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**CAPITAL FLOWS: SAVINGS AND INVESTMENT
IN COLOMBIA, 1990-1995***

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CAPITAL FLOWS, SAVINGS AND INVESTMENT IN COLOMBIA, 1990-1995*

Economic performance in Colombia in the 1990s has been determined by a complex interaction of structural reforms, major shifts in macroeconomic policy and external shocks in the capital account. External capital flows have played a major role in the evolution of macroeconomic variables, particularly on savings and investment performance. This paper analyzes the nature of capital flows, the effects of macroeconomic policies aimed at affecting the size and composition of such flows, and their relation to the evolution of savings and investment. It is divided in three sections. The first briefly reviews macroeconomic events. The second takes a closer look at the evolution and determinants of capital flows. The third considers the links between capital flows, savings and investment performance. A fourth section on domestic financial flows may be added in a later version of the paper, if statistics are up to date.

1. Macroeconomic events in the 1990s

The early 1990s were characterized by major shifts in the pattern of growth which Colombia had been experiencing in the second half of the 1980s. The major elements of macroeconomic policy adopted in the mid-1980s were a weak currency, a return to orthodox fiscal management and reduced reliance on external financing. The fiscal and current account deficits of the first half of the decade were back into control and, indeed, the economy started to run balance of payment surpluses in some years. Accelerated by the short-lived coffee boom of 1986, moderate economic growth returned, led by tradable sectors. Despite high tariff and non-tariff protection, non-traditional exports boomed. The export boom was supported by

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the development of major oil, coal mineral deposits. At the end of the export boom, in 1991, exports of goods and services had reached 22.7% of GDP vs. an average of 14.9% in 1980-1985. Exports of goods had significantly diversified: from 1985 to 1991 the share of coffee exports declined from 49.3 to 18.4%, as that of non-traditional exports increased from 32.1 to 49.1% and that of mineral exports also expanded from 18.6 to 32.6% (see Tables 1 and 2, and Figure 1).

The major flaws of this process was the resilience of domestic inflation. Moreover, towards the end of the decade, growth tended to slow down. Dissatisfaction with macroeconomic performance and the demonstration effects of similar policies in other countries led to the wave of structural reforms adopted at the end of the Barco Administration (August 1986-August 1990) and the early part of the Gaviria Administration (August 1990-August 1994). Parallel events had led to major reforms in the political arena, which were particularly reflected in the drafting of a new Constitution in 1991, which had also important implications in the economic reforms underway.

In the external area, this process included a major trade and direct foreign investment liberalization, and a reform of the foreign exchange regime. It was complemented in the domestic area by the creation of an independent central bank, a reform of the domestic financial system aimed at increasing competition, rapid fiscal decentralization -accelerating in this case a process which had been unleashed by the Betancour Administration (August 1982-August 1986)-, a modest privatization process, and a moderate reform of the labor regime and a more ambitious reform of the social security system. Contrary to international patterns, this process was accompanied by a significant expansion of public expenditure, largely associated to the new fiscal responsibilities in the judicial and social areas, and the rapid increased in transfers to the regions for social expenditure, all of them

decreed by the 1991 Constitution and the laws which implemented it, but also to increased expenditures in the armed forces during the Gaviria Administration. This pattern of reforms has continued since August 1994 under the Samper Administration and indeed have tended to accelerate in the area of private participation in areas traditionally reserved to the State; since mid-1995 a still incomplete attempt has been made to slow down the growth of public expenditure.

Macroeconomic policy has been subject to significant changes over the period. The evolution of major policy variables and performance indicators can be followed with the help of Tables 1 and 2 and Figures 1 to 3. Five major phases of economic policy can be differentiated since the beginning of the decade.

Phase I: Since mid-1989 nominal devaluation had accelerated in response to the collapse of the International Coffee Agreement and as a preparation for trade liberalization. Trade liberalization was initiated by the Barco Administration in February 1990; the virtual elimination of non-tariff barriers was decreed by the Gaviria Administration in November 1990, when a three-year tariff reduction schedule was announced. With moderate growth (4.3% in 1990), particularly in non-tradable activities, inflation accelerated, reaching 32.4% by the end of 1990. By then, there was a fairly general consensus on the fact that exchange rate undervaluation was the critical factor behind poor inflation performance.

