeconomic management recently witnessed in the country, generally resulting in poor macroeconomic performance.

The policy implication of the above results is that in order to continue attracting private long-term capital inflows, then our policies have to focus on improving the country's economic growth and finding a solution to the present high levels of external debt. Donor assistance may become necessary especially in settling the latter problem. Recent discussions on debt forgiveness among donors, if implemented, would restore the country's ability to attract long-term investments.

In the 1993- 1996 period, interest rates have become dependent to a great extent on capital inflows so that any reduced inflows of capital result in high interest rates. Consequently, capital inflows are seen as necessary for keeping interest rates low. On the other hand, budget deficits have positive effects on interest rates, current account deficits and, hence, short-term capital inflows. Therefore, attempts to reduce interest rates will

result in an outflow of short-term capital which, in turn, will induce a rise in interest rates. Therefore, the Kenyan case shows that any attempt to artificially lower interest rates without correcting economic fundamentals will ultimately lead to even higher interest rates than before. By fundamentals we mean internal policy reforms (fiscal reform, privatization, etc.), debt and debt service reduction.

The implicit policy option here is to correct the budget deficit through tax reforms which raise government revenues or through a restructuring of government activities which reduce government expenditures. This will have the effect of keeping interest rates low.

The results suggest that recent short-term capital inflows will be reversed once economic fundamentals are corrected or when international interest rates rise relative to domestic rates. Therefore, strong reform programs are required to improve economic growth and encourage long-term capital inflows in order to avoid disruptive effects of short-term capital outflows on economic activity.

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Appendix I: Charts

Chart 1.4: Total capital Inflows as % of GDP (TCr) and Economic Growth

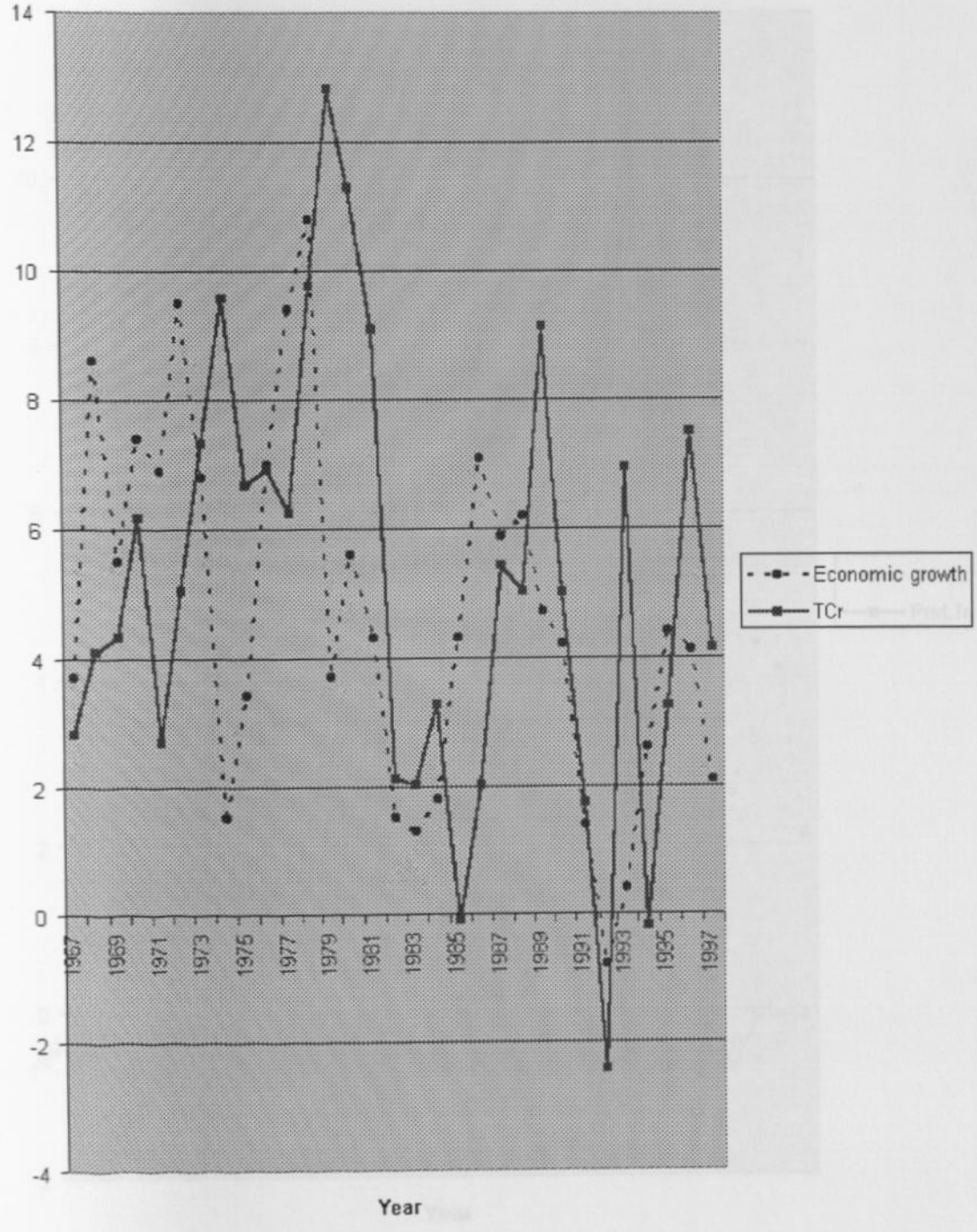


Chart 1.5: private Long-term Capital Inflows as % of GDP (PrivLTr) and economic growth

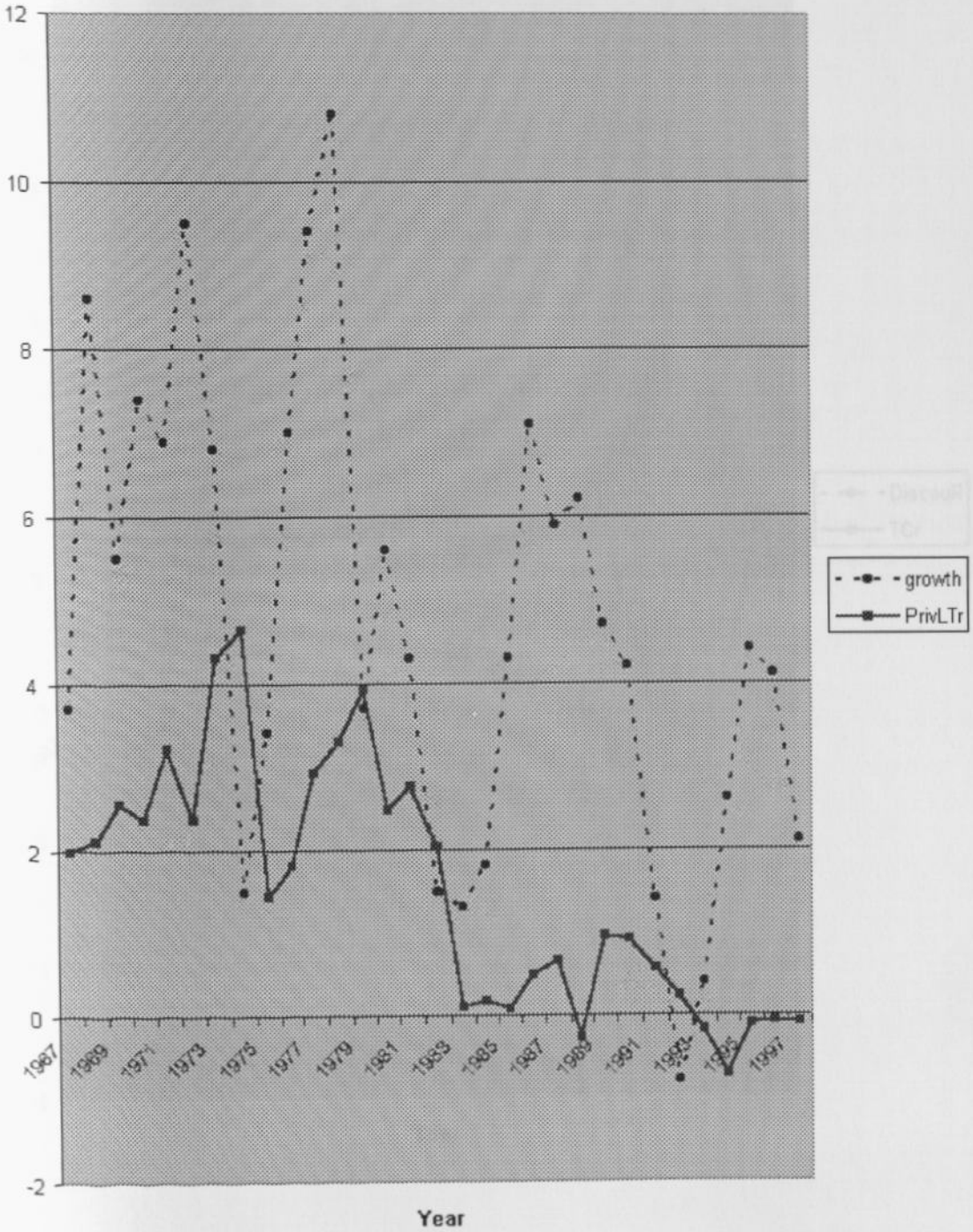


Chart 1.6: Total Capital Inflows as % of GDP (TCr) and the discount rate (DiscouR)

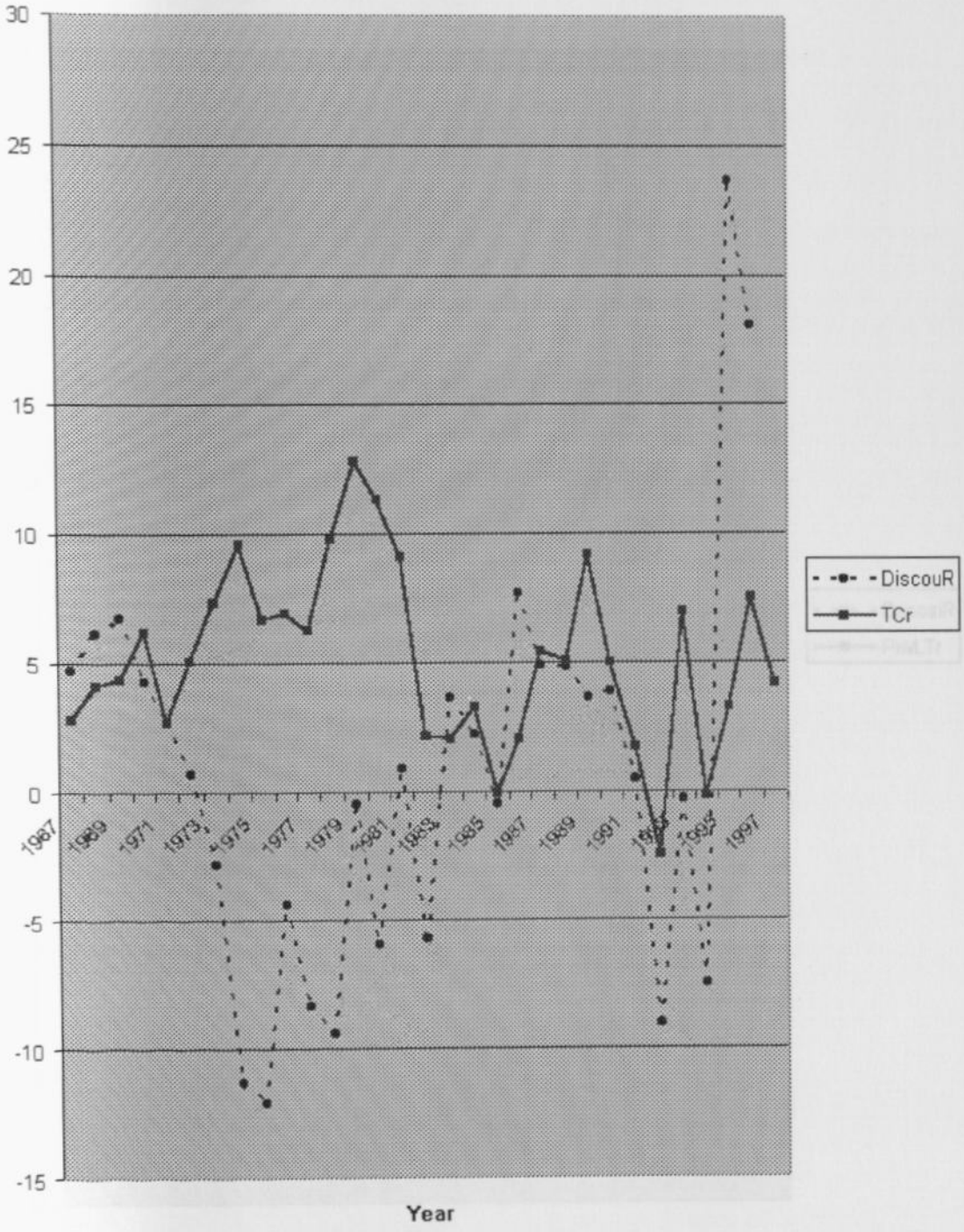


Chart 1.7: Private Long-term Capital Inflows as % of GDP (PrivLTr) and the deposit rate (DeposiR)

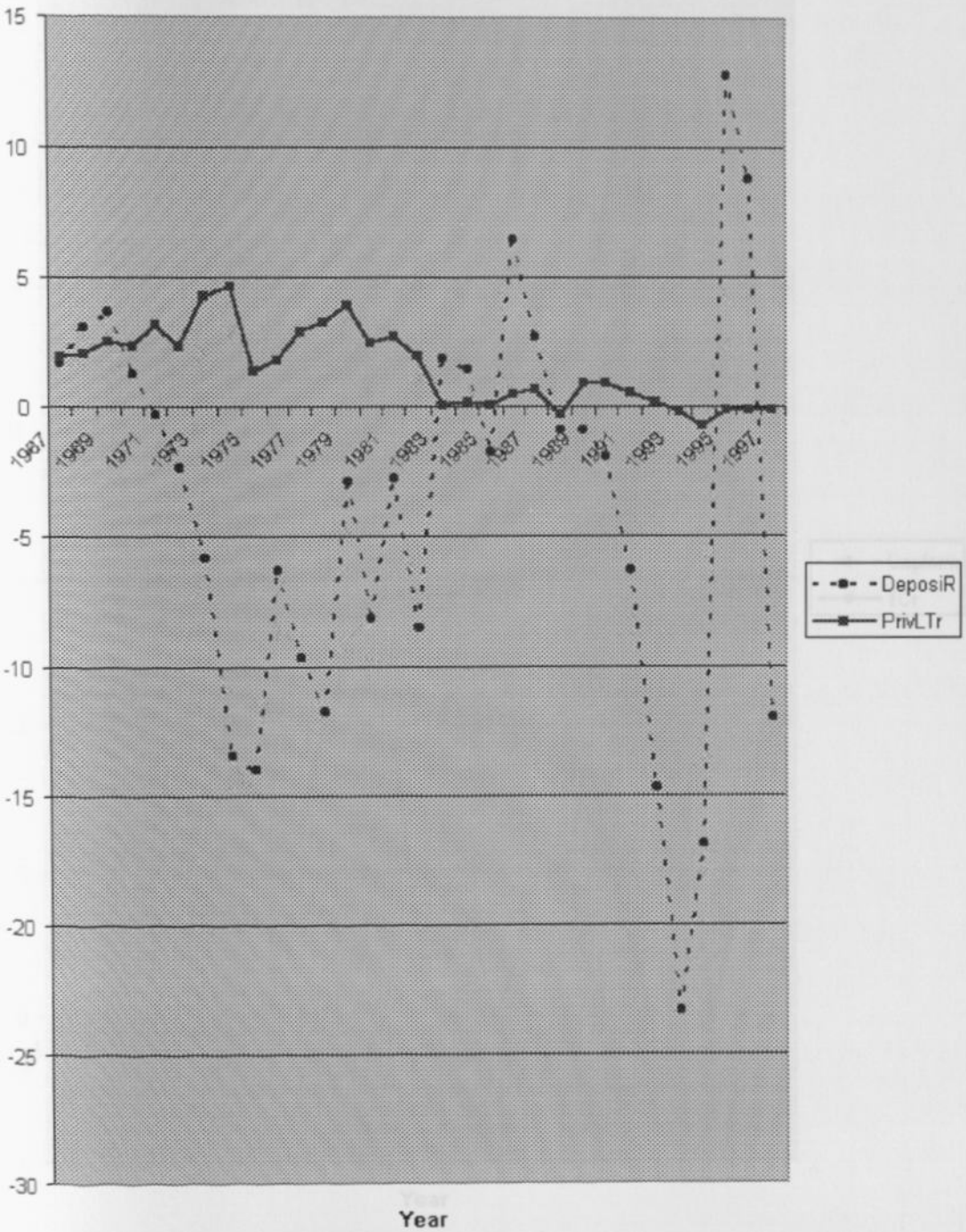


Chart 1.8: Total Capital Inflows as % of GDP (TCr) and Capital Formation as % of GDP (Capform)

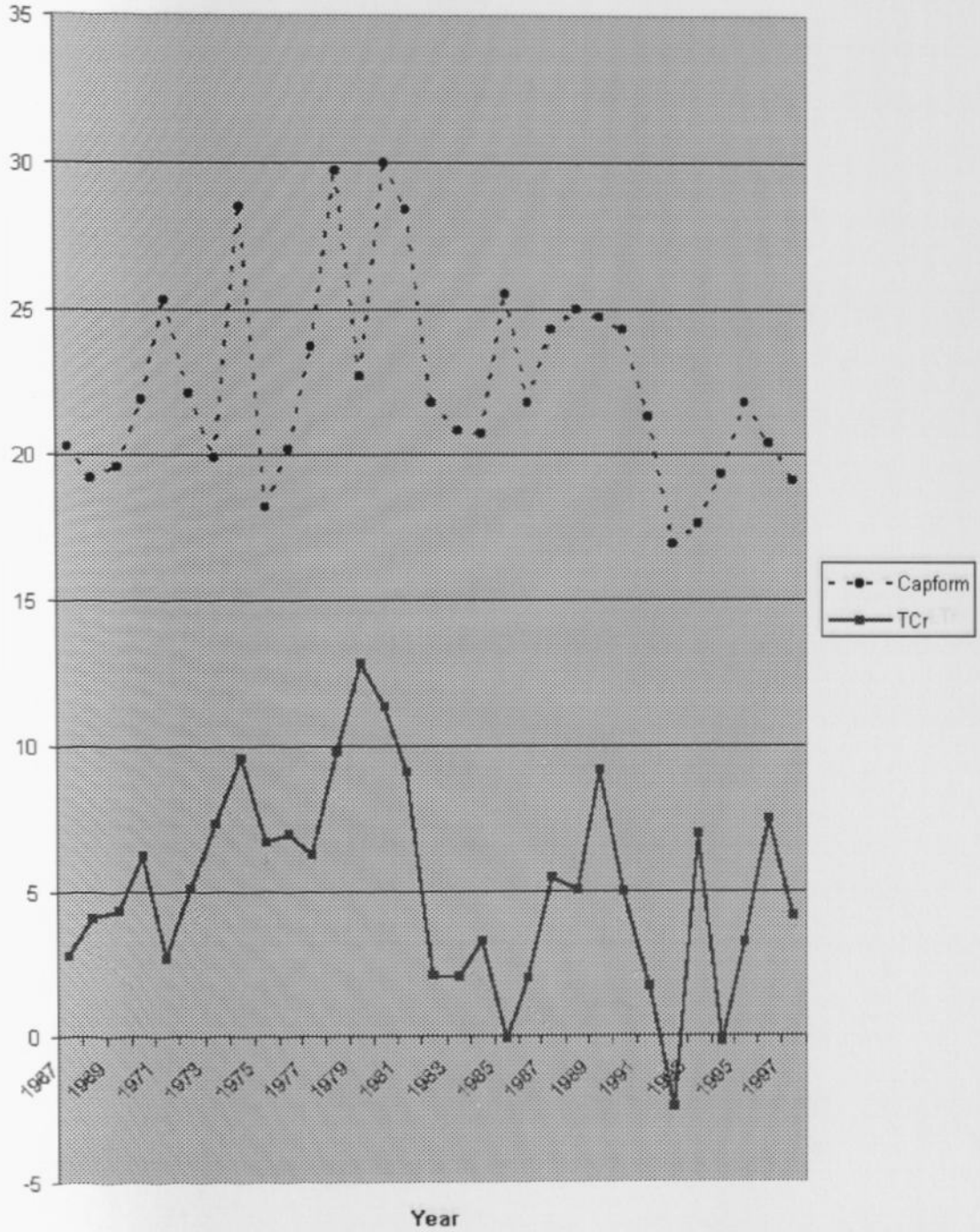


Chart 1.9: Private Long-term Capital Inflows as % of GDP (PrivLTr) and Capital Formation as % of GDP (Capform)

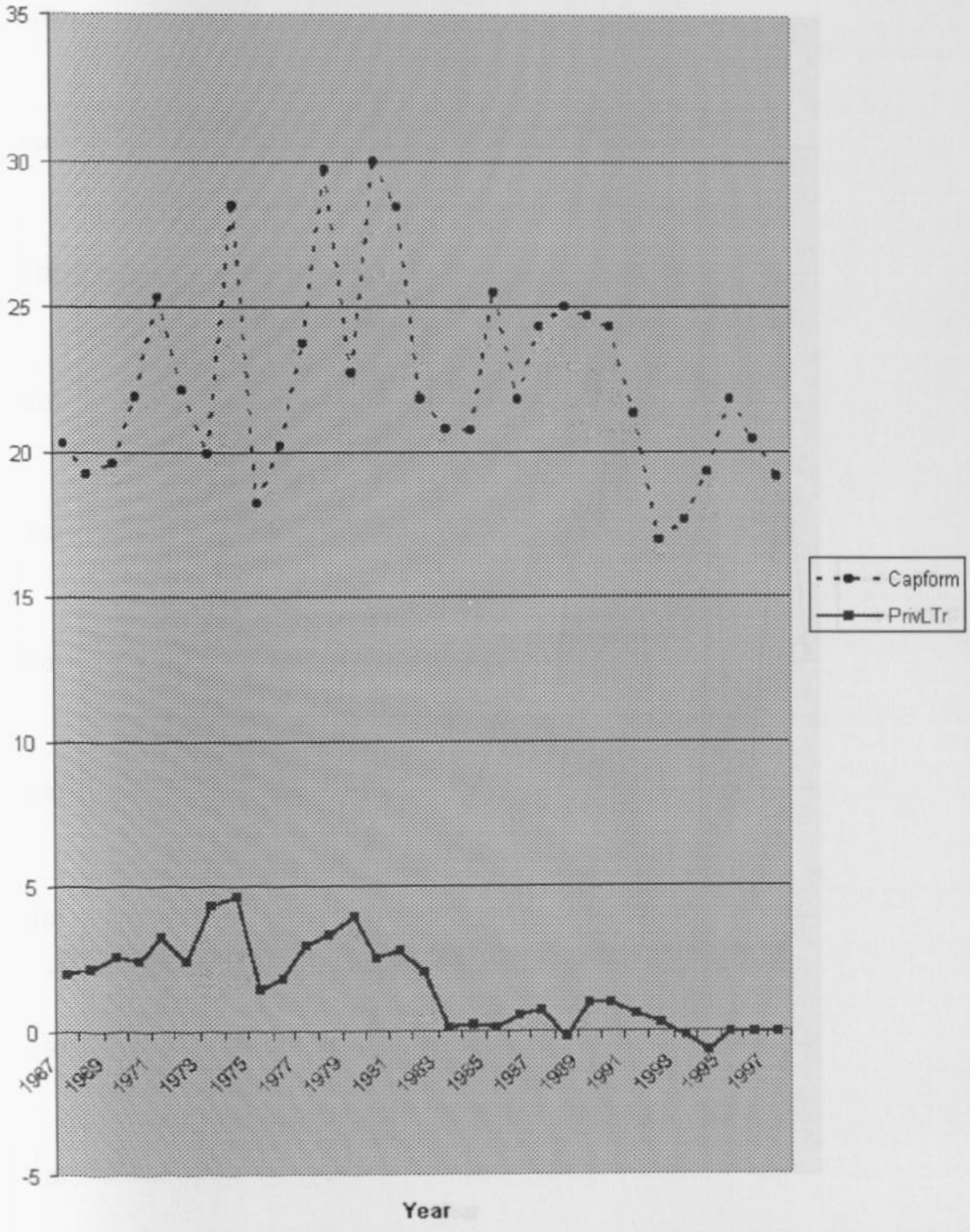


Chart 1.10: Total Capital Inflows as % of GDP (TCr) and returns to investment (IOCR in multiples of '0s)

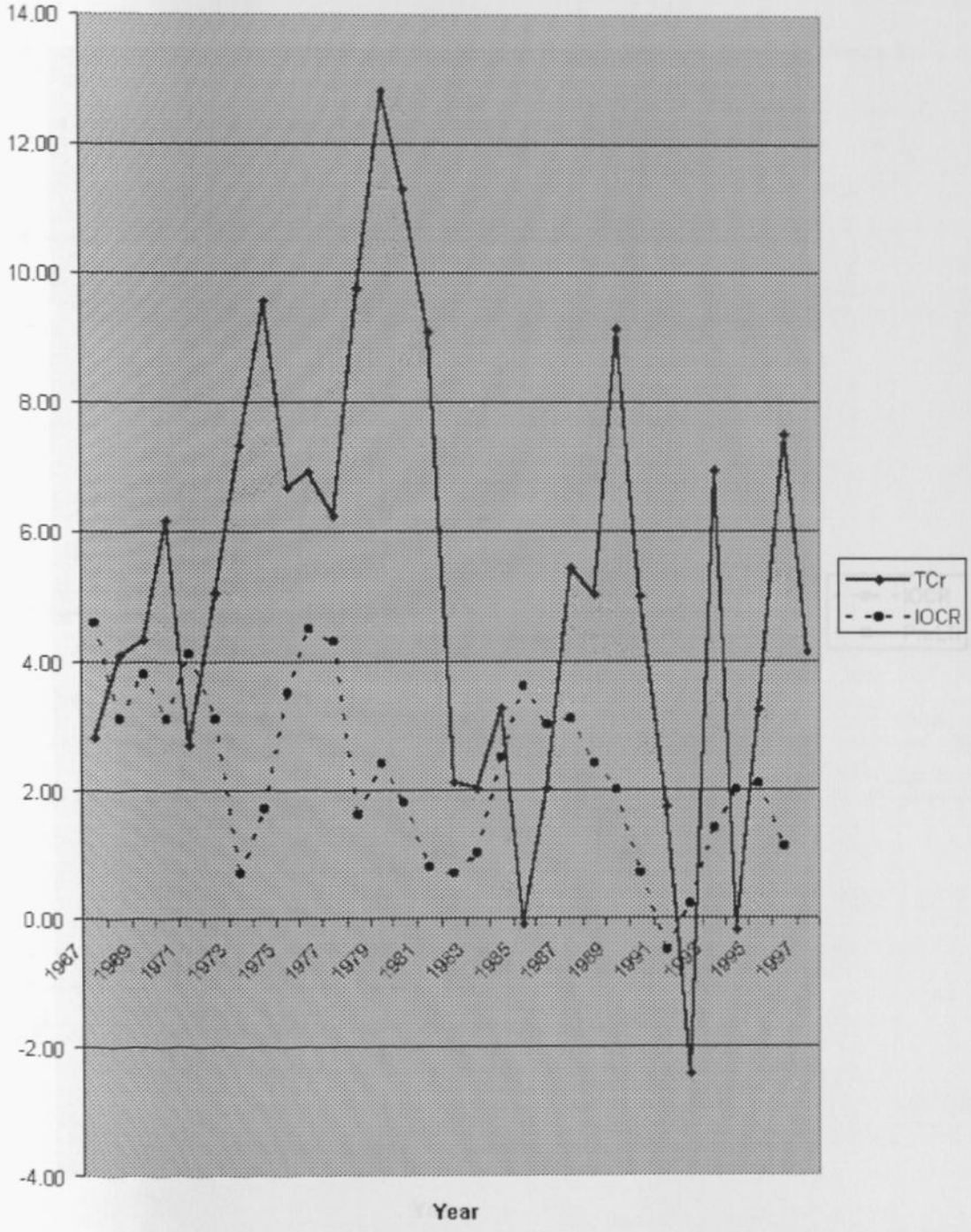


Chart 1.11: private Long-term Capital Inflows as % of GDP (PrivLTr) and Returns to Investment as measured by IOCR (in multiples of 10)

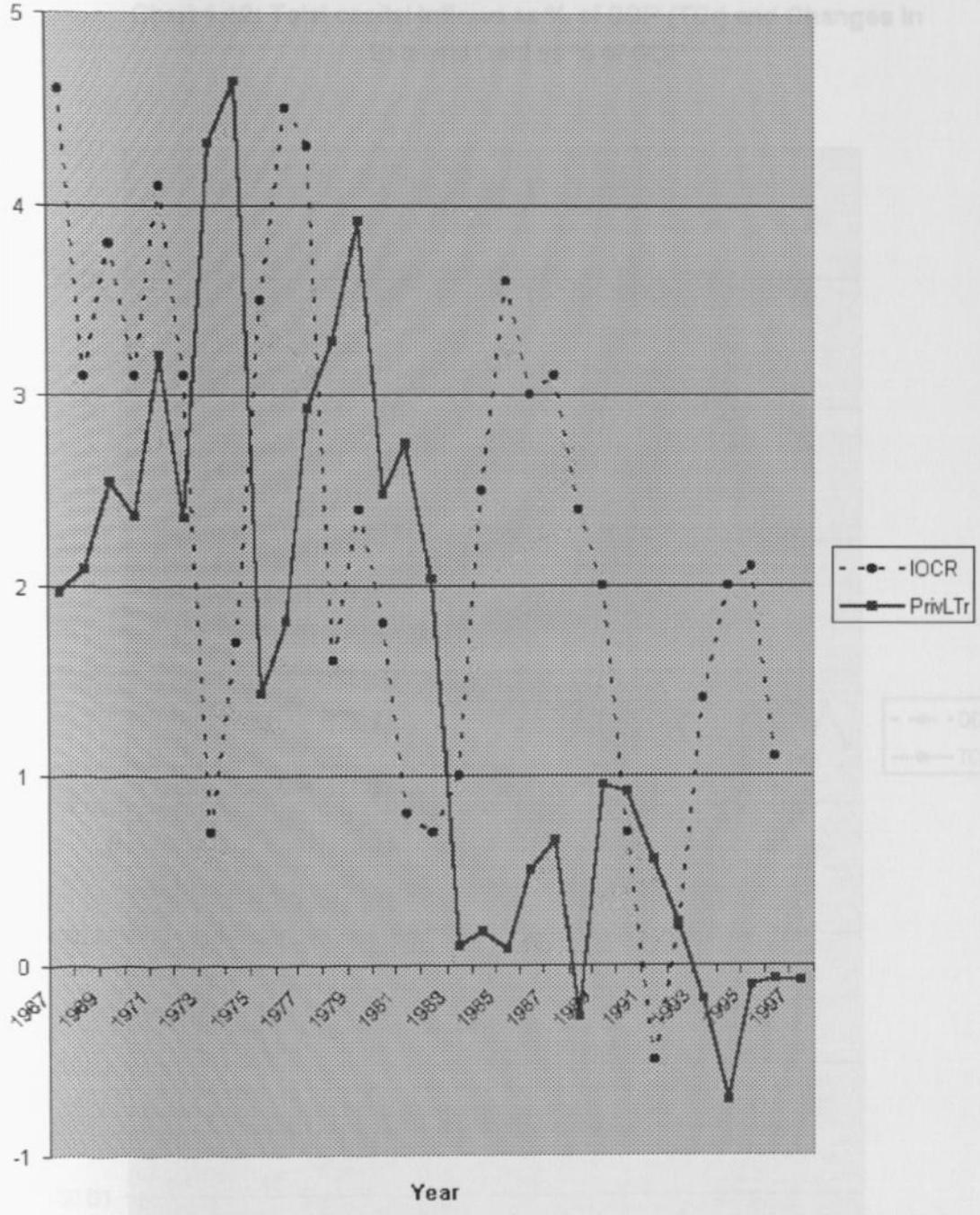


Chart 1.12: Total capital Inflows as % of GDP (TCr) and Changes in External Debt as % of GDP

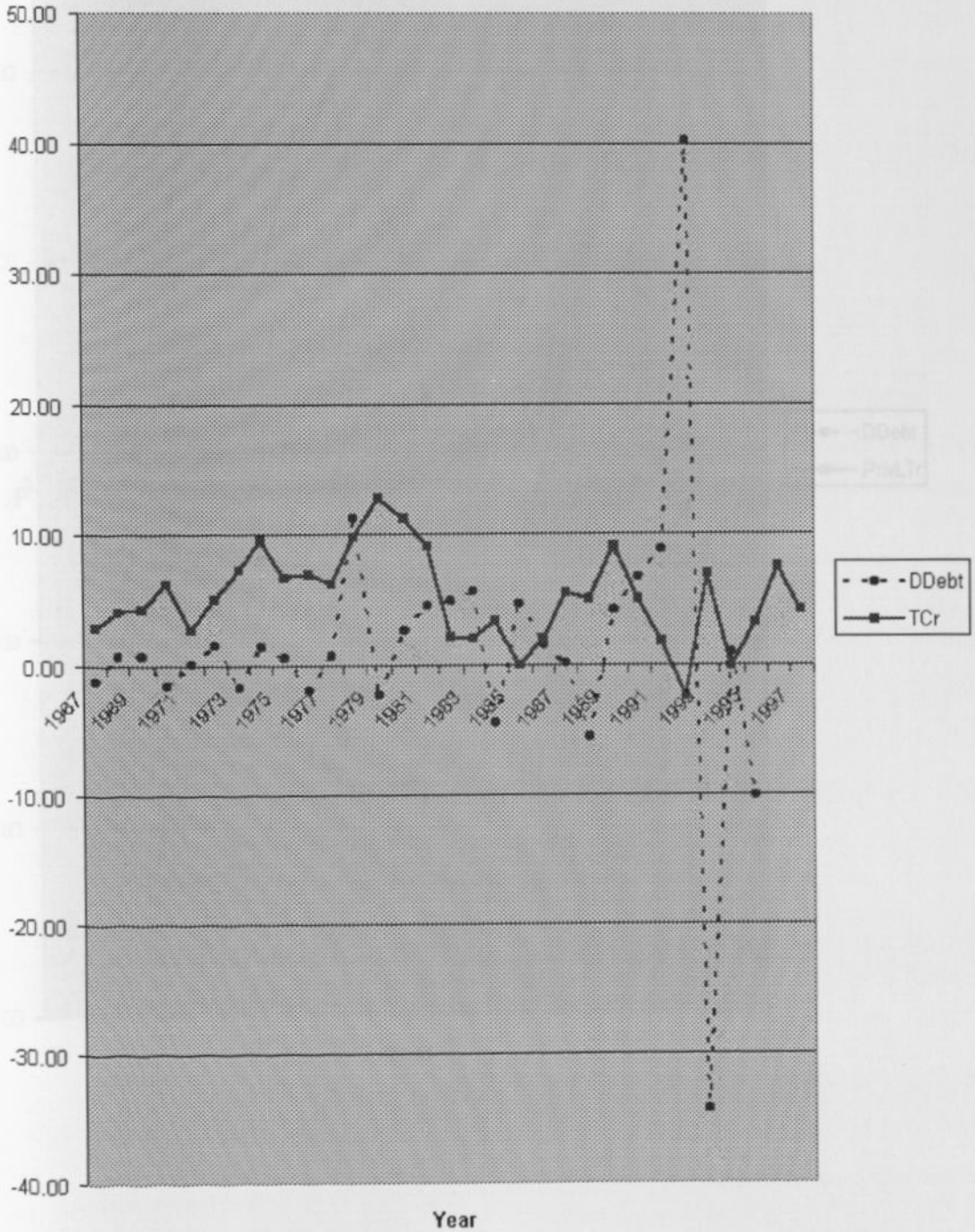


Chart 1.13: Private Long-term Capital Inflows as % of GDP (PrivLTr) in multiples of 0's and changes in external debt as % of GDP

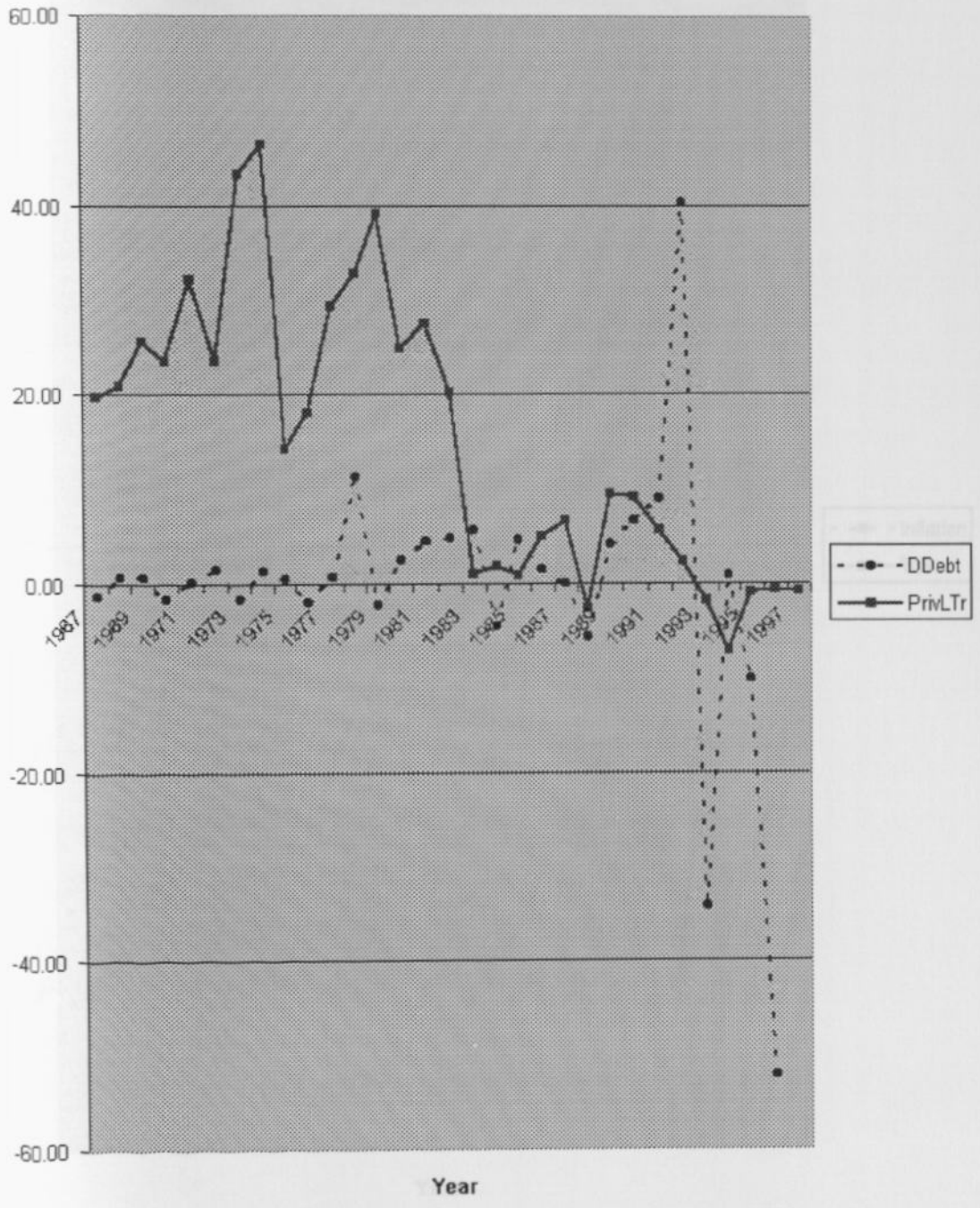


Chart 1.14: Total Capital Inflows as % of GDP (TCr) and inflation

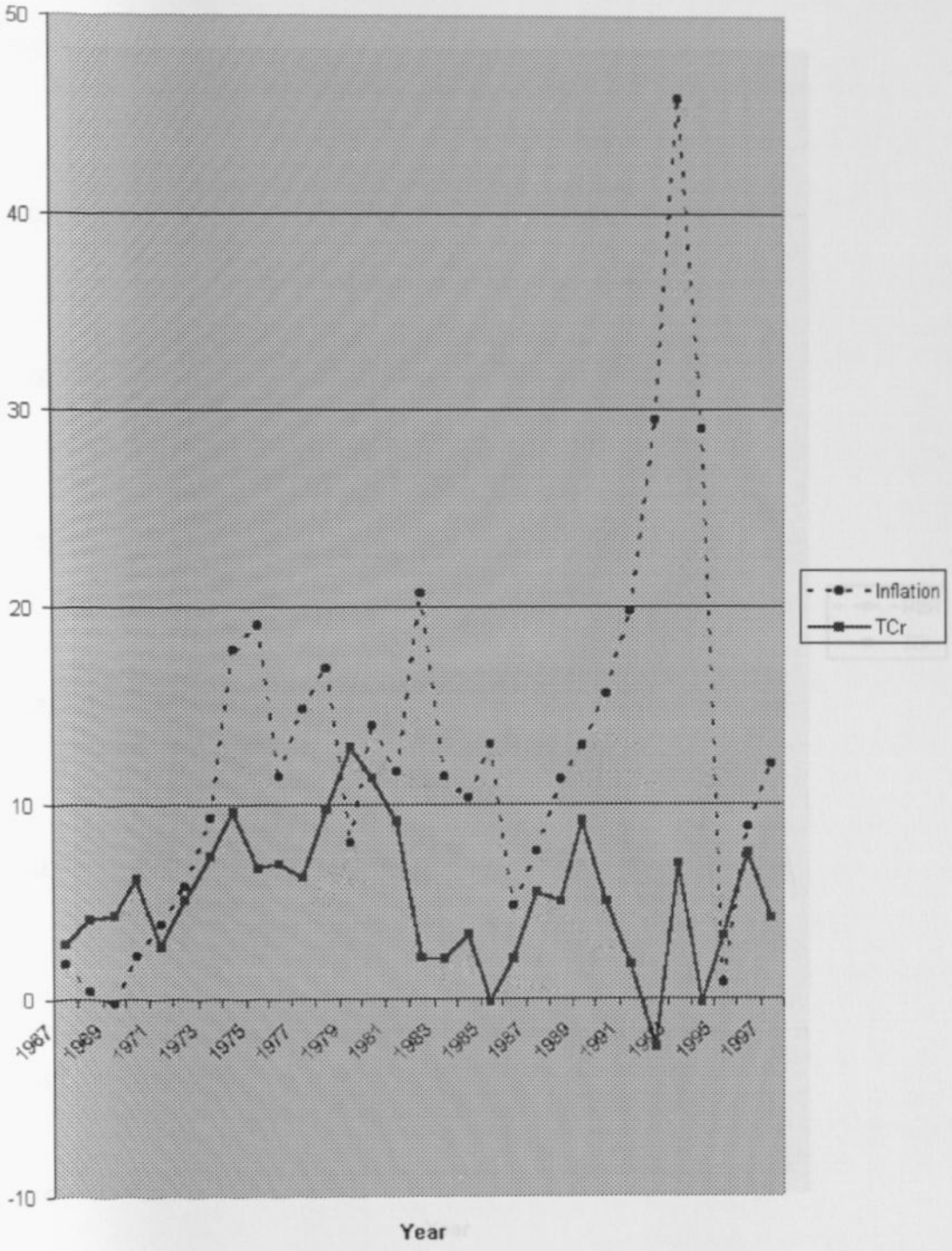


Chart 1.15: Total Capital Inflows as % of GDP (TCr) and Real Exchange Rates (RER)