Phase II: As a response to rising inflation, a drastic stabilization policy was implemented in December 1990/January 1991. The three basic elements of this policy were massive open market operations, 100% marginal reserve requirements on most deposits in the financial system and a reduction in the rate of crawl of the peso. Central government finances also became moderately contractionary, no doubt facilitated by the 1990 tax reform, which increased the VAT rate from 10 to 12%. Real interest rates

increased, led by those of Banco de la República open market operations; real domestic credit decreased; domestic demand came to a standstill, inducing a "Colombian-type" recession; and inflation declined with a lag.

However, monetary control had self-defeating elements. It was argued, in particular, that high domestic interest rates, together with the slowdown in the rate of devaluation, generated massive incentives to capital inflows, which entered the country despite the foreign exchange controls of the period. It was further claimed that the amnesty on foreign exchange holdings decreed in the 1990 tax reform facilitated the repatriation of capitals held abroad, which were illegal according to previous exchange controls. Equally important was the fact that exchange rate undervaluation was being corrected as a slow rate and imports declined as a result of domestic recession¹; both factors led to a rapid increase in the current account surplus, which reached 3.0% of GDP in 1991 (probably overstated as a result of capital inflows filtered through the trade and service accounts). In any case, reserve accumulation accelerated and monetary control was only possible at the cost of massive sterilization, which increased the domestic liabilities of Banco de la República associated to open market operations to unprecedented levels (6.3% by the end of 1991 vs. 2.3% one year earlier); due to interest payments on such liabilities, the quasi-fiscal deficit increased with a lag.

As an attempt to face the growing difficulties of the stabilization process, in June 1991, the authorities resorted to a mechanism which had been used in previous periods of foreign exchange booms: it was determined that foreign exchange certificates could only be redeemed three months after they were

¹ It was also claimed that the announced tariff reduction was in fact generating incentives to postpone imports. I have argued elsewhere, however, that this factor was secondary to that of domestic inflation on the demand for imports (Ocampo, 1993).

issued; however, the central bank could purchase them immediately at a 10% discount. Under the system which prevailed until January 1994, these certificates were issued by Banco de la República when it bought foreign exchange. The increase in the redemption period had two effects: first of all, it immediately reduced the price of the certificates, which was an implicit exchange rate appreciation; secondly, it forced some domestic agents to hold the certificates, which was equivalent to an open market operation. Thus, the system generated both exchange rate flexibility and sterilization effects (lagged monetization of the accumulation of foreign exchange reserves). On the other hand, to reduce short term external commercial debts, it was also decreed at the time that consumer and intermediate goods had to be paid abroad within six months after clearing customs.

Phase III: A consensus was rapidly building during Phase II on the snowball effects of massive sterilization of foreign exchange reserves; indeed, according to some authors, the policy mix characteristic of this period was precisely that which maximized the accumulation of foreign exchange reserves (Lora, 1991). Starting in September 1991, the new independent central bank authorities accelerated exchange rate appreciation as it made a U-turn in monetary policy. In October, the redemption period for foreign exchange certificates was increased to one year; the discount for immediate redemption was also increased to 12.5%. As the minimum discount over the following months was 5.5%, some authors have claimed that the system was equivalent to a exchange rate band with a mid-point at a 9% discount and a maximum fluctuations of 3.5% in each side of the band; however, there were important differences between this system and the explicit exchange rate bands adopted in 1994, as we will see below.

In September, 100% marginal reserve requirements were eliminated. Simultaneously, interest rates on open market operations were radically cut; by early 1992, they had become

negative in real term, inducing a sharp reduction in all market interest rates. To (the reduction in the latter, a cap on domestic lending rates was temporarily set between May and December 1992. Reserve requirements on term deposits were reduced in 1992 and 1993. All monetary and credit aggregates boomed. It was initially argued that the endogeneity of the money supply and increased domestic demand for monetary and financial assets made interest rates rather than monetary aggregates the main targets of monetary target. A gradual shift to a more restrictive monetary policy was evident through 1993 in the evolution of interest rates. Nonetheless, monetary and credit aggregates continued to boom: by the third quarter of 1993, the growth of real domestic credit peaked at 27%. Private foreign indebtedness was eased, particularly in September 1993.

Simultaneously, the rapid increase in government income, enhanced by a new tax reform in 1992, was translated into one of the most rapid expansions of public sector expenditure in Colombian history. Overall fiscal balances remained, nonetheless, under control. Expansionary monetary and fiscal policies were rapidly reflected in a spectacular boom of aggregate domestic demand, which increased in real terms by 10% in 1992 and 12% in 1993. Led by the non-tradable sectors, economic growth picked up, reaching 5.4% in the latter year. However, in a very open trade regime, the increase in domestic demand was reflected in an even more rapid increase in imports. On the other hand, due to exchange rate appreciation, and despite the positive effects of integration agreements on intrarregional sales, the export boom which had started in the mid-1980s came to an end in the second quarter of 1991. Both factors induced a sharp turnaround in the current account, which eliminated the overall balance of payments surplus. By 1993, the rapid accumulation of international reserves ceased. The favorable evolution in the domestic price of tradables -particularly agricultural prices in 1993- was also reflected in a gradual

reduction of inflation; however, "core" (non-food) inflation tended to accelerate through 1993.

Phase IV: By late 1993, the central bank had become increasingly worried by the rapid increase in monetary aggregates, domestic demand and inflation. This set the stage for a return to a more restrictive monetary policy. The initial preoccupation of the authorities was, nonetheless, on how to regain monetary control under the conditions of an open economy. This led to the decision, in January 1994, to establish a system of foreign exchange rate bands. Flexibility within the band was seen as essential to regain monetary control.² The central point of the band was set at the market discount which foreign exchange certificates had at the time --11.6%--, whereas the margins for fluctuations were set at 7% on each side of the band, i.e., twice that which prevailed under the implicit bands which may be said to exist in the previous system. However, there were two important differences: first of all, the central bank could intervene within the band, which made it a system of dirty floating; secondly, although it was asserted that the band was only preannounced for ten days, statements by the central bank and the government on macroeconomic targets for the year were generally understood by the public -and have continued to be understood in 1995 and 1996- as a preannouncement of the annual devaluation of the band; this was an equally radical change in foreign exchange policy, as exchange rates had never been preannounced in Colombia. As it was pointed out, the central point of the band was revalued by close to 3% but, under the pressure of rising interest rates (see below), the exchange rate soon reached and remained close to the floor of the band. The band was explicitly revalued by 7% in mid-December 1994.

^{2/} See, for example, Urrutia (1995).

Revaluation and exchange rate flexibility was combined with a return to more active monetary and credit management. Credit ceilings were established between March and July 1994, but they were generally seen as a failure. In the second quarter of the year, interest rates started to increase sharply; by the end of the year, they exceeded by a considerable margin those typical in 1991. Nonetheless, monetary and credit aggregates slowed down initially at a very slow pace, no doubt reflecting buoyant demand. Restrictions on foreign indebtedness were increased in March and particularly, when the new Administration pressed Banco de la República to do so as a central element of a policy package aimed at putting an end to the appreciation of the peso. Indeed, since August 1994 real appreciation ceased.

Fiscal policy continued to be expansionary. Although the expansionary fiscal-contractiory monetary policy mix characteristic of this Phase was reflected in some reduction in the growth of aggregate demand, it continued to increase at very high rates in 1994 (close to 10% in real terms). Non-tradable sectors boomed, overall growth reached 5.7% but, again, most of the increase in aggregate demand and real exchange rate appreciation were reflected in a continuous deterioration in the current account of the balance of payments. Core inflation regained its downward trend; however, due to rising agricultural prices, global inflation did not decrease in 1994. To fight the very important inertial elements of Colombian inflation, the Samper Administration negotiated a tripartite incomes policy (Pacto Social de Productividad, Precios y Salarios) in December 1994.