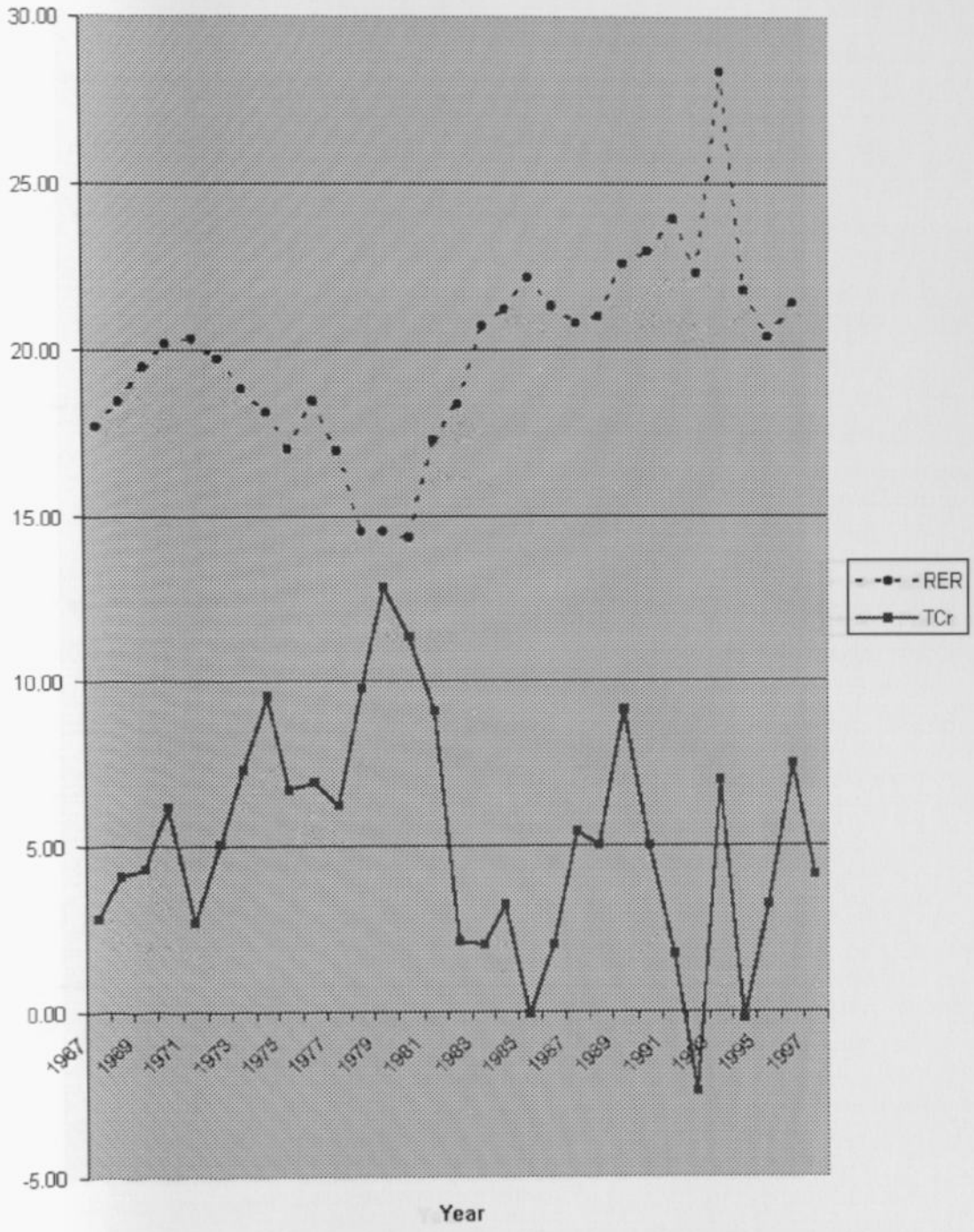


Chart 1.16: Private Long-term Capital Inflows as % of GDP (PrivLTr) in multiples of '0s and domestic inflation

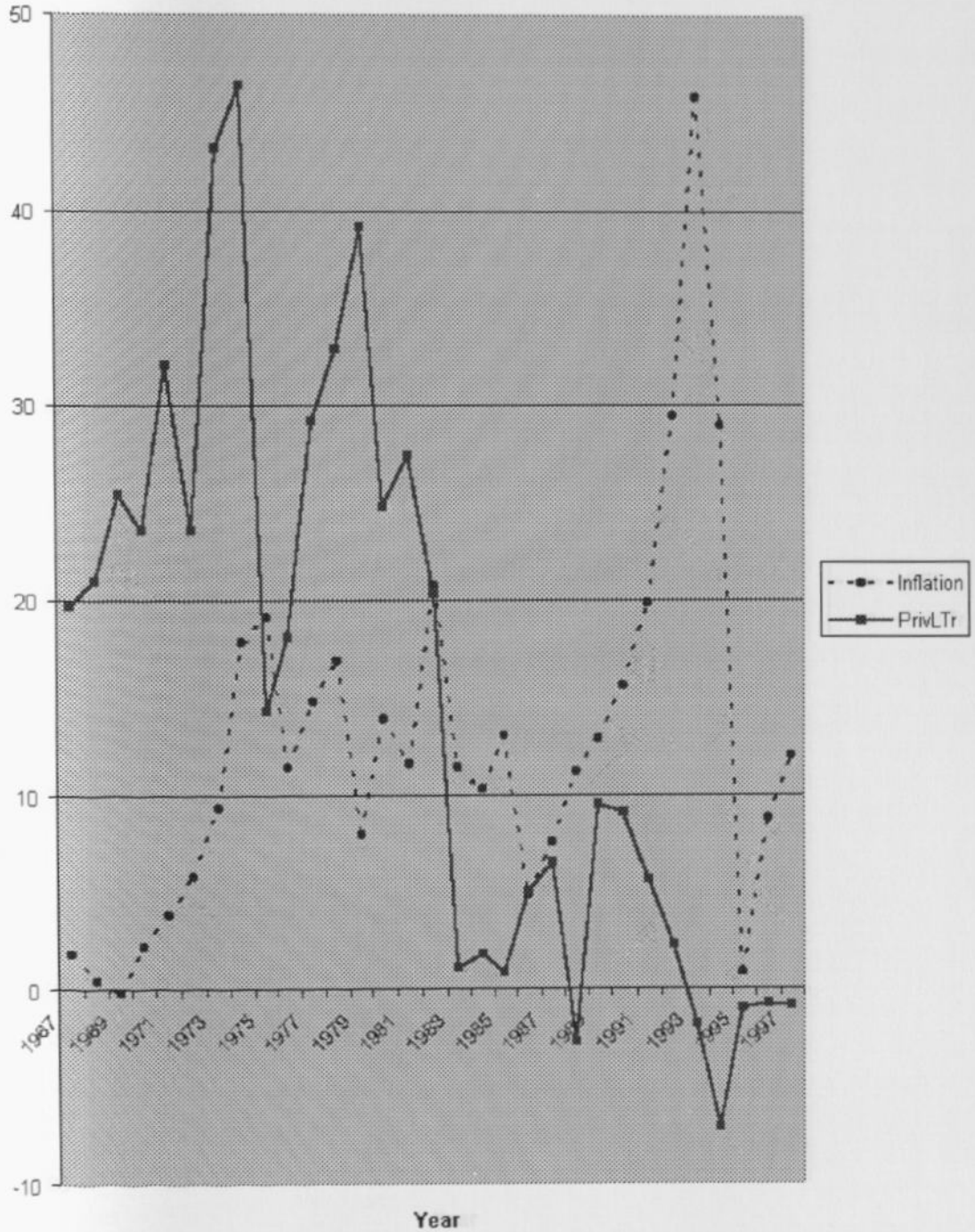


Chart 1.17: Private Long-term Capital Inflows as % of GDP (PrivLTr) in multiples of '0s and Real Exchange Rates (RER)

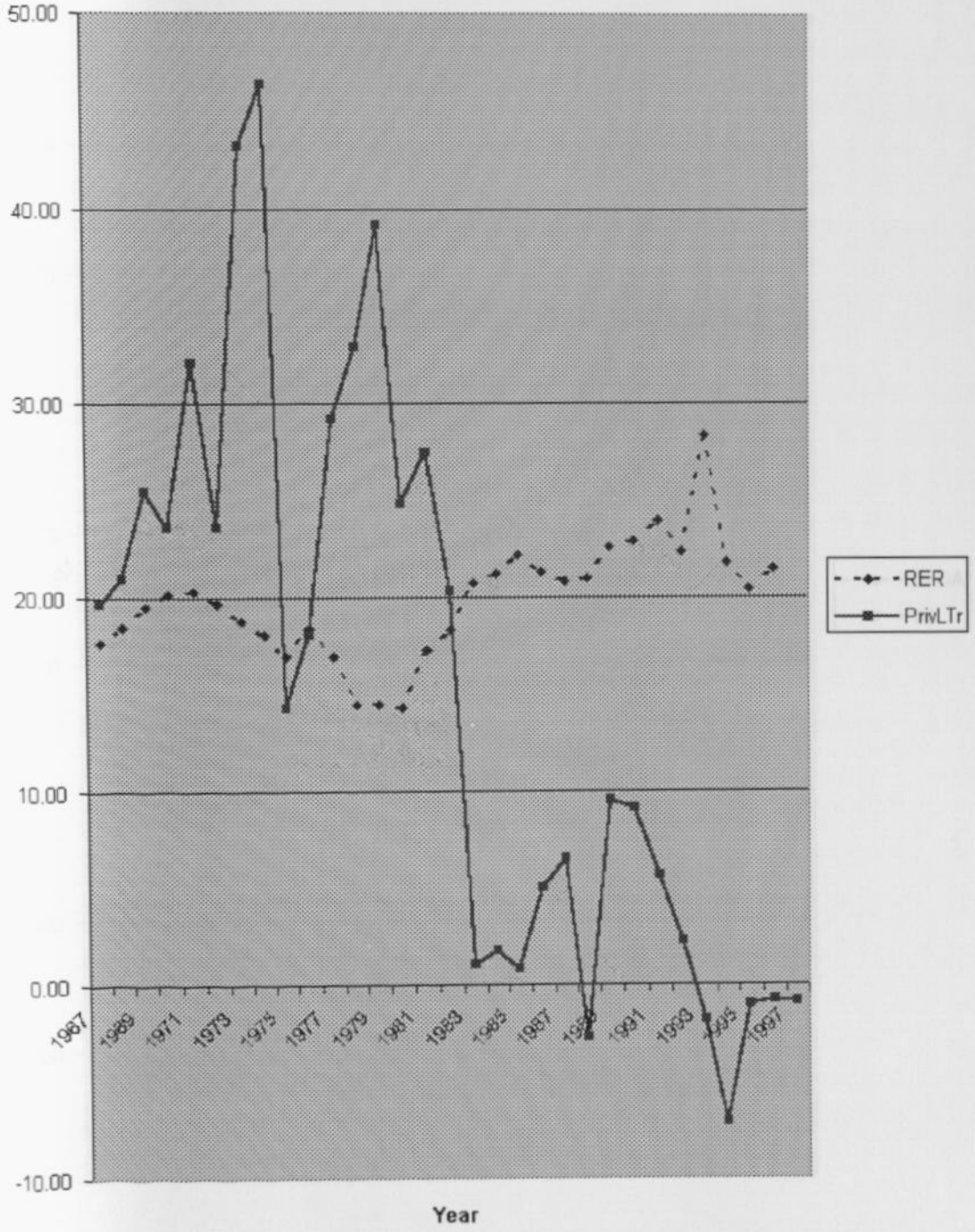


Chart 1.18: Total Capital Inflows (TC) and Changes in Net Domestic Assets in 00's (DNDA)

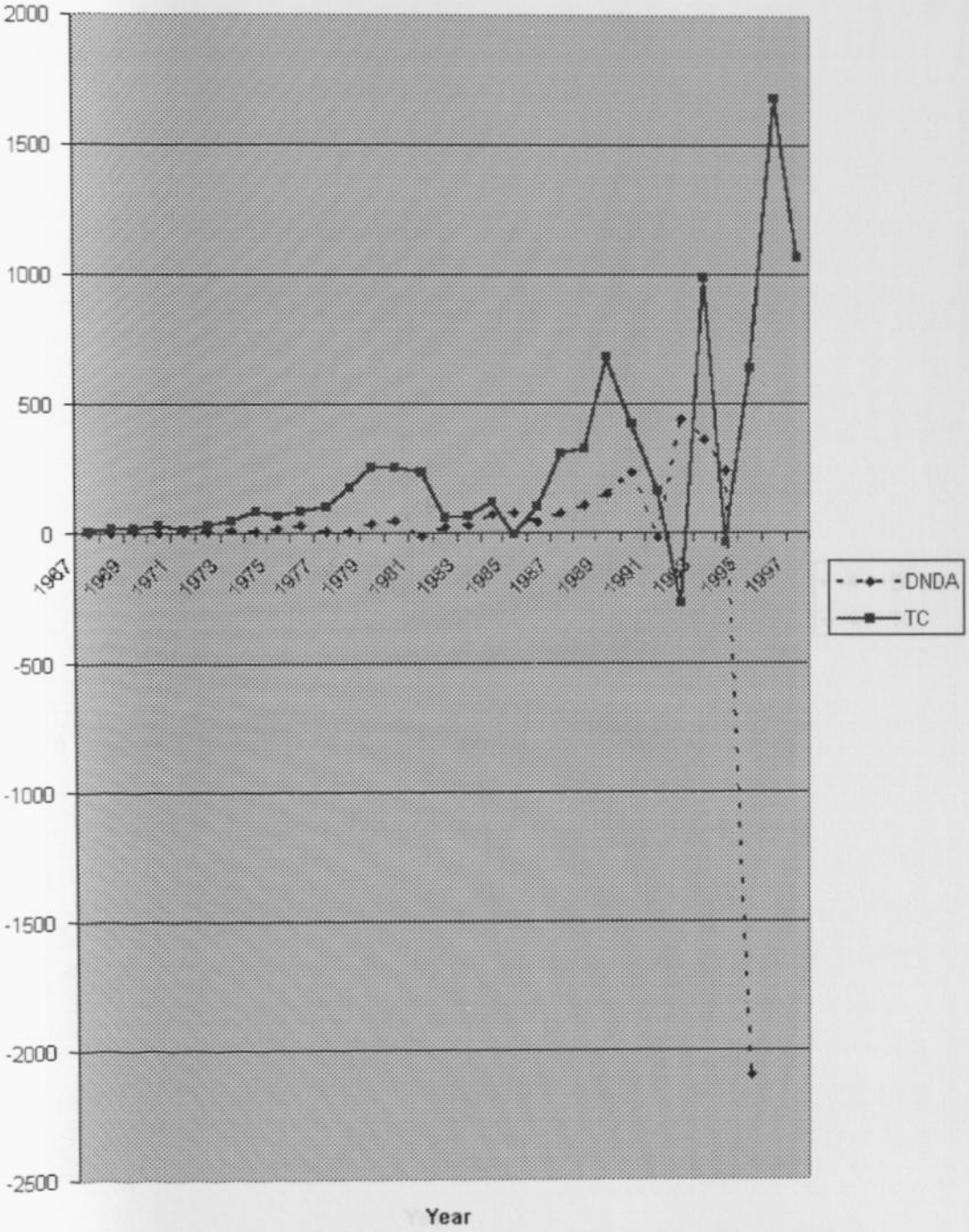


Chart 1.19: Total Capital Inflows as % of GDP (TCr) and Budget Deficits as % of GDP

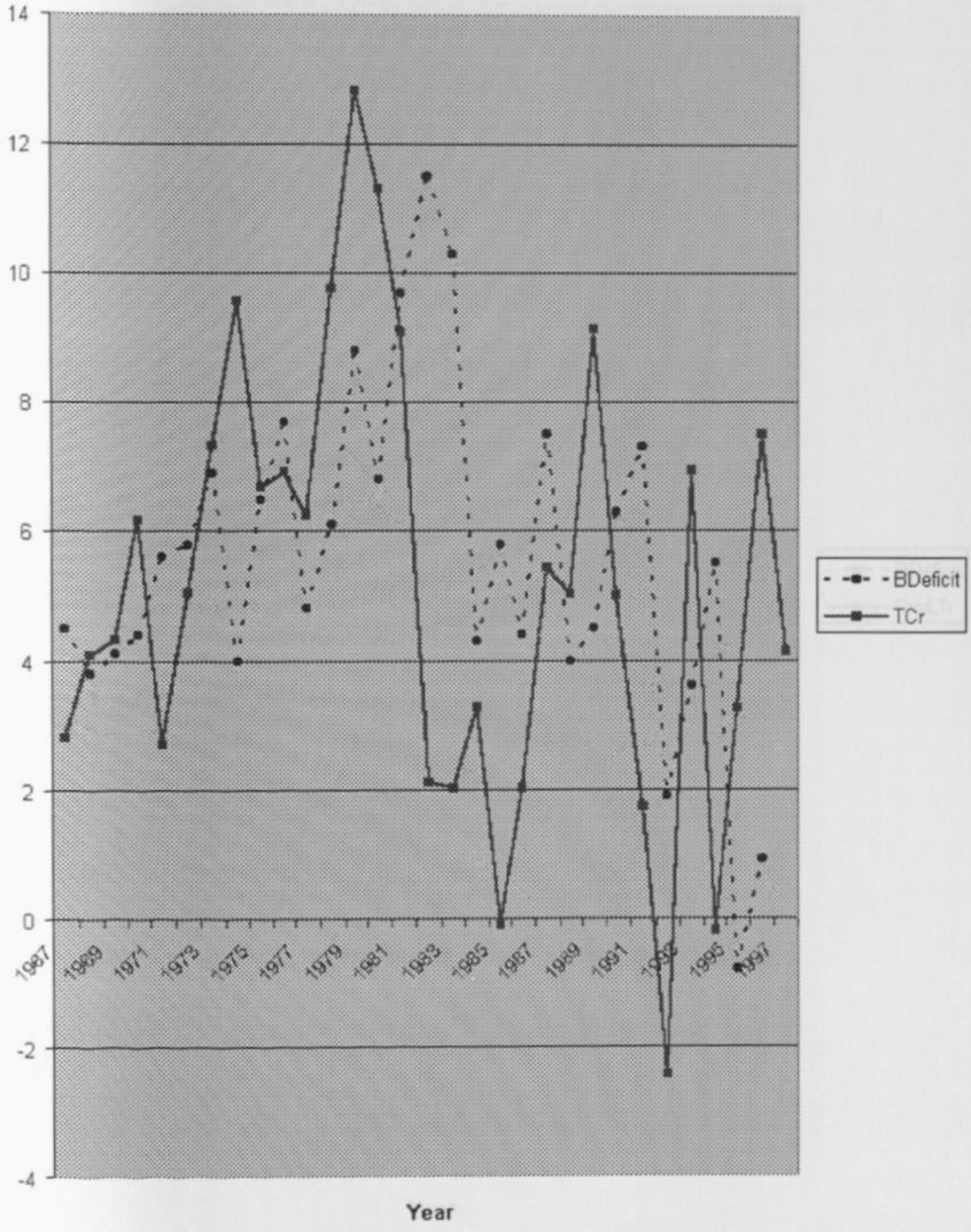


Chart 1.20: Private Long-term Capital Inflows as % of GDP (PrivLTr) and Budget Deficits as % of GDP (Bdeficit)

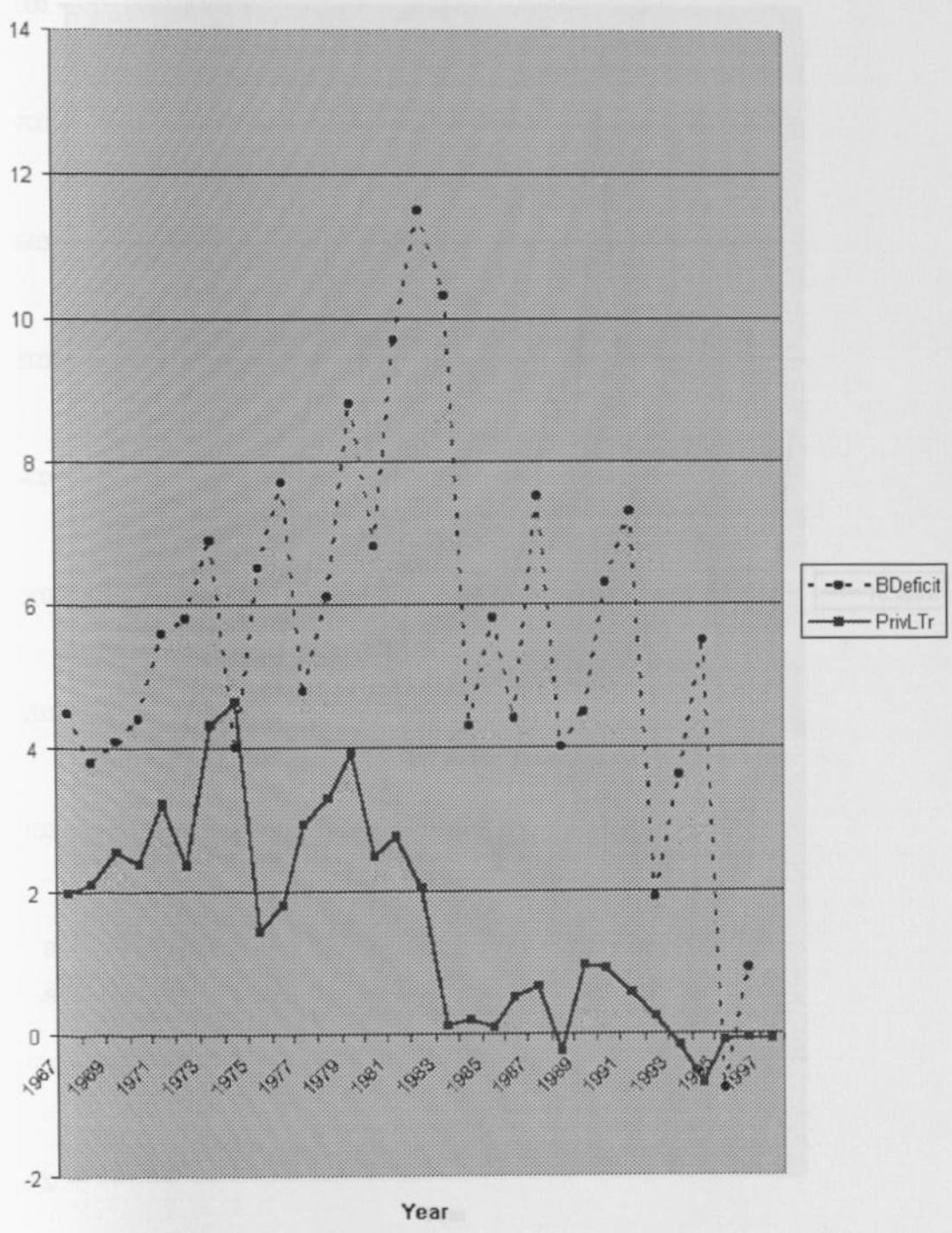


Chart 4.1 Total Capital Inflows, Kenya

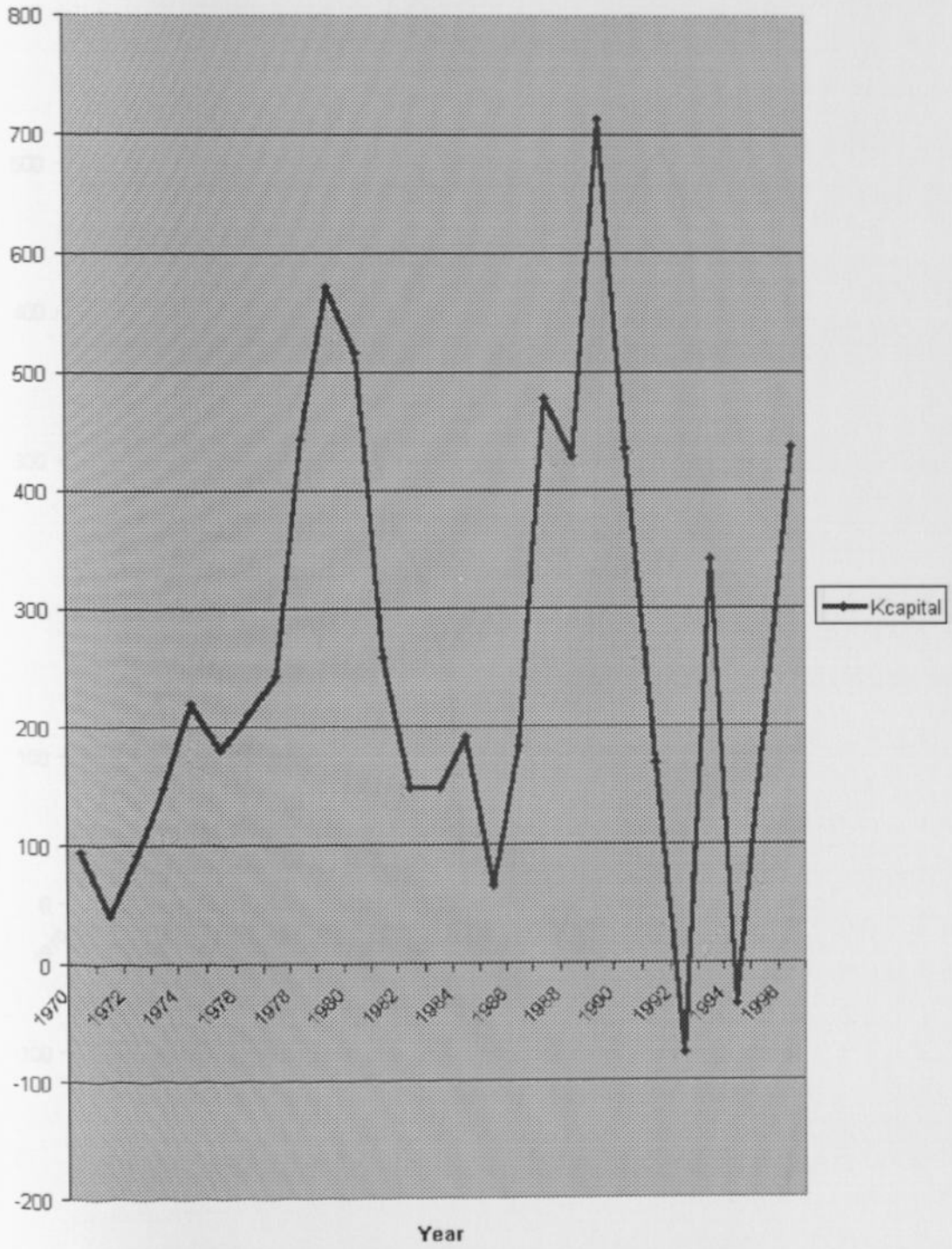


Chart 4.2: Total Capital Inflows, Tanzania

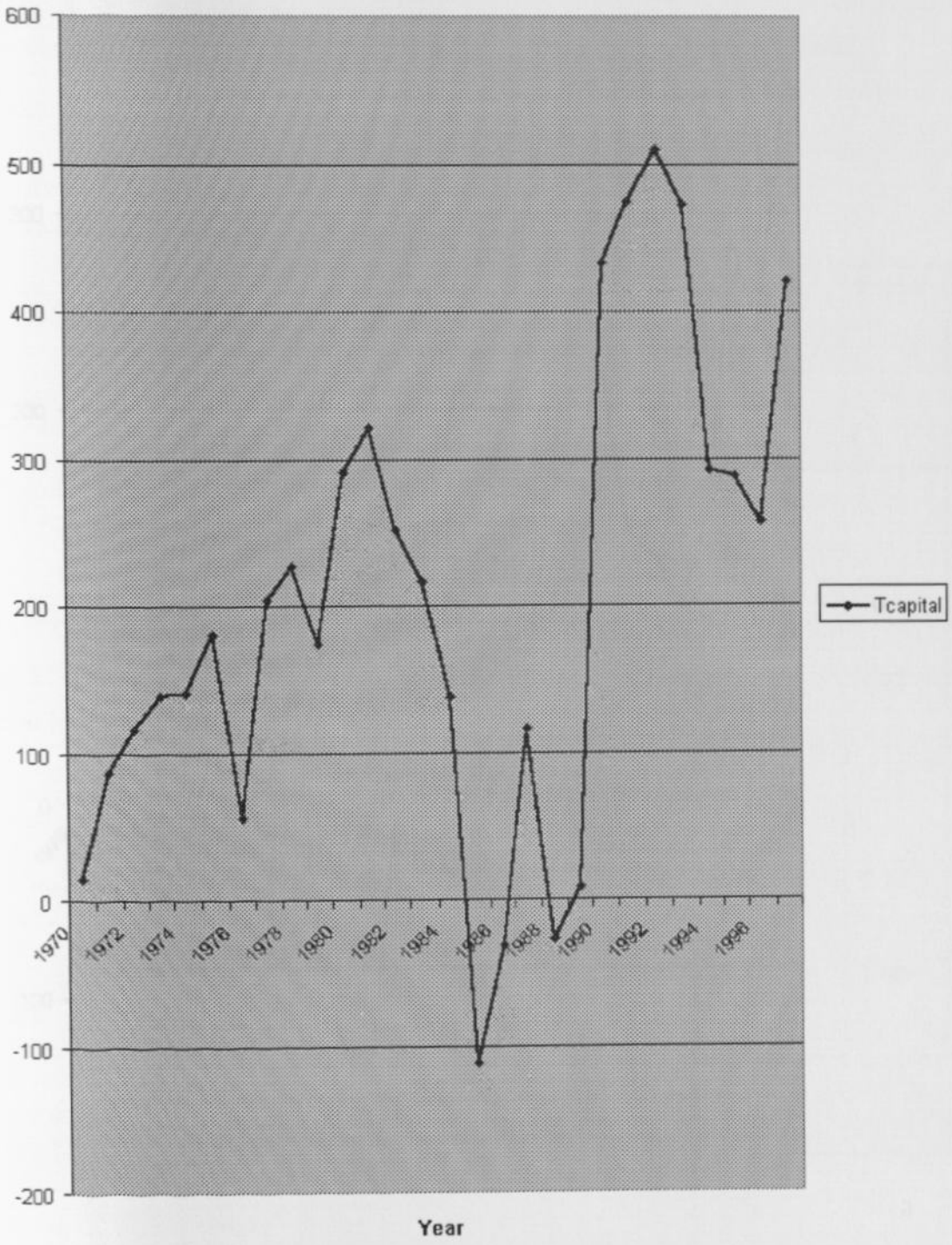
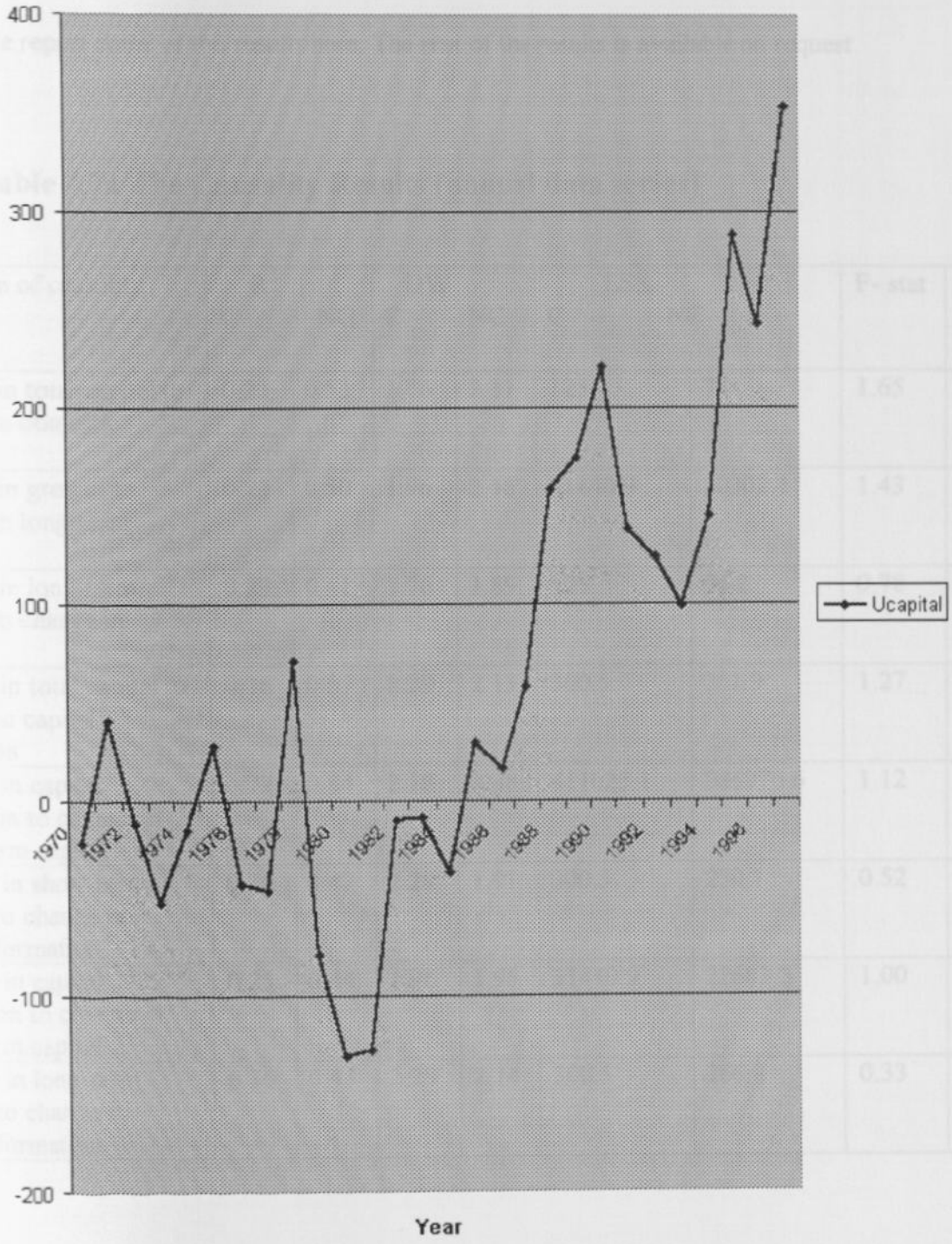


Chart 4.3 : Total Capital Inflows, Uganda



Appendix II: Estimation Results

We report some of the results here. The rest of the results is available on request.

Table 4.7a The Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in total capital to change in domestic growth	0.23	0.53	1.76	2.11	125	74	1.65	+/-
Change in growth to change in long-term capital	0.23	0.50	1.96	2.18	31440.9	20302.1	1.43	+
Change in long-term capital to change in growth	0.23	0.41	1.76	1.89	125	96.2	0.78	-
Change in total capital to change in capital formation	0.36	0.57	2.29	2.13	300.5	201.9	1.27	+/-
Change in capital formation to change in short-term capital	0.77	0.84	2.18	1.88	411025.1	286976.6	1.12	-/+
Change in short-term capital to change in capital formation	0.36	0.47	2.29	1.91	300.5	250.1	0.52	+/-
Change in capital formation to change in long-term capital	0.23	0.44	1.96	1.95	31440.9	22683.3	1.00	+
Change in long-term capital to change in capital formation	0.36	0.43	2.29	2.14	300.5	266.8	0.33	-

Table 4.7b: Causality Results (annual data)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in total capital to change in consumption	0.41	0.63	2.06	2.15	211.1	132	1.56	+
Change in consumption to change in long-term capital	0.23	0.47	1.96	2.01	31440.9	21531.9	1.20	+/-
Change in current account balance to change in total capital	0.72	0.81	2.14	2.22	1289263.2	893224.1	1.15	+/-
Change in total capital to change in current account balance	0.22	0.47	2.02	2.07	1382514.8	929891.9	1.15	+/-
Change in short-term capital to change in current account balance	0.22	0.52	2.02	2.27	1382514.8	842306.5	1.67	+/-
Change in current account balance to change in long-term capital	0.23	0.51	1.96	1.80	31440.9	20090.9	1.47	+/-
Change in total capital to change in real exchange rates	0.13	0.59	2.05	2.05	105.9	50.3	2.87	+/-

Table 4.7c: Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in external debt to change in total capital	0.72	0.82	2.14	2.09	1289263.2	840105.6	1.39	+/-
Change in total capital to change in external debt	0.33	0.90	2.02	2.03	2176.1	324.1	14.9***	+/-
Change in external debt to change in short-term capital	0.77	0.95	2.18	1.40	411025.1	80656.8	10.7***	+/-
Change in short-term capital to change in external debt	0.33	0.74	2.02	1.94	2176.1	827.4	4.24**	+/-
Change in external debt to change in long-term capital	0.23	0.79	1.96	1.86	31440.9	8511.4	7.00***	-
Change in long-term capital to change in external debt	0.33	0.57	2.02	1.65	2176.1	1412.7	1.40	+/-
Change in total capital to change in inflation	0.23	0.75	2.00	1.97	1602.7	525.2	5.33***	+/-
Change in inflation to change in short-term capital	0.77	0.87	2.18	2.11	411025.1	228707.7	2.07	+/-
Change in short-term capital to change in inflation	0.23	0.65	2.00	2.02	1602.7	731.7	3.09**	+/-
Change in inflation to change in long-term capital (6lags)	0.23	0.56	1.97	1.97	309.35	17565	1.27	+/-
Change in long-term capital to change in inflation (6lags)	0.30	0.80	2.13	1.82	1434.7	408.1	4.19**	+/-

Table 4.7c: Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in external debt to change in total capital	0.72	0.82	2.14	2.09	1289263.2	840105.6	1.39	+/-
Change in total capital to change in external debt	0.33	0.90	2.02	2.03	2176.1	324.1	14.9***	+/-
Change in external debt to change in short-term capital	0.77	0.95	2.18	1.40	411025.1	80656.8	10.7***	+/-
Change in short-term capital to change in external debt	0.33	0.74	2.02	1.94	2176.1	827.4	4.24**	+/-
Change in external debt to change in long-term capital	0.23	0.79	1.96	1.86	31440.9	8511.4	7.00***	-
Change in long-term capital to change in external debt	0.33	0.57	2.02	1.65	2176.1	1412.7	1.40	+/-
Change in total capital to change in inflation	0.23	0.75	2.00	1.97	1602.7	525.2	5.33***	+/-
Change in inflation to change in short-term capital	0.77	0.87	2.18	2.11	411025.1	228707.7	2.07	+/-
Change in short-term capital to change in inflation	0.23	0.65	2.00	2.02	1602.7	731.7	3.09**	+/-
Change in inflation to change in long-term capital (6lags)	0.23	0.56	1.97	1.97	309.35	17565	1.27	+/-
Change in long-term capital to change in inflation (6lags)	0.30	0.80	2.13	1.82	1434.7	408.1	4.19**	+/-

Table 4.7d The Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in budget deficits to change in total capital	0.72	0.86	2.14	2.42	1289263.2	657124.7	2.50	+/-
Change in total capital to change in budget deficits	0.38	0.65	2.01	1.95	122	68.7	2.02	+/-
Change in short-term capital to change in budget deficits	0.38	0.69	2.01	2.25	122	60.6	2.63	+/-
Change in long-term capital to change in budget deficits	0.38	0.71	2.01	1.94	122	55.9	3.07**	+
Change in export growth to change in total capital	0.72	0.83	2.14	1.82	1282773.3	762534.9	1.64	+/-
Change in total capital to change in export growth	0.35	0.66	1.99	2.05	12786.8	6760.3	2.14	+/-
Change in export growth to change in short-term capital	0.77	0.86	2.18	2.09	409430.2	256665.9	1.43	+
Change in short-term capital to change in export growth	0.35	0.55	1.99	1.91	12786.8	8889.8	1.05	+/-
Change in export growth to change in long-term capital	0.23	0.50	1.98	1.93	30997.7	20092.9	1.30	+/-
Change in long-term capital to change in export growth	0.35	0.57	1.99	1.99	12786.8	8394.3	1.26	+/-

Table 4.7e The Causality Results (annual data series)

Direction of Causality	R^2		DW		ESS		F-Stat	Pattern of Causality
	C	NC	C	NC	C	NC		
Change in real exchange rates to change in short-term capital	0.77	0.84	2.18	2.15	411025.1	276970.3	1.26	+/-
Change in short-term capital to change in real exchange rates	0.13	0.69	2.05	2.05	105.9	37.3	4.78**	+/-
Change in real exchange rates to change in long-term capital	0.23	0.55	1.96	2.11	31440.9	18401.8	1.84	+/-
Change in long-term capital to change in real exchange rates	0.13	0.65	2.05	2.33	105.9	42.1	3.94**	+/-
Rate of change of net domestic assets to change in total capital (3lags)	0.41	0.67	1.79	2.05	2707593.7	1508170.4	4.51**	+
Change in total capital to rate of change of net domestic assets (3lags)	0.50	0.71	1.99	1.79	153594.1	88970.2	4.12**	+
Rate of change of net domestic assets to change in short-term capital(3lags)	0.72	0.86	1.90	2.54	504458.9	255708.2	5.51***	+
Change in short-term capital to rate of change of net domestic assets (3lags)	0.5	0.90	1.99	2.17	153594.1	29709.5	23.6***	+/-
Rate of change of net domestic assets to change in long-term capital (3lags)	0.07	0.46	2.01	1.97	37736.2	22122.3	4.00**	+/-