Phase V: By the second quarter of 1995, it was clear that high interest rates had started to affect aggregate demand. Particularly, the long construction boom which started in 1992 was over. This led the Administration to negotiate with Banco de la República a more balanced fiscal-monetary policy mix. As a result of the agreement, interest rates were subject again to temporary

controls in June-August 1995. Reserve requirements on sight deposits were marginally reduced in July but they were increased for term deposits in December, when those for public sector deposits were reduced. Interest rates came down during most of the second semester but tended to increase again in December. A new wave of controversies on the contractionary effects of high interests rates have characterized the beginning of 1996, intermixed with discussions on the effects of the political crisis. New agreements led to some liberalization on foreign indebtedness and reductions in reserve requirements on domestic deposits in February and March. The growth of public expenditure directly under the control of the central government has been reduced, but legally decreed transfers to the regions and interest payments on the rising internal debt have continued to generate some expenditure pressure.

Overall, aggregate demand and non-tradable sectors slowed down in 1995, as inflation declined as the result of the joint effects of slower demand growth, incomes policy and good harvests. As a result of the brake to real exchange rate appreciation since August 1994 and devaluation pressures since August 1995, partly associated to political events, non-traditional exports have reentered an expansionary path. It was supported by a new phase of oil exports and a temporary recovery of coffee prices. Although the import coefficient continued to increase in 1995, the deterioration of the current account of the balance of payments slowed down; it is expected to improve from 1996 onwards.

Overall, the 1990s have been a period of sharp stop-go cycles associated to monetary policy. It is perhaps paradoxical that independence of the central bank has not encouraged more continuity in monetary policy and, particularly, that it actually encouraged one of the most spectacular booms in aggregate domestic demand in Colombian economic history. The increase in public sector expenditures may also be seen as a paradoxical companion to the

expectations, by bringing back a consensus on the need to closely monitor exchange rate revaluation and current account deficits, issues which the new Administration had struggled to get back into domestic discussions against the views of more orthodox observers. This issue is closely related to that on the adverse trends of private savings which accompanied the turnaround of the balance of payments, an issue which had also been absent from domestic discussions during the 1992-1994 demand boom and which the new Administration was brought to the forefront of domestic macroeconomic debates.

More recently, the central issue has been on the sustainability of existing current account deficits and, thus, on the relation between such deficits and available external financing. In this regard, a fairly general consensus exists on the favorable effects of capital controls on the structure of external financing -the large proportion of long-term financing- which makes Colombia less vulnerable to speculative attacks than countries like Mexico or Argentina. There is also a similar consensus on the fact that existing current account deficits are sustainable, but that it is desirable to reduce them in the future, using for that purpose the expected increase in oil revenues.

Recent decisions, like those of 1993, indicate, however, that an additional controversy relates to the possibility of using capital flows as a mechanism to force more competition in the financial market, to force reductions in the high interest rate margins of domestic financial intermediaries. We will not deal with this issue in this paper, but rather concentrate in this Section on the links between interest rate differentials, controls and capital flows. In Section III we will concentrate on a less explored issue, which relates to the role of external financing in the savings-investment process.

b) Regulations

There has been an important liberalization of foreign exchange transactions in Colombia in the 1990s, and a complete liberalization of direct foreign investment³, but significant regulations on short term debt flows remain. Law 9 of 1991 and its related Resolution 57, issued in June 1991, made major changes to the exchange control system which had been established by Decree 444 of 1967, which regulated foreign exchange transactions in Colombia for a quarter of a century.

The major innovation was a decentralization of foreign exchange transactions: financial intermediaries were allowed to manage exchange transactions without prior controls by the central bank; it also allowed a fairly general use of bank accounts abroad to manage foreign exchange income and expenditures of particular firms; however, most transactions continued to be highly regulated, including the obligation to channel them through intermediaries legally allowed to operate in the market, with few exceptions. With respect to capital transactions, it established a minimum maturity of one year for foreign loans, except for some commercial credits; it maintained strong regulations on the final use of external lending (investment, exports and imports) and some sectoral discriminations. In all these respects, there was a great continuity between the 1991 regulations and those which have existed since 1967.