Table 4.7f The Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in total capital to change in discount rate	0.26	0.68	2.03	1.77	1292.7	562.8	3.37**	-
Change in discount rate to change in short-term capital	0.77	0.88	2.18	2.05	411025.1	205541	2.60	+/-
Change in short-term capital to change in discount rate	0.26	0.66	2.03	1.82	1292.7	596.3	3.04**	+/-
Change in long-term capital to change in discount rate (3lags)	0.22	0.54	1.98	2.17	1373.7	810.1	4.41**	-
Change in total capital to change in deposit rate	0.11	0.68	1.98	1.94	1448.3	517.9	4.67**	+/-
Change in deposit rate to change in short-term capital	0.77	0.88	2.18	2.11	411025.1	208547.7	2.52	+/-
Change in short-term capital to change in deposit rate	0.11	0.63	1.98	1.93	1448.3	596.4	3.71**	+
Change in deposit rate to change in long-term capital (3lags)	0.07	0.24	2.02	1.94	37833.1	31023.5	1.39	+
Change in long-term capital to change in deposit rate (3lags)	0.09	0.49	2.05	2.35	1488.8	838.5	4.91**	-

Table 4.7g The Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in total capital to change in treasury rate	0.36	0.73	2.13	1.83	956.4	412.1	2.91	-
Change in treasury rate to change in short-term capital	0.77	0.86	2.18	2.22	409146.8	236340.1	1.61	+/-
Change in short-term capital to change in treasury rate	0.36	0.65	2.13	1.87	956.4	524	1.82	+/-
Change in long-term capital to change in treasury rate	0.36	0.70	2.13	1.69	956.4	451.5	2.46	-
Change in total capital to change in IOCR	0.29	0.60	1.92	2.03	0.215	0.12	1.90	-
Change in GDP differential to change in long-term capital	0.23	0.70	1.96	1.56	31440.9	12269.7	4.06**	+
Change in IOCR to change in long-term capital	0.23	0.50	1.98	2.06	30997.7	20011.3	1.32	+
Change in long-term capital to change in IOCR	0.29	0.50	1.92	2.05	0.215	0.150	1.04	-

Table 4.7h The Causality Results (annual data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Rate of change of M1 money to change in total capital (6lags)	0.72	0.96	1.91	2.24	1257376.7	180382.7	8.96***	+/-
Change in total capital to rate of change of M1 money (6lags)	0.46	0.91	2.02	1.89	156483426.1	26638903.9	7.31***	+/-
Rate of change of M1 money to change in short-term capital	0.77	0.99	2.18	1.64	409430.2	8311.2	115.8***	+
Change in short-term capital to rate of change of M1 money	0.45	0.66	1.90	1.57	159197271.4	98689733.2	1.47	+/-
Rate of change of M1 money to change in long-term capital	0.23	0.76	1.98	1.82	30997.7	9854.9	5.15***	+/-
Change in interest rate differential to change in short-term capital	0.91	0.96	1.82	1.77	393869.2	169006	3.46**	+/-
Change in foreign treasury rate to change in short-term capital	0.77	0.84	2.18	2.40	411025.1	284935.9	1.15	+/-
Change in foreign treasury rate to change in long-term capital (3lags)	0.07	0.22	2.02	2.05	37833.1	31535.1	1.26	+/-
Change in GDP differential to change in total capital	0.72	0.82	2.14	2.29	1289263.2	822289.6	1.48	+/-
Change in foreign discount rate to change in long-term capital (3lags)	0.07	0.22	2.02	2.01	37833.1	31917.1	1.17	+/-

Table 4.8a: The Causality Results (Monthly Data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in discount rate to change in short-term capital	0.49	0.60	1.97	2.11	917133355.9	729553324.6	1.59 (0.19)	+/-
Change in short-term capital to change in discount rate	0.31	0.54	2.18	2.00	936.9	620.7	3.16** (0.02)	-
Change in discount rate to change in total capital	0.51	0.59	2.00	2.14	960627565.7	793264806	1.31 (0.29)	+/-
Change in total capital to change in discount rate	0.31	0.54	2.18	2.02	936.9	624.1	3.11** (0.02)	-
Change in current account balance to change in total capital	0.51	0.61	2.00	2.01	960627565.7	769854419.4	1.54 (0.21)	+/-
Change in current account balance to change in short-term capital	0.49	0.63	1.97	2.03	917133355.9	674361682.9	2.23 (0.08)*	+/-
Change in total capital to change in imports	0.17	0.29	1.90	1.85	41117.1	35143.5	1.05 (0.40)	+/-

Table 4.8b: The Causality Results (Monthly Data series)

Direction of causality	R^2		DW		ESS		F- stat	Pattern of causality
	C	NC	C	NC	C	NC		
Change in total capital to change in budget deficits	0.65	0.67	2.11	2.02	536449324.8	500866605.7	0.44 (0.82)	+
Change in budget deficits to change in short-term capital	0.49	0.62	1.97	2.31	917133355.9	687615762.7	2.07(0.09)*	+/-
Change in budget deficits to change in total capital	0.51	0.60	2.00	2.26	960627565.7	767785652.6	1.56 (0.20)	+/-
Change in interest rate differential to change in total capital	0.51	0.59	2.00	2.15	960627565.7	793451849.5	1.31 (0.29)	+/-
Change in total capital to change in interest rate differential	0.30	0.53	2.18	2.00	952.7	636.1	3.09** (0.02)	-
Change in interest rate differential to change in short-term capital	0.49	0.60	1.97	2.11	917133355.9	728134934.2	1.61	+/-
Change in short-term capital to change in interest rate differential	0.30	0.54	2.18	1.97	952.7	632.8	3.13** (0.02)	-

Appendix III: Impulse Response Functions

Chart 4.5 : Impulse Response Function of private long-term capital inflows (DPrivLT) to a one-unit shock to the domestic-foreign GDP growth differential(Ddgpdif)

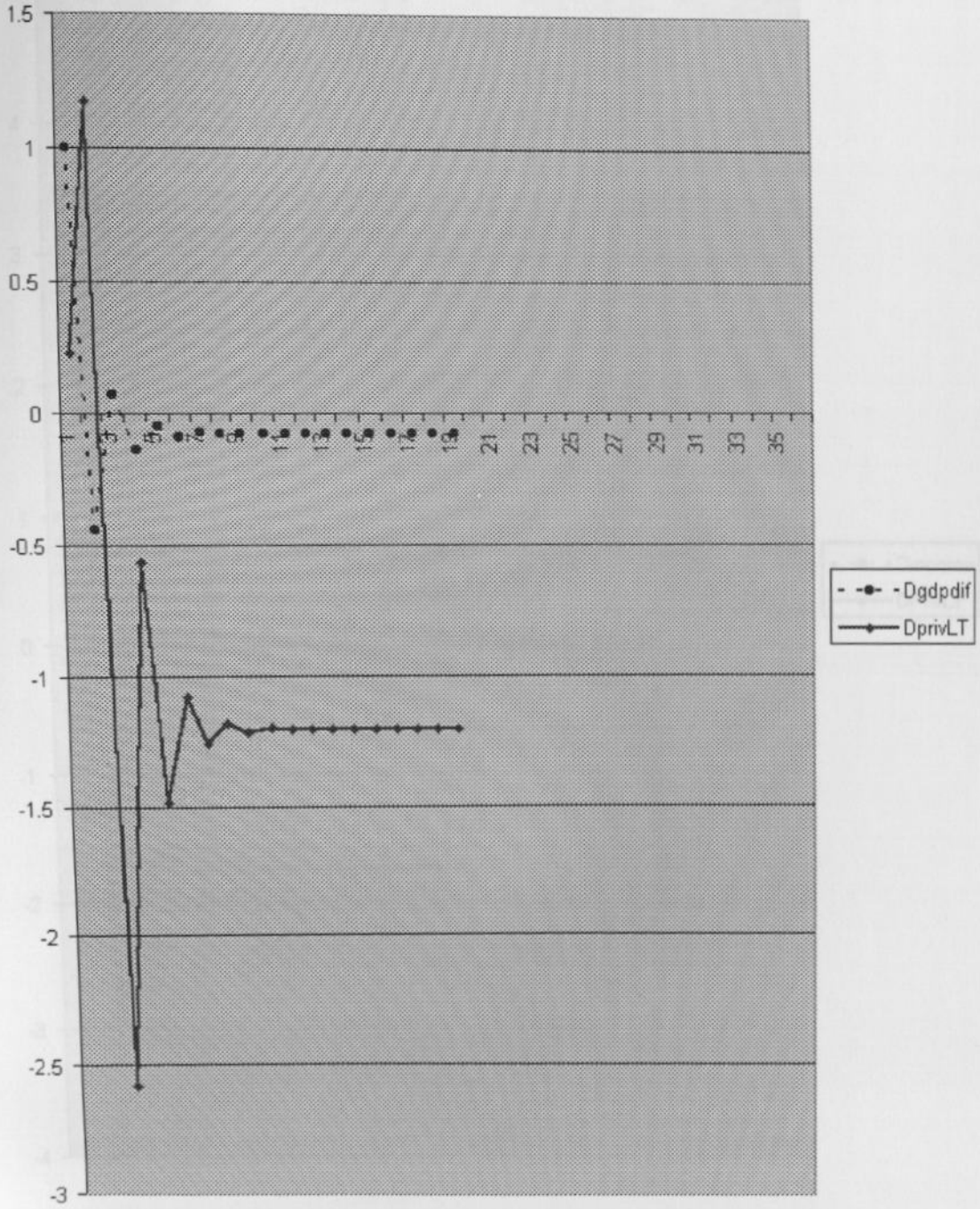


Chart 4.6 : Impulse Response Fuction of private long-term capital(DPrivLT) to a one-unit shock to domestic growth rates(Dincome)

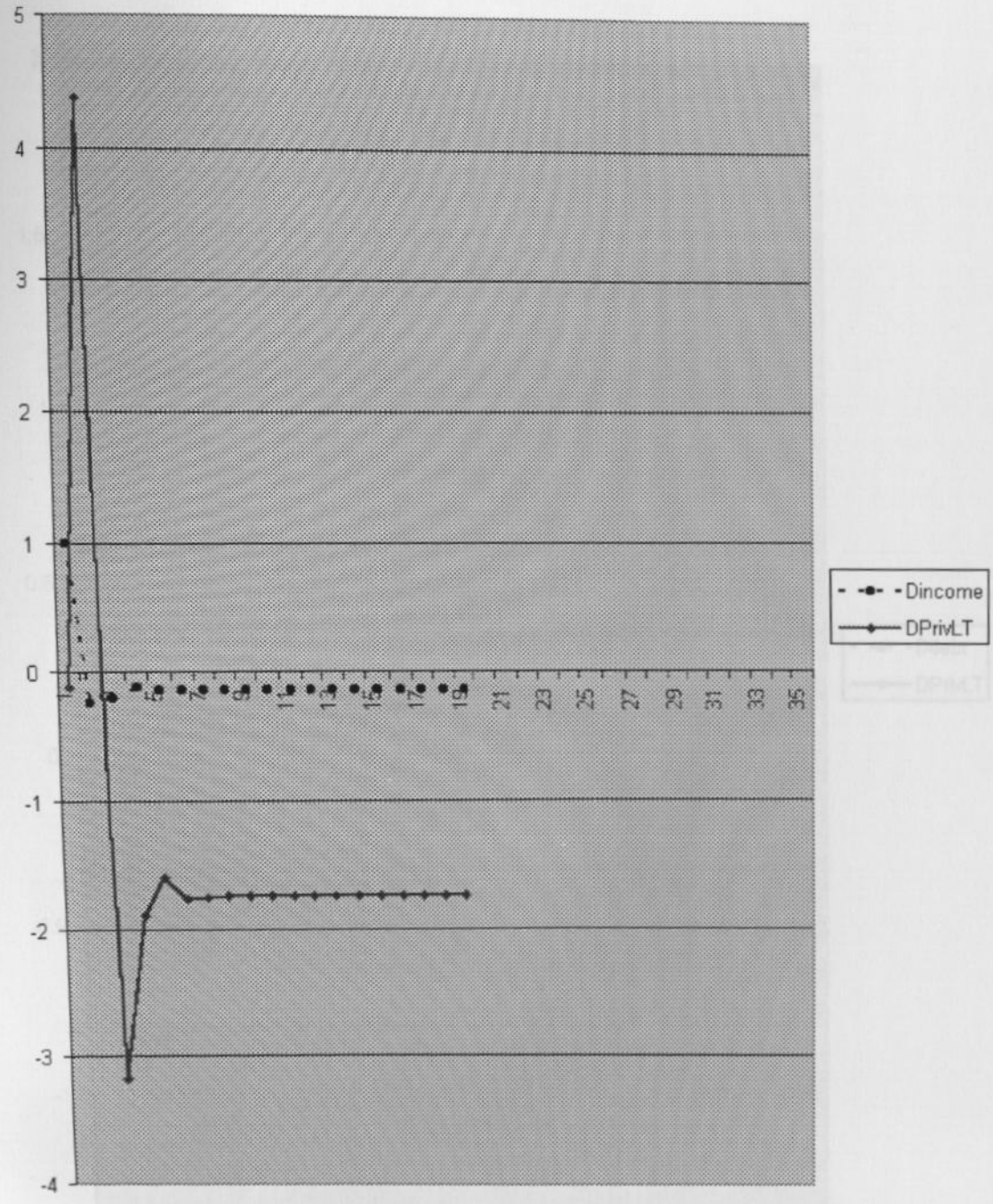


Chart 4.7 : Impulse Response Function of private long-term capital inflows(DPrivLT) to a one-unit shock to debt(DDebt)

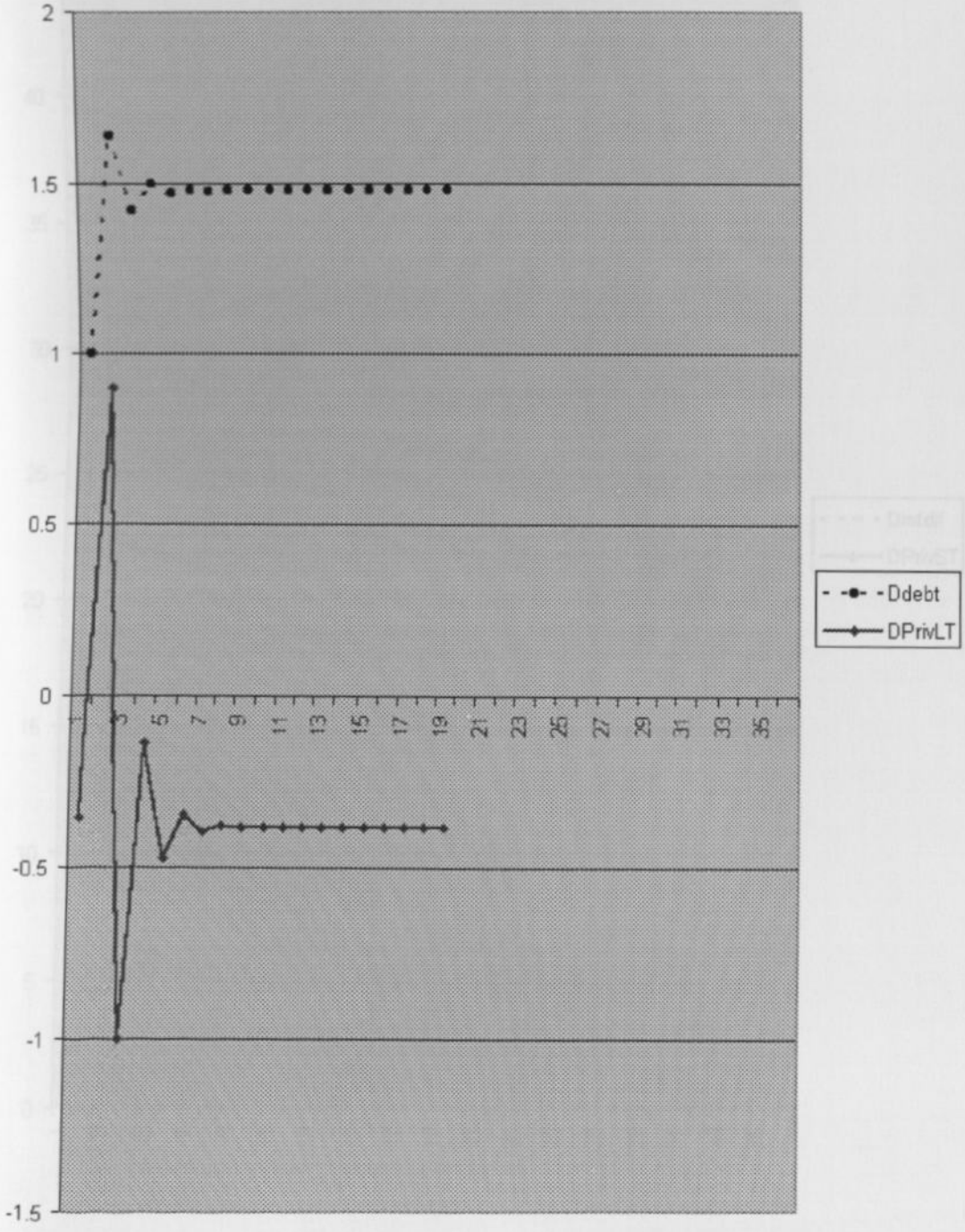


Chart 4.8 : Impulse Response Function of private short-term capital inflows(DPrivST) to a one-unit shock to the domestic-foreign interest rate differential(Dintdif)

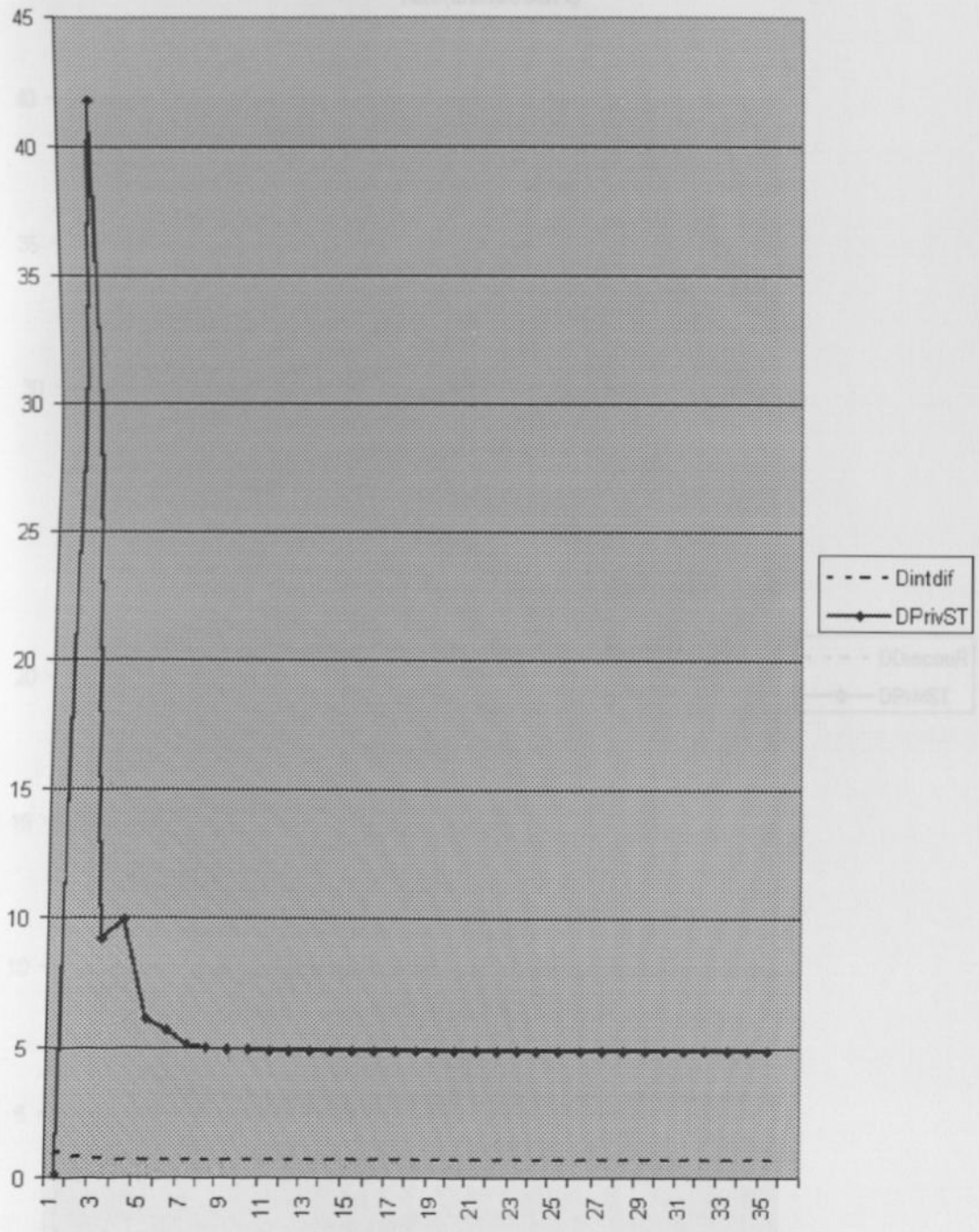


Chart 4.9 : Impulse Response Function of private short-term capital inflows(PrivST) to a one-unit shock to the discount rate(DDiscouR)

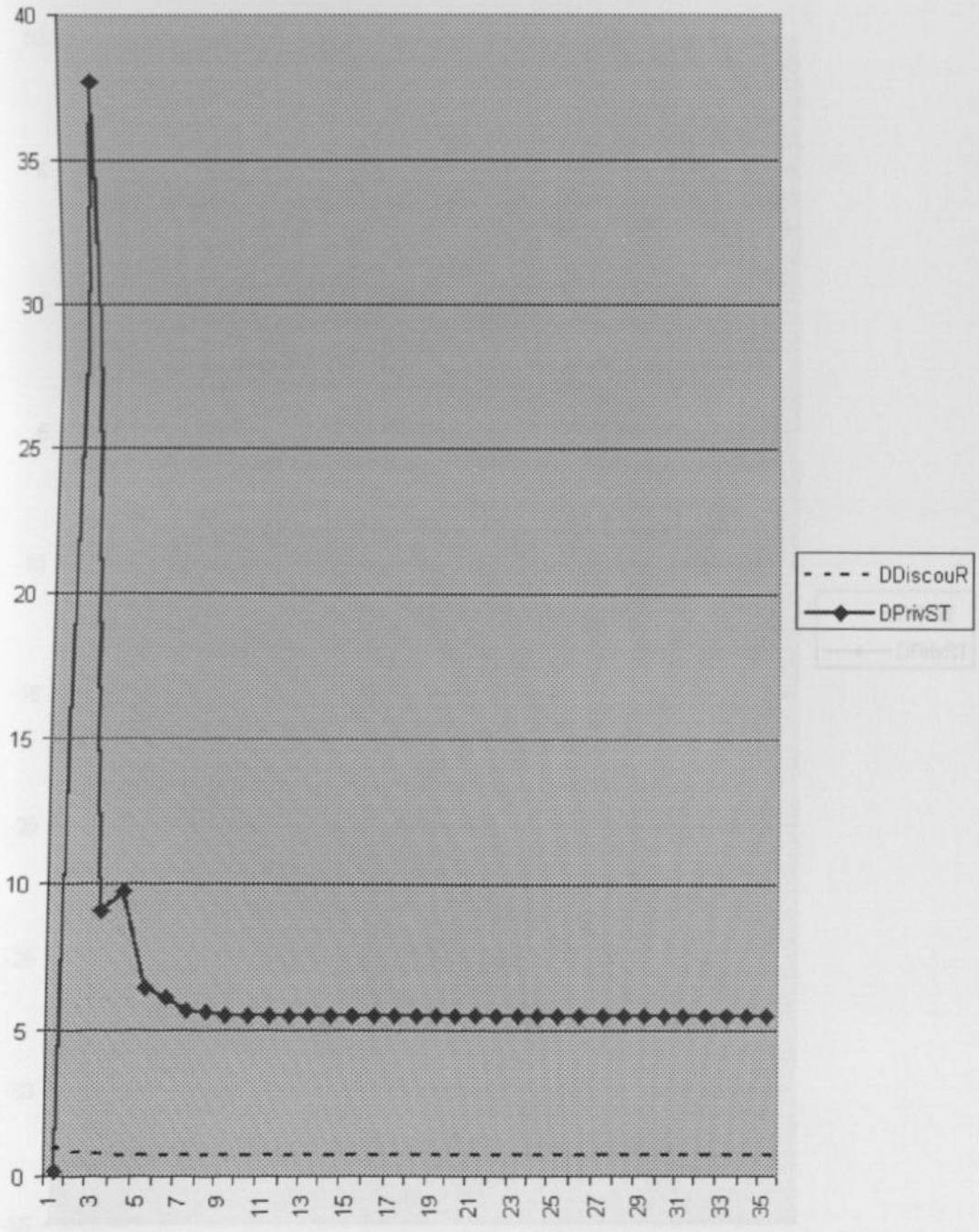


Chart 4.10 : Impulse Response Function of private short-term capital inflows(DPrivST) to a one-unit shock to the current account balance(DCAB)

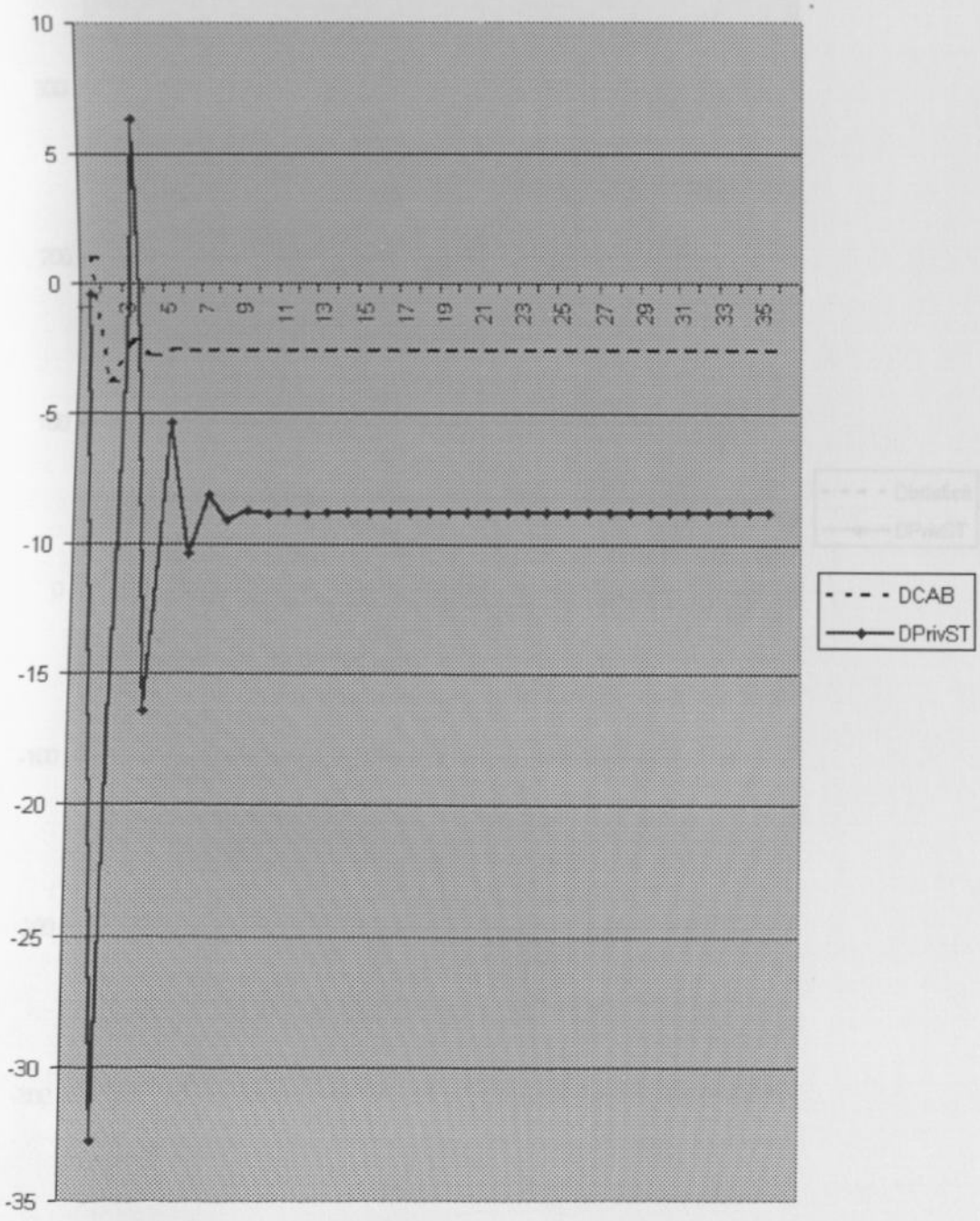


Chart 4.11 : Impulse Response function of private short-term capital inflows(DPrivST) to a one-unit shock to the budget deficit (DBDeficit)

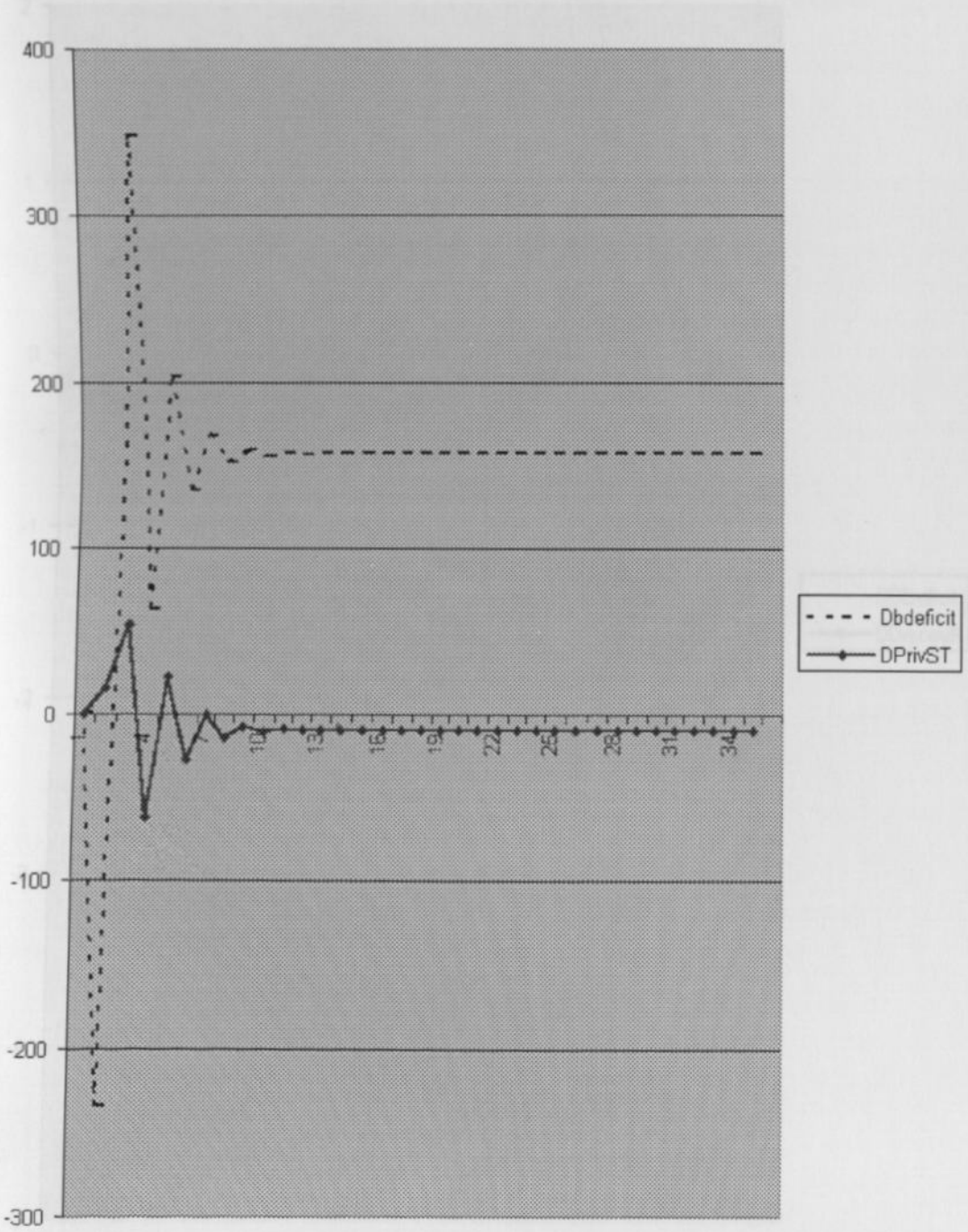


Chart 4.12 : Impulse Response Function of domestic interest rates(DDiscouR) to a one-unit shock to budget deficits(DBDeficit)

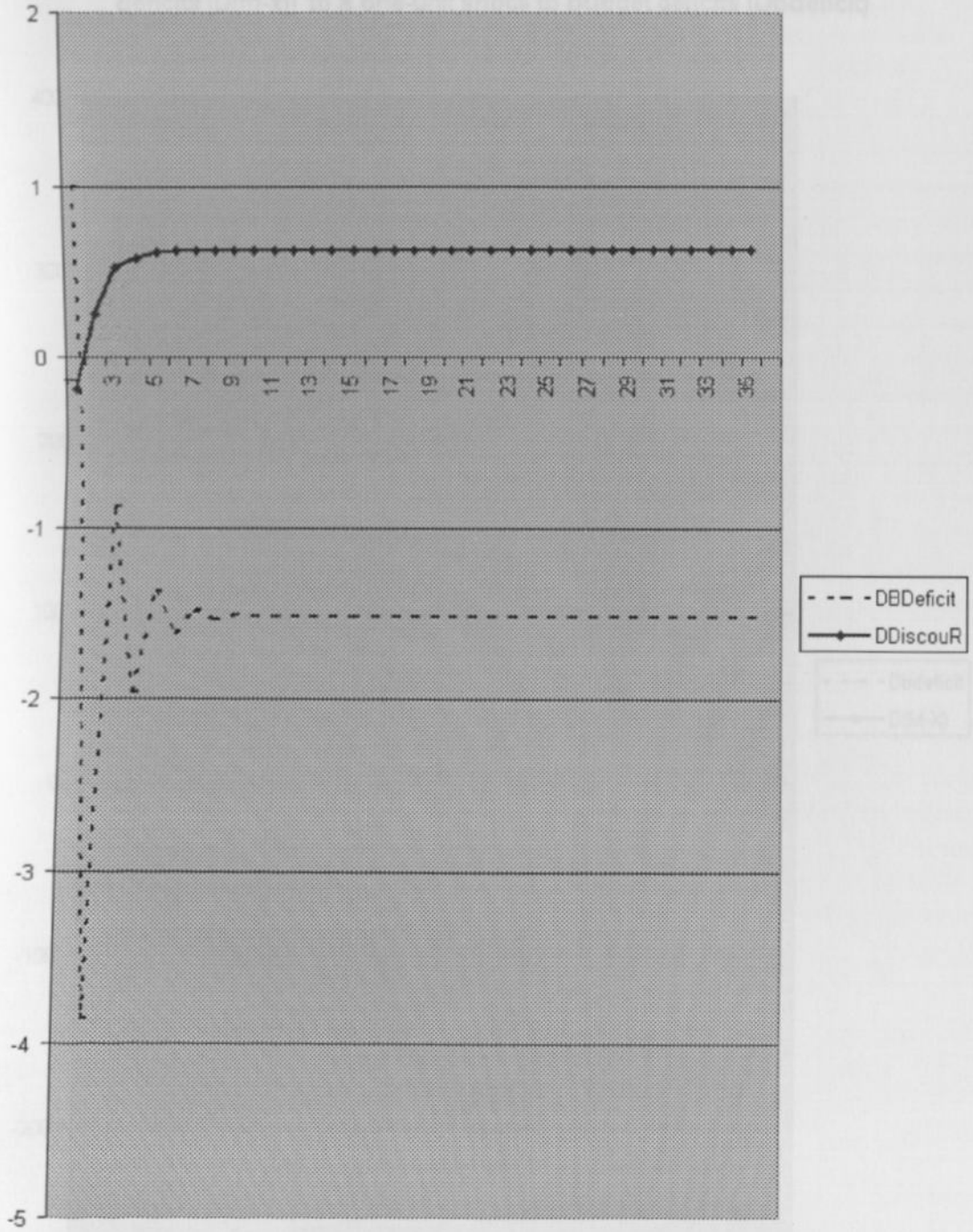
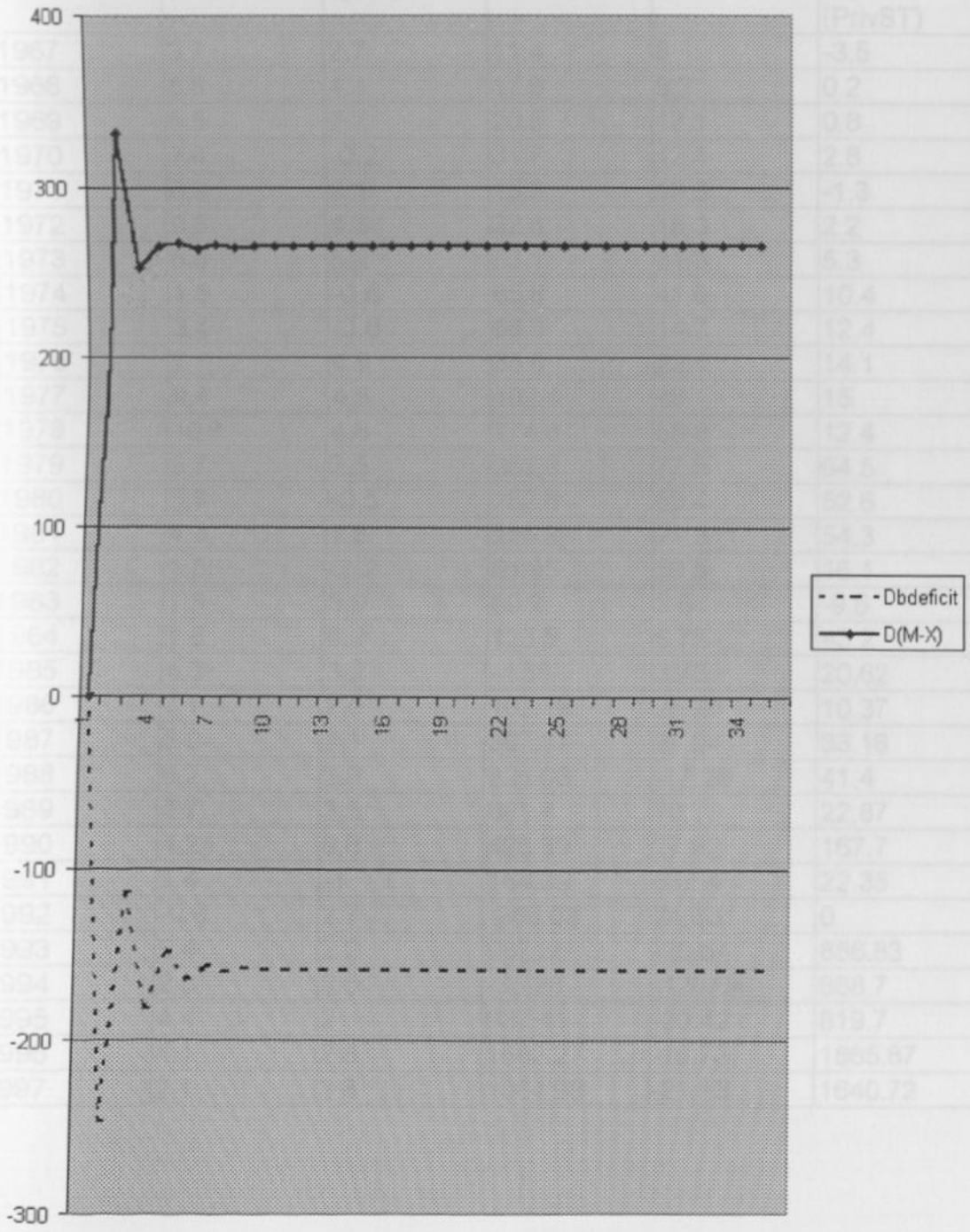


Chart 4.13 : Impulse Response function of current account deficits [D(m-x)] to a one-unit shock to budget deficits (Dbdeficit)



Appendix IV: Data

Table A4.1: **Annual Data Series**

Year	Domestic GDP growth (Income)	US GDP growth (gdpf)	Total capital (capital)	Private long-term capital (PrivLT)	Private short-term capital (PrivST)
1967	3.7	2.7	11.4	8	-3.5
1968	8.6	4.1	17.9	9.2	0.2
1969	5.5	2.7	20.5	12.1	0.8
1970	7.4	-0.2	31.7	12.1	2.8
1971	6.9	3.1	15.3	18.3	-1.3
1972	9.5	4.8	32.8	15.3	2.2
1973	6.8	5.2	53.1	31.3	5.3
1974	1.5	-0.6	85.8	41.6	10.4
1975	3.4	-0.8	68.9	14.7	12.4
1976	7	4.9	88.6	23.1	14.1
1977	9.4	4.5	102.4	48	15
1978	10.8	4.8	174.8	58.8	12.4
1979	3.7	2.5	253.8	77.5	64.5
1980	5.6	-0.5	252.8	55.4	52.6
1981	4.3	1.8	236.3	71.3	54.3
1982	1.5	-2.2	61.95	59.5	16.1
1983	1.3	3.9	69.2	3.6	-9.5
1984	1.8	6.2	125.5	6.75	43.2
1985	4.3	3.2	-4.58	3.75	20.62
1986	7.1	2.9	102.19	25.23	10.37
1987	5.9	3.1	307.17	37.04	33.16
1988	6.2	3.9	326.08	-17.28	41.4
1989	4.7	2.5	681.4	70.79	22.87
1990	4.2	0.8	426.39	77.92	167.7
1991	1.4	-1	164.39	53.54	22.35
1992	-0.8	2.7	-268.03	24.63	0
1993	0.4	2.2	987.38	-25.64	856.83
1994	2.6	3.5	-35.28	-120.64	688.7
1995	4.4	2	637.41	-20.42	819.7
1996	4.1	2.8	1682.27	-16.73	1865.87
1997	2.1	3.8	1064.98	-21.13	1640.72

Table A4.2 : **Annual Data Series**					
Year	Real exchange rates (RER)	Nominal discount rate (NdiscouR)	Nominal deposit rate (NdeposiR)	Nominal treasury rate (NtreasuR)	US treasury rate (USTreasR)
1967	17.68	6.5	3.5		4.33
1968	18.44	6.5	3.5		5.35
1969	19.48	6.5	3.5	3.95	6.69
1970	20.20	6.5	3.5	2	6.44
1971	20.31	6.5	3.5	1.42	4.34
1972	19.70	6.5	3.5	3.45	4.07
1973	18.79	6.5	3.5	1.92	7.03
1974	18.11	6.5	4.32	4.63	7.87
1975	16.99	7	5.13	6.08	5.82
1976	18.43	7	5.13	5.54	4.99
1977	16.92	6.5	5.13	2.13	5.27
1978	14.50	7.5	5.13	4.29	7.22
1979	14.49	7.5	5.13	6.01	10.04
1980	14.32	8	5.75	5.26	11.62
1981	17.26	12.5	8.85	7.61	14.08
1982	18.34	15	12.2	12.58	10.72
1983	20.70	15	13.27	14.15	8.62
1984	21.21	12.5	11.77	13.24	9.57
1985	22.16	12.5	11.25	13.9	7.49
1986	21.28	12.5	11.25	13.23	5.97
1987	20.77	12.5	10.31	12.86	5.83
1988	20.97	16.02	10.33	13.48	6.67
1989	22.57	16.5	12	13.86	8.11
1990	22.92	19.43	13.67	14.78	7.51
1991	23.93	20.27	13.5	16.59	5.41
1992	22.30	20.46	14.8	16.53	3.46
1993	28.35	45.5	22.5	49.8	3.02
1994	21.77	21.5	12.1	23.32	4.27
1995	20.38	24.5	13.6	18.29	5.51
1996	21.41	26.88	17.59	22.25	5.22
1997		.			.

Table A4.3: **Annual Data Series**					
Year	US discount rate (USDiscR)	US inflation (inflf)	Domestic inflation (infd)	Discount rate (DiscouR)	Deposit rate (DeposiR)
1967	4.5	2.8	1.8	4.7	1.7
1968	5.5	4.2	0.4	6.1	3.1
1969	6	5.4	-0.2	6.7	3.7
1970	5.5	5.9	2.2	4.3	1.3
1971	4.5	4.3	3.8	2.7	-0.3
1972	4.5	3.3	5.8	0.7	-2.3
1973	7.5	6.2	9.3	-2.8	-5.8
1974	7.75	11	17.8	-11.3	-13.48
1975	6	9.1	19.1	-12.1	-13.97
1976	5.25	5.7	11.4	-4.4	-6.27
1977	6	6.5	14.8	-8.3	-9.67
1978	9.5	7.6	16.9	-9.4	-11.77
1979	12	11.3	8	-0.5	-2.87
1980	13	13.5	13.9	-5.9	-8.15
1981	12	10.3	11.6	0.9	-2.75
1982	8.5	6.2	20.7	-5.7	-8.5
1983	8.5	3.2	11.4	3.6	1.87
1984	8	4.3	10.3	2.2	1.47
1985	7.5	3.6	13	-0.5	-1.75
1986	5.5	1.9	4.8	7.7	6.45
1987	6	3.7	7.6	4.9	2.71
1988	6.5	4	11.2	4.82	-0.87
1989	7	4.8	12.9	3.6	-0.9
1990	6.5	5.4	15.6	3.83	-1.93
1991	3.5	4.2	19.8	0.47	-6.3
1992	3	3	29.5	-9.04	-14.7
1993	3	3	45.8	-0.3	-23.3
1994	4.75	2.6	29	-7.5	-16.9
1995	5.25	2.8	0.8	23.7	12.8
1996	5	2.9	8.8	18.08	8.79
1997		2.3	12		-12

Table A4.4: **Annual Data Series**

Year	Treasury rate (TreasuR)	US treasury rate (USRTreaR)	US discount rate (USRDiscr)	Exports growth (expg)	Capital formation (capform)
1967		1.53	1.7		20.3
1968		1.15	1.3	3.81	19.2
1969	4.15	1.29	0.6	7.51	19.6
1970	-0.2	0.54	-0.4	12.73	21.9
1971	-2.38	0.04	0.2	2.98	25.3
1972	-2.35	0.77	1.2	14.39	22.1
1973	-7.38	0.83	1.3	29.92	19.9
1974	-13.17	-3.13	-3.25	29.09	28.5
1975	-13.02	-3.28	-3.1	3.69	18.2
1976	-5.86	-0.71	-0.45	48.07	20.2
1977	-12.67	-1.23	-0.5	48.62	23.7
1978	-12.61	-0.38	1.9	-19.44	29.7
1979	-1.99	-1.26	0.7	2.91	22.7
1980	-8.64	-1.88	-0.5	13.56	30
1981	-3.99	3.78	1.7	10.76	28.4
1982	-8.12	4.52	2.3	8.45	21.8
1983	2.75	5.42	5.3	5.10	20.8
1984	2.94	5.27	3.7	32.81	20.7
1985	0.9	3.89	3.9	1.41	25.5
1986	8.43	4.07	3.6	23.75	21.8
1987	5.26	2.13	2.3	-18.86	24.3
1988	2.28	2.67	2.5	20.41	25
1989	0.96	3.31	2.2	4.69	24.7
1990	-0.82	2.11	1.1	18.96	24.3
1991	-3.21	1.21	-0.7	28.29	21.3
1992	-12.97	0.46	0	46.48	16.9
1993	4	0.02	0	75.97	17.6
1994	-5.68	1.67	2.15	9.38	19.3
1995	17.49	2.71	2.45	13.66	21.8
1996	13.45	2.32	2.1	21.46	20.4
1997	-12				19.1

Table A4.5: **Annual Data Series**					
Year	External debt (Debt)	Current account balance (CAB)	Net domestic assets (NDA)	Budget deficits (Bdeficit)	Consumption (consumpt)
1967	14.50	-60.2		-4.5	
1968	13.25	-40.2	1480.23	-3.8	81.5
1969	13.90	-8.1	1498.89	-4.1	79.7
1970	14.58	-49	1905.97	-4.4	79.8
1971	12.92	-111.7	2561.4	-5.6	81.3
1972	13.04	-68.1	2957.24	-5.8	80.1
1973	14.53	-126	3807.15	-6.9	81.4
1974	12.84	-307.9	4838.82	-4	79.1
1975	14.21	-220.2	6151.78	-6.5	86.5
1976	14.76	-120.2	7005.54	-7.7	79.1
1977	12.76	35.1	8788.5	-4.8	72.9
1978	13.39	-661	11989.1	-6.1	80
1979	24.65	-494.6	12808.25	-8.8	83.3
1980	22.25	-877.7	13943.5	-6.8	81.4
1981	24.81	-563.4	18064.01	-9.7	80.6
1982	29.31	-307.9	23343.26	-11.5	81.9
1983	34.17	-50.4	22138.71	-10.3	79.6
1984	39.77	-129.8	24838.41	-4.3	80.6
1985	35.26	-117.6	28293.43	-5.8	75.4
1986	39.91	-46.8	35510.76	-4.4	78.2
1987	41.46	-503	43371.12	-7.5	80.8
1988	41.52	-472.1	47721.89	-4	80.3
1989	35.92	-590.6	55762.83	-4.5	82.7
1990	40.03	-527.1	66796.77	-6.3	80.9
1991	46.74	-213.3	82387.64	-7.3	80
1992	55.64	-180.2	105874.6	-1.9	83
1993	95.91	71.2	104627.9	-3.6	77.6
1994	61.55	97.9	148942.3	-5.5	77.6
1995	62.42	-480.1	185585.4	0.8	84.1
1996	52.28	-166.4	209848.2	-0.9	83.7
1997	0.00				88.6

Table A4.6: **Annual Data Series**

Year	Private long-term capital (PrivLT)	Capital flight (Cflight)	Private long-term capital as a % of GDP (PrivLTr)	Private short-term capital as a % of GDP (PrivSTr)	Total capital as a % of GDP (TCr)
1967	8		1.97	-0.86	2.80
1968	9.2	-12.6	2.09	0.05	4.07
1969	12.1	-5.2	2.55	0.17	4.32
1970	12.1	-15.5	2.36	0.55	6.19
1971	18.3	-15.9	3.21	-0.23	2.68
1972	15.3	-21.7	2.36	0.34	5.06
1973	31.3	-15.2	4.32	0.73	7.33
1974	41.6	-61.7	4.64	1.16	9.57
1975	14.7	-62.9	1.43	1.20	6.69
1976	23.1	-42.3	1.81	1.10	6.93
1977	48	-40.7	2.93	0.91	6.24
1978	58.8	-119.9	3.29	0.69	9.77
1979	77.5	8.3	3.91	3.26	12.82
1980	55.4	-216.4	2.48	2.35	11.31
1981	71.3	26.1	2.75	2.09	9.10
1982	59.5	2.0	2.03	0.55	2.11
1983	3.6	91.2	0.11	-0.28	2.02
1984	6.75	246.7	0.18	1.12	3.26
1985	3.75	-76.1	0.09	0.47	-0.10
1986	25.23	462.8	0.50	0.20	2.01
1987	37.04	67.1	0.66	0.59	5.44
1988	-17.28	-119.4	-0.27	0.64	5.03
1989	70.79	-604.7	0.95	0.31	9.14
1990	77.92	267.1	0.91	1.96	4.99
1991	53.54	853.2	0.56	0.23	1.72
1992	24.63	1478.9	0.22	0.00	-2.44
1993	-25.64	6361.4	-0.18	6.04	6.96
1994	-120.64	-2728.0	-0.71	4.07	-0.21
1995	-20.42	1977.1	-0.10	4.16	3.23
1996	-16.73	-1980.4	-0.07	8.31	7.49
1997	-21.13	4854.7	-0.08	6.37	4.14

Table A4.7: **Annual Data Series**					
Year	Incremental-output capital ratio (IOCR)	Kenya-US GDP differential (gdpdif)	Kenya-US interest rate differential (Intdif)	Incremental output capital ratio in multiples of '0 (IOCR*10)	Change in net domestic assets (DNDA)
1967		1	3		
1968	0.46	4.5	4.8	4.6	
1969	0.31	2.8	6.1	3.1	18.66
1970	0.38	7.6	4.7	3.8	407.08
1971	0.31	3.8	2.5	3.1	655.43
1972	0.41	4.7	-0.5	4.1	395.84
1973	0.31	1.6	-4.1	3.1	849.91
1974	0.07	2.1	-8.05	0.7	1031.67
1975	0.17	4.2	-9	1.7	1312.96
1976	0.35	2.1	-3.95	3.5	853.76
1977	0.45	4.9	-7.8	4.5	1782.96
1978	0.43	6	-11.3	4.3	3200.6
1979	0.16	1.2	-1.2	1.6	819.15
1980	0.24	6.1	-5.4	2.4	1135.25
1981	0.18	2.5	-0.8	1.8	4120.51
1982	0.08	3.7	-8	0.8	5279.25
1983	0.07	-2.6	-1.7	0.7	-1204.55
1984	0.1	-4.4	-1.5	1	2699.7
1985	0.25	1.1	-4.4	2.5	3455.02
1986	0.36	4.2	4.1	3.6	7217.33
1987	0.3	2.8	2.6	3	7860.36
1988	0.31	2.3	2.32	3.1	4350.77
1989	0.24	2.2	1.4	2.4	8040.94
1990	0.2	3.4	2.73	2	11033.94
1991	0.07	2.4	1.17	0.7	15590.87
1992	-0.05	-3.5	-9.04	-0.5	23486.97
1993	0.02	-1.8	-0.3	0.2	-1246.7
1994	0.14	-0.9	-9.65	1.4	44314.36
1995	0.2	2.4	21.25	2	36643.09
1996	0.21	1.3	15.98	2.1	24262.83
1997	0.11	-1.7	0	1.1	-209848

Table A4.8: **Annual Data Series**				
Year	Change in net domestic assets in '00 (DNDA/100)	Change in external debt (Ddebt)	Budget deficits; G-R (BDeficit2)	Private long-term capital in multiples of '0 (PrivLTr*10)
1967			4.5	19.671
1968		-1.25	3.8	20.94193
1969	0.1866	0.66	4.1	25.49354
1970	4.0708	0.68	4.4	23.6093
1971	6.5543	-1.66	5.6	32.10188
1972	3.9584	0.12	5.8	23.59218
1973	8.4991	1.49	6.9	43.18135
1974	10.3167	-1.68	4	46.41303
1975	13.1296	1.37	6.5	14.27781
1976	8.5376	0.55	7.7	18.0737
1977	17.8296	-2.00	4.8	29.2567
1978	32.006	0.64	6.1	32.87837
1979	8.1915	11.25	8.8	39.14893
1980	11.3525	-2.40	6.8	24.78337
1981	41.2051	2.56	9.7	27.45232
1982	52.7925	4.50	11.5	20.29421
1983	-12.0455	4.86	10.3	1.053454
1984	26.997	5.61	4.3	1.752437
1985	34.5502	-4.51	5.8	0.857217
1986	72.1733	4.65	4.4	4.962647
1987	78.6036	1.56	7.5	6.555868
1988	43.5077	0.06	4	-2.66641
1989	80.4094	-5.61	4.5	9.500305
1990	110.3394	4.12	6.3	9.123737
1991	155.9087	6.70	7.3	5.611965
1992	234.8697	8.91	1.9	2.241946
1993	-12.467	40.26	3.6	-1.80749
1994	443.1436	-34.36	5.5	-7.13709
1995	366.4309	0.88	-0.8	-1.03621
1996	242.6283	-10.14	0.9	-0.74532
1997	-2098.48	-52.28	0	-0.82056

Table A4.9: **Monthly Data Series**

Year	month	Treasury rate (Treasur)	Minimum Deposit rate (DeposRmi)	Maximum deposit rate (DeposRma)	Discount rate (Discour)
1992	1	16.3123	13.1	13.25	
1992	2	15.544	13.01	13.58	
1992	3	16.8331	13.18	13.72	
1992	4	16.2698	13.14	13.62	
1992	5	16.8429	12.91	13.42	
1992	6	16.878	13.16	13.71	
1992	7	15.4832	13.15	13.86	
1992	8	17.03	13.13	13.67	
1992	9	16.8682	13.05	13.88	
1992	10	16.8493	13.12	13.71	
1992	11	16.4639	12.85	13.7	
1992	12	16.9643	12.83	13.63	
1993	1	17.1708	12.7	13.6	20.57
1993	2	17.1012	12.83	13.73	20.83
1993	3	34.8087	12.78	13.61	38.31
1993	4	48.94	13.56	15.21	63.5
1993	5	64.88	11.02	15.67	75.68
1993	6	70.64	10.23	16.64	76.5
1993	7	67.97	10.51	17.93	76
1993	8	65.59	10.79	18.83	73
1993	9	61.91	11.48	19.42	68.5
1993	10	60.51	11.2	21.82	64.49
1993	11	48.71	11.08	23.49	44.5
1993	12	39.34	11.29	23.46	45.5
1994	1	23.09	14.03	23.2	27.5
1994	2	23.32	13.63	23.18	28.5
1994	3	28.44	12.39	22.53	32.5
1994	4	28.78	12.78	23.21	32.5
1994	5	29.08	12.06	22.81	33.5
1994	6	30.37	10.31	21.91	34.5
1994	7	26.28	9.98	21.61	30.5
1994	8	20.86	9.73	20.39	25.5
1994	9	22.6	9.6	20.31	26.5
1994	10	13.69	8.95	18.85	18
1994	11	16.59	8.93	15.88	21.5
1994	12	17.9	8.56	15.73	21.5
1995	1	16.92	8.66	15.68	20.5
1995	2	16.95	8.59	15.51	20.5
1995	3	15.44	8.42	14.9	19
1995	4	14.18	6.27	12.15	18
1995	5	15.25	6.37	11.81	19
1995	6	16.1	6.63	11.62	19.75

1995	7	17.94	6.19	11.51	22.25
1995	8	18.78	5.85	11.6	22.75
1995	9	20.85	5.93	12.04	24.75
1995	10	23.5	5.77	11.93	27.5
1995	11	22.65	6.66	11.85	26.15
1995	12	20.9	6.89	12.09	24.5
1996	1	20.8	6.93	12.35	26.5
1996	2	25.89	7.1	12.3	30.5
1996	3	24.05	7.34	13.02	28.5
1996	4	21.15	7.49	12.63	27
1996	5	20.84	7.71	13.6	26.25
1996	6	20.86	7.59	13.74	26
1996	7	20.53	7.61	13.72	25.75
1996	8	20.65	7.55	13.56	26
1996	9	24.27	7.56	13.93	30
1996	10	23.42	7.51	14.05	28.75
1996	11	21.8	7.74	14.21	27
1996	12	21.609	7.96	14.49	26.88

Table A4.10: **Monthly Data Series**

Year	Month	Lending rate (LendingR)	CPI low income	CPI Middle income	CPI High income
1992	1	19.3	203.9	228.9	223.6
1992	2	19.3	205.4	232.6	224.3
1992	3	20.24	224.2	250.8	234
1992	4	19.03	226.4	251.8	235.7
1992	5	20.93	235.1	255.5	239.5
1992	6	21.05	265.7	259.9	244.3
1992	7	21.18	261.8	259.4	246
1992	8	21.15	262.5	261.9	246
1992	9	21.77	267	266.3	250.8
1992	10	22.29	262.6	266.7	251.8
1992	11	22.14	267.1	269.6	254.5
1992	12	22.34	275.1	276.3	262.9
1993	1	22.55	276.2	280.3	265.9
1993	2	22.56	302.4	289.7	270.1
1993	3	22.61	305.7	318.3	309.9
1993	4	23.98	327.7	335.8	330.2
1993	5	26.87	338.8	349.5	356.5
1993	6	28.39	363.3	385.1	385.1
1993	7	30.18	367	397.8	393
1993	8	31.77	381.4	405.4	400.6
1993	9	32.37	411.5	423.1	431.8
1993	10	36.55	409.3	430.6	434.7
1993	11	37.65	414.5	432.2	438.6
1993	12	38.55	418.5	449.1	446.3

1994	1	38.05	445.59	452.7	452.3
1994	2	38.34	463.17	455.6	459.9
1994	3	37.72	473.19	476.4	482
1994	4	38.25	486.58	487.9	483.4
1994	5	37.04	477.63	494.7	504.8
1994	6	36.59	469.96	481.3	495
1994	7	37.52	474.18	482.4	493.1
1994	8	37.79	464.91	486.5	489.8
1994	9	37.51	457.36	479.1	495.9
1994	10	34.19	459.3	484.3	488.2
1994	11	30.95	443.6	487.8	492.4
1994	12	30.93	446.3	476.7	493.2
1995	1	30.11	456.53	483	502.9
1995	2	28.03	462.05	485.8	505.5
1995	3	27.37	465.27	487.9	496.9
1995	4	27.14	462.4	490.1	495.6
1995	5	27.32	467.2	491.8	493.5
1995	6	26.6	465.9	499.6	497
1995	7	26.16	465.9	500.1	498.5
1995	8	28.38	468.29	502.7	503.3
1995	9	29.91	473.88	505.6	509.7
1995	10	30.71	472.03	507.9	516.4
1995	11	32.95	470.08	508.5	515.5
1995	12	33.14	476.25	513.2	519.2
1996	1	27.81	481.96	522.37	522.51
1996	2	27.79	484.57	523.75	522.78
1996	3	28.06	491.37	534.75	540.29
1996	4	27.99	492.55	538.43	544.51
1996	5	28.06	496.01	542.21	544.34
1996	6	28.34	510.73	549.9	530.73
1996	7	28.15	519.35	551.97	552.98
1996	8	28.17	521.29	553.43	554.13
1996	9	28.44	524.02	555.85	556.44
1996	10	28.78	524.24	560.04	563.17
1996	11	28.7	525.32	561.01	564.57
1996	12	28.58	528.52	566.06	576.61

Table A4.11: **Monthly Data Series**

Year	Month	av.CPI	Inflation (inflcpi)	Base money (Mo)	Bank deposits (BankDepo)
1992	1	209.5781		12544.42	3416.12
1992	2	211.5195		12670.77	4752.71
1992	3	229.9848		12642.03	4264.6
1992	4	231.9225		12710.49	3579.32
1992	5	239.4648		12765.28	3050.95
1992	6	263.9956		12725.84	3430.11
1992	7	260.935		13224.1	4292.18
1992	8	261.9951		13285.98	3869.99
1992	9	266.4811		13648.47	5143.54
1992	10	263.2085		14486.99	4960.63
1992	11	267.3327		15530.07	4246.63
1992	12	275.0702		17205.4	5674.76
1993	1	276.82	32.1	16797.89	4607.4
1993	2	299.0028	41.4	16725.21	5251.5
1993	3	308.43	34.1	17249.48	5743.4
1993	4	329.4504	42.1	18031.71	5511.1
1993	5	341.4434	42.6	17835.54	6634.3
1993	6	368.3576	39.5	17774.92	6593.8
1993	7	374.0352	43.3	18590.43	8324
1993	8	386.8576	47.7	18774.32	8256.9
1993	9	414.3913	55.5	18750.35	9395.3
1993	10	414.3359	57.4	18999.67	15842.6
1993	11	418.7536	56.6	20638.61	12955
1993	12	425.5348	54.7	21354.95	17355
1994	1	447.2303	61.6	21031.88	20530
1994	2	461.5127	54.4	21269.03	20004
1994	3	474.0635	53.7	21832.95	21341
1994	4	486.7827	47.8	21427.8	28246
1994	5	481.8225	41.1	20635.39	21959
1994	6	472.906	28.4	20437.69	17474
1994	7	476.3331	27.3	20954.98	21167
1994	8	469.9948	21.5	21575.91	22051
1994	9	462.7901	11.7	21625.05	20813
1994	10	465.1897	12.3	21859.68	22190
1994	11	453.9602	8.4	25776.54	24151
1994	12	453.7323	6.6	24816.94	26152
1995	1	463.1287	3.6	24160.56	24559
1995	2	468.0131	1.4	24815.06	23952
1995	3	470.7272	-0.7	24889.75	23610
1995	4	468.9529	-3.7	25094.62	26868
1995	5	472.9463	-1.8	24974.64	24514
1995	6	473.6586	0.2	25899.79	23900

1995	7	473.7976	-0.5	26008.16	26122
1995	8	476.2869	1.3	26689.24	27379
1995	9	481.3333	4.0	26489.51	29352
1995	10	480.5473	3.3	26469.97	30229
1995	11	479.1544	5.5	28168.78	34315
1995	12	484.9604	6.9	28890.93	37206
1996	1	491.3383	6.1	27935.87	36621
1996	2	493.6375	5.5	28540.17	37379
1996	3	501.5616	6.6	28805.57	35951
1996	4	503.334	7.3	28428.75	40114
1996	5	506.7774	7.2	28524.04	37231
1996	6	519.3765	9.7	28796.24	36543
1996	7	526.9411	11.2	28869.08	41178
1996	8	528.7626	11.0	29389.29	39580
1996	9	531.4181	10.4	27814.14	41292
1996	10	532.6176	10.8	28478.78	40699
1996	11	533.682	11.4	30340.56	42226
1996	12	537.4719	10.8	30390.03	40654

Table A4.12 : **Monthly Data Series**

Year	month	Budget deficit (Bdeficit)	Domestic debt (Debt)	Inflation	CPI (CPIifs)
1992	1		64970	12.1	178.8
1992	2		68220	12.2	179.3
1992	3		61319	16.4	187.8
1992	4		63192	23.2	
1992	5		64095	24	
1992	6		63037	35.4	271.9
1992	7		63927	35.9	267.9
1992	8		64894	35.7	268.5
1992	9		65142	35	273.1
1992	10		64658	29.3	
1992	11		62707	30.6	273.2
1992	12		64831	33.6	281.4
1993	1	-5164.7	65944	28.6	284.9
1993	2	-1221.7	65623	30.9	311.9
1993	3	3044.4	75355	31.9	315.4
1993	4	5288.9	92149	33.5	338
1993	5	-7787.4	102298	35	349.4
1993	6	-1577.1	103620	35	374.8
1993	7	1081.4	109538	36.2	378.6
1993	8	-480.6	113650	37.5	393.5
1993	9	5224.8	115428	39.4	418.6
1993	10	918.7	121188	41.67	422.2
1993	11	931.8	121233	43.81	427.6

1993	12	3015.4	146565	45.52	430.4
1994	1	335.78	175832	48.35	280.7
1994	2	866.96	99495	49.39	291.8
1994	3	1615.88	102302	50.89	298.1
1994	4	5449.32	100932	51.2	306.5
1994	5	-1873.29	105028	50.79	300.9
1994	6	2830.13	103153	49.37	296
1994	7	526.04	104902	47.53	298.7
1994	8	2115.04	112177	44.84	292.9
1994	9	-1736.78	111911	40.85	288.1
1994	10	774.26	114916	36.85	289.4
1994	11	882.9	115953	32.76	279.4
1994	12	2376.56	115489	28.82	281.1
1995	1	5229.75	117358	24.3	287.6
1995	2	1534.16	115970	20.1	291.1
1995	3	6201.41	114188	16	293.1
1995	4	-4021.58	117040	12	291.3
1995	5	-3609.81	112985	8.7	294.3
1995	6	9908	111406	6.6	293.5
1995	7	-6453.17	115135	4.5	293.5
1995	8	1587.12	115755	3	295
1995	9	5103.65	112337	2.4	298.5
1995	10	-6313.33	119254	1.7	297.4
1995	11	-2462.55	122013	1.5	296.1
1995	12	-992.57	118576	1.6	300
1996	1	2874.73	113600	1.8	303.6
1996	2	4643.29	117095	2.2	305.3
1996	3	-3953.59	116343	2.8	309.6
1996	4	-3572.86	119681	7.3	310.3
1996	5	-529.75	119279	4.4	312.5
1996	6	3866.79	110547	5.3	321.7
1996	7	-5392.35	119879	6.2	327.2
1996	8	1770.75	120392	7.1	328.4
1996	9	6021.94	122460	7.6	330.1
1996	10	-6082.81	120340	8.4	330.3
1996	11	1750.82	121717	8.7	330.9
1996	12	6146.2	118221	9.1	333

Table A4.13: **Monthly Data Series**					
Year	month	US Cpi (Uscpi)	LIBOR	US treasury rate (UsTreasur)	US discount rate (Usdiscour)
1992	1	128.3	4.19		
1992	2	128.8	4.16		
1992	3	129.5	4.34		
1992	4	129.6	4.09		
1992	5	129.8	3.97		
1992	6	130.3	3.93		
1992	7	130.6	3.13		
1992	8	130.9	3.4		
1992	9	131.3	3.27		
1992	10	131.8	3.23		
1992	11	132	3.32		
1992	12	131.9	3.68		
1993	1	132.5	3.2	3.06	3
1993	2	133	3	2.95	3
1993	3	133.5	3.19	2.97	3
1993	4	133.8	2.87	2.89	3
1993	5	134	3.14	2.96	3
1993	6	134.2	3.22	3.1	3
1993	7	134.2	3.17	3.05	3
1993	8	134.6	3.19	3.05	3
1993	9	134.9	3.17	2.96	3
1993	10	135.4	3.19	3.04	3
1993	11	135.5	3.2	3.12	3
1993	12	135.5	3.33	3.08	3
1994	1	111.9	3.15	3.02	3
1994	2	112.3	3.38	3.21	3
1994	3	111.7	3.62	3.52	3
1994	4	112.8	3.84	3.74	3
1994	5	112.9	4.33	4.19	3.24
1994	6	113.3	4.38	4.18	3.5
1994	7	113.6	4.56	4.39	3.5
1994	8	114	4.69	4.5	3.76
1994	9	114.3	4.92	4.64	4
1994	10	114.4	5.07	4.96	4
1994	11	114.6	5.48	5.25	4.4
1994	12	114.6	6.08	5.64	4.75
1995	1	115	5.93	5.81	4.75
1995	2	115.5	6.12	5.8	5.25
1995	3	115.9	6.13	5.73	5.25
1995	4	116.3	6.11	5.67	5.25
1995	5	116.5	6.06	5.7	5.25
1995	6	116.7	6.06	5.5	5.25

1995	7	116.7	5.92	5.47	5.25
1995	8	117	5.89	5.41	5.25
1995	9	117.3	5.86	5.26	5.25
1995	10	117.6	5.87	5.3	5.25
1995	11	117.6	5.83	5.35	5.25
1995	12	117.5	5.86	5.16	5.25
1996	1	118.2	5.57	5.02	5.24
1996	2	118.6	5.33	4.87	5
1996	3	119.2	5.38	4.96	5
1996	4	119.6	5.4	4.99	5
1996	5	119.9	5.43	5.02	5
1996	6	119.9	5.46	5.11	5
1996	7	120.2	5.46	5.17	5
1996	8	120.4	5.41	5.09	5
1996	9	120.8	5.45	5.15	5
1996	10	121.2	5.35	5.01	5
1996	11	121.4	5.36	5.03	5
1996	12	121.4	5.64	5	5

Table A4.14: **Monthly Data Series**

Year	month	Government revenue (govtrev)	Government expenditure (govtexp)	Exchange rate (exchR)	Real lending rate (RlendR)
1992	1				
1992	2				
1992	3				
1992	4				
1992	5				
1992	6				
1992	7				
1992	8				
1992	9				
1992	10				
1992	11				
1992	12				
1993	1	6868.9	12033.6	35.922	-6.05
1993	2	11950.6	13172.3	36.456	-8.34
1993	3	7719.5	4675	45.528	-9.29
1993	4	11412.6	6123.7	59.866	-9.52
1993	5	9351.3	17138.7	63.179	-8.13
1993	6	10933	12510.1	65.142	-6.61
1993	7	4628.2	3546.8	65.253	-6.02
1993	8	7873.5	8354.1	65.56	-5.73
1993	9	54683.3	49458.5	66.962	-7.03
1993	10	6730.4	5811.6	69.064	-5.12
1993	11	10272.9	9341.1	68.749	-6.16

1993	12	11143.4	8127.9	68.163	-6.97
1994	1	6240.61	5904.83	67.666	-10.3
1994	2	9923.99	9057.03	67.125	-11.05
1994	3	15894.15	14278.27	64.858	-13.17
1994	4	11151.57	5702.25	60.77	-12.95
1994	5	11548.96	13422.25	56.459	-13.75
1994	6	15171.38	12341.25	55.959	-12.78
1994	7	5395.96	4869.72	55.908	-10.01
1994	8	8030.24	5915.2	54.813	-7.05
1994	9	15802.14	17538.92	48.007	-3.34
1994	10	8536.23	7761.97	41.268	-2.66
1994	11	9529.24	8646.34	45.948	-1.81
1994	12	11601.34	9224.78	44.839	2.11
1995	1	13816.3	8586.55	44.467	5.81
1995	2	10282.27	8748.11	44.436	7.93
1995	3	17458.73	11257.32	43.552	11.37
1995	4	8618.85	12640.43	45.887	15.14
1995	5	11255.31	14865.12	54.039	18.62
1995	6	19669.99	9761.99	54.628	20
1995	7	5902.16	12355.33	55.833	21.66
1995	8	11676.3	10089.18	55.317	25.38
1995	9	17150.81	12047.16	55.472	27.51
1995	10	6381.95	12695.28	55.497	29.01
1995	11	10271.49	12734.04	55.578	31.45
1995	12	11305.74	12298.31	55.939	31.54
1996	1	12961.11	10086.38	59.533	26.01
1996	2	14562.62	9919.33	58.393	25.59
1996	3	13318.57	17272.16	58.389	25.26
1996	4	8466.2	12039.06	58.333	20.69
1996	5	15939.29	16469.04	58.199	23.66
1996	6	23473.4	19606.61	57.417	23.04
1996	7	6430.34	11822.69	57.237	21.95
1996	8	9851.96	8081.21	56.922	21.07
1996	9	16865.61	10843.67	56.111	20.84
1996	10	12886.18	18968.99	55.694	20.38
1996	11	11256.48	9505.66	55.401	20
1996	12	13234.96	7088.76	55.021	19.48

Table A4.15: **Monthly Data Series**					
Year	month	Real treasury rate (Rtreasur)	Real discount rate (RdiscouR)	Real deposit rate (RdeposiR)	US CPI (uscpi)
1992	1				128.3
1992	2				128.8
1992	3				129.5
1992	4				129.6
1992	5				129.8
1992	6				130.3
1992	7				130.6
1992	8				130.9
1992	9				131.3
1992	10				131.8
1992	11				132
1992	12				131.9
1993	1	-11.43	-8.03	-15	132.5
1993	2	-13.80	-10.07	-17.17	133
1993	3	2.91	6.41	-18.29	133.5
1993	4	15.44	30	-18.29	133.8
1993	5	29.88	40.68	-19.33	134
1993	6	35.64	41.5	-18.36	134.2
1993	7	31.77	39.8	-18.27	134.2
1993	8	28.09	35.5	-18.67	134.6
1993	9	22.51	29.1	-19.98	134.9
1993	10	18.84	22.82	-19.85	135.4
1993	11	4.90	0.69	-20.32	135.5
1993	12	-6.18	-0.02	-22.06	135.5
1994	1	-25.26	-20.85	-25.15	111.9
1994	2	-26.07	-20.89	-26.21	112.3
1994	3	-22.45	-18.39	-28.36	111.7
1994	4	-22.42	-18.7	-27.99	112.8
1994	5	-21.71	-17.29	-27.98	112.9
1994	6	-19.00	-14.87	-27.46	113.3
1994	7	-21.25	-17.03	-25.92	113.6
1994	8	-23.98	-19.34	-24.45	114
1994	9	-18.25	-14.35	-20.54	114.3
1994	10	-23.16	-18.85	-18	114.4
1994	11	-16.17	-11.26	-16.88	114.6
1994	12	-10.92	-7.32	-13.09	114.6
1995	1	-7.38	-3.8	-8.62	115
1995	2	-3.15	0.4	-4.59	115.5
1995	3	-0.56	3	-1.1	115.9
1995	4	2.18	6	0.15	116.3
1995	5	6.55	10.3	3.11	116.5
1995	6	9.50	13.15	5.02	116.7

1995	7	13.44	17.75	7.01	116.7
1995	8	15.78	19.75	8.6	117
1995	9	18.45	22.35	9.64	117.3
1995	10	21.80	25.8	10.23	117.6
1995	11	21.15	24.65	10.35	117.6
1995	12	19.30	22.9	10.49	117.5
1996	1	19.00	24.7	10.55	118.2
1996	2	23.69	28.3	10.1	118.6
1996	3	21.25	25.7	10.22	119.2
1996	4	13.85	19.7	5.33	119.6
1996	5	16.44	21.85	9.2	119.9
1996	6	15.56	20.7	8.44	119.9
1996	7	14.33	19.55	7.52	120.2
1996	8	13.55	18.9	6.46	120.4
1996	9	16.67	22.4	6.33	120.8
1996	10	15.02	20.35	5.65	121.2
1996	11	13.10	18.3	5.51	121.4
1996	12	12.51	17.78	5.39	121.4

Table A4.16: **Monthly Data Series**

Year	Month			U.S CPI (SPLuscpi)	US inflation (Usinflcpi)
1992	1	105.954	128.3	105.954	
1992	2	106.3669	128.8	106.3669	
1992	3	106.945	129.5	106.945	
1992	4	107.0276	129.6	107.0276	
1992	5	107.1928	129.8	107.1928	
1992	6	107.6057	130.3	107.6057	
1992	7	107.8534	130.6	107.8534	
1992	8	108.1012	130.9	108.1012	
1992	9	108.4315	131.3	108.4315	
1992	10	108.8444	131.8	108.8444	
1992	11	109.0096	132	109.0096	
1992	12	108.927	131.9	108.927	
1993	1	109.4225	132.5	109.4225	3.3
1993	2	109.8354	133	109.8354	3.3
1993	3	110.2483	133.5	110.2483	3.1
1993	4	110.4961	133.8	110.4961	3.2
1993	5	110.6613	134	110.6613	3.2
1993	6	110.8264	134.2	110.8264	3.0
1993	7	110.8264	134.2	110.8264	2.8
1993	8	111.1568	134.6	111.1568	2.8
1993	9	111.4045	134.9	111.4045	2.7
1993	10	111.8174	135.4	111.8174	2.7
1993	11	111.9	135.5	111.9	2.7

1993	12	111.9	135.5	111.9	2.7
1994	1	112.3		112.3	2.6
1994	2	111.7		111.7	1.7
1994	3	112.8		112.8	2.3
1994	4	112.9		112.9	2.2
1994	5	113.3		113.3	2.4
1994	6	113.6		113.6	2.5
1994	7	114		114	2.9
1994	8	114.3		114.3	2.8
1994	9	114.4		114.4	2.7
1994	10	114.6		114.6	2.5
1994	11	114.6		114.6	2.4
1994	12	115		115	2.8
1995	1	115.5		115.5	2.8
1995	2	115.9		115.9	3.8
1995	3	116.3		116.3	3.1
1995	4	116.5		116.5	3.2
1995	5	116.7		116.7	3.0
1995	6	116.7		116.7	2.7
1995	7	117		117	2.6
1995	8	117.3		117.3	2.6
1995	9	117.6		117.6	2.8
1995	10	117.6		117.6	2.6
1995	11	117.5		117.5	2.5
1995	12	118.2		118.2	2.8
1996	1	118.6		118.6	2.7
1996	2	119.2		119.2	2.8
1996	3	119.6		119.6	2.8
1996	4	119.9		119.9	2.9
1996	5	119.9		119.9	2.7
1996	6	120.2		120.2	3.0
1996	7	120.4		120.4	2.9
1996	8	120.8		120.8	3.0
1996	9	121.2		121.2	3.1
1996	10	121.4		121.4	3.2
1996	11	121.4		121.4	3.3
1996	12	121.8		121.8	3.0

Table A4.17: **Monthly Data Series**					
Year	Month	US Treasury rate	US Discount rate	RER	Kenya-US interest (discount) rate differential
1992	1				
1992	2				
1992	3				
1992	4				
1992	5				
1992	6				
1992	7				
1992	8				
1992	9				
1992	10				
1992	11				
1992	12				
1993	1	-0.2	-0.3	16.7	-7.8
1993	2	-0.3	-0.3	15.5	-9.8
1993	3	-0.1	-0.1	19.3	6.5
1993	4	-0.4	-0.2	23.7	30.2
1993	5	-0.3	-0.2	24.2	40.9
1993	6	0.1	0.0	23.3	41.5
1993	7	0.3	0.2	23.1	39.6
1993	8	0.2	0.2	22.4	35.3
1993	9	0.2	0.3	21.6	28.8
1993	10	0.3	0.3	22.1	22.6
1993	11	0.5	0.3	21.8	0.3
1993	12	0.4	0.3	21.5	-0.3
1994	1	0.4	0.4	27.0	-21.2
1994	2	1.5	1.3	25.8	-22.2
1994	3	1.2	0.7	24.3	-19.1
1994	4	1.6	0.8	22.4	-19.5
1994	5	1.8	0.9	21.2	-18.1
1994	6	1.7	1.0	21.4	-15.9
1994	7	1.5	0.6	21.3	-17.7
1994	8	1.7	0.9	21.3	-20.3
1994	9	2.0	1.3	19.0	-15.7
1994	10	2.5	1.5	16.3	-20.4
1994	11	2.8	2.0	18.8	-13.2
1994	12	2.9	2.0	18.3	-9.3
1995	1	3.0	1.9	17.8	-5.7
1995	2	2.0	1.5	17.6	-1.1
1995	3	2.6	2.1	17.2	0.9
1995	4	2.5	2.1	18.3	3.9
1995	5	2.7	2.2	21.4	8.1
1995	6	2.8	2.5	21.7	10.6

1995	7	2.8	2.6	22.2	15.1
1995	8	2.8	2.6	21.9	17.1
1995	9	2.5	2.5	21.8	19.9
1995	10	2.7	2.6	21.9	23.2
1995	11	2.8	2.7	22.1	21.9
1995	12	2.4	2.5	21.9	20.4
1996	1	2.3	2.6	23.2	22.1
1996	2	2.0	2.2	22.7	26.1
1996	3	2.1	2.2	22.5	23.5
1996	4	2.1	2.1	22.5	17.6
1996	5	2.3	2.3	22.3	19.6
1996	6	2.1	2.0	21.4	18.7
1996	7	2.3	2.1	21.0	17.5
1996	8	2.1	2.0	20.9	16.9
1996	9	2.1	1.9	20.5	20.5
1996	10	1.8	1.8	20.4	18.6
1996	11	1.7	1.7	20.3	16.6
1996	12	2.0	2.0	20.1	15.8

Table A4.18: **Total Capital & Financial Account for Kenya, Uganda, Tanzania**

Year	Kenya	Uganda	Tanzania
1967			
1968			
1969			
1970	94	-22	15
1971	41	41	87
1972	92	-12	116
1973	148	-52	139
1974	220	-15	141
1975	181	28	180
1976	210	-43	56
1977	243	-46	204
1978	442	71	227
1979	572	-79	174
1980	516	-131	291
1981	258	-128	321
1982	148	-10	252
1983	148	-9	217
1984	191	-37	138
1985	66	29	-112
1986	184	16	-31
1987	478	58	116
1988	428	158	-27
1989	713	175	8
1990	435	221	433
1991	169	138	475
1992	-77	124	510
1993	341	99	473
1994	-36	145	292
1995	200	288	288
1996	436	243	257
1997		353	421