Resolution 21 of September 1993 made a more important change in this regard: it changed a system of regulations of capital flows based on their final use for a system based on their maturity. Curiously, this was accompanied by an extension of the requirement that all debts in foreign currency must be registered in Banco de la República, which did not exist prior to that date with respect

³ Since 1991, prior approval is only required for direct foreign investment in utilities, large mining activities, investment funds and banking; in this case, it is also required for domestic investors. There are also some recent regulations on direct purchase of real state by foreigners, but no restrictions on real estate which foreign companies operating in the country can buy.

to permitted short term commercial debts. Resolution 21 also allowed domestic financial intermediaries to lend to foreigners in international currencies and to invest abroad in liquid assets.

More generally, restrictions of capital flows are of five different types:

i) Restrictions on the domestic use of foreign loans and minimum maturity which existed until September 1993. Since then, the system is based on a deposit in the central bank, which is required for all loans of less than certain maturity; we will call this the "minimum maturity" required to have deposit-free loans. This deposit may be conceived as a reserve requirement or an interest equalization tax; the latter interpretation is highlighted by the fact that the deposit can be immediately rediscounted at preestablished rates. Minimum maturities and deposit requirements have varied over time: they became more restrictive in March and August 1994, but have been reduced in February and March 1996.

In September 1993, a one-year 47% deposit was established for loans of maturities of less than 18 months. In March 1994, the minimum maturity was increased to three years, and three alternatives were established for loans less than that maturity: 93% deposit for a year, 64% for two years or 50% for three years. In August 1994, the minimum maturity was increased to five years, the maturity of the deposit was made equal to that of the loan and a complex table was established according to maturities of the loans, with a maximum of 140% for 30-days loans and a minimum of 42.8% for those with maturities just less than five years. In February 1996 the minimum maturity was reduced to four years and a new simpler table was established, keeping equal the maturity of the deposit and the loans. In March 1996 the minimum maturity was reduced to three years and a unique 18-month deposit of 50% was established independently of the maturity of the loan. As we can see, the restrictive character of the regulations depend on two

factors: on the one hand, the domestic interest rate, and the rate and maturity of the forced deposits, which determine their opportunity cost; on the other, the differential between the domestic and the external interest rate cum expected devaluation, which determine the incentive to borrow abroad.

ii) Restrictions on the maximum payment period for imports of consumer and intermediate goods and maximum prefinancing of exports. These regulations set restrictions on commercial indebtedness. With respect to imports, where more restrictive measures have been in place throughout the decade, in December 1990 it was determined that imports have to be paid within three months of the freely determined credit period which had been established in the import registration; this was equivalent to a prohibition on rollovers of commercial debts. In June 1991, a six month maximum repayment period was established for imports of consumer and intermediate goods. This period was reduced to four months in August 1994 and increased again to six months in February 1996.

iii) Regulations on net foreign exchange assets (posición propia) of financial intermediaries also have implications on capital flows. By forbidding them to have negative net foreign exchange assets, they are prohibited from using external funds to lend in pesos. By forcing them to hold positive net foreign assets in periods of expected appreciation of the peso, the costs of intermediating foreign exchange loans increases, as well as the demand for foreign exchange. This instrument has been actively used in the 1990s: thus, in October 1991 it was determined that domestic financial intermediaries must hold minimum net foreign assets equivalent to 30% of their liabilities in foreign currencies; this requirement was increased to 45% in March 1992, but reduced to 40% in June 1993, 30% in October 1995 and eliminated in November 1995. To increase the costs of intermediating external credit lines, a 5% marginal reserve requirement on the external liabilities of financial intermediaries was also established in September 1994. It

must be emphasized that, whereas forcing intermediaries to hold net foreign exchange assets is a good idea in periods of excess supply of foreign exchange, it may be a source of speculation under different conditions, a fact which became evident in the short speculative wave of August 1995. Thus, the requirement was eliminated shortly after, as noted, and restrictions on daily variations of such net assets were established in September 1995. Restrictions on maximum net foreign assets can also be used for that purpose; they are established as proportion of "technical net worth" (i.e., net worth weighted by riskiness of the assets).

iv) There are many other complementary regulations which may also have effects on capital flows. Most important are regulations on the domestic assets of foreign investment funds, which are allowed since 1992. On the other hand, to control interest arbitrage which may be filtered through service transactions and illegal flow of funds, some policies have been adopted at different times: discounts on sales of cash to the central bank were established in April 1991; a withholding income tax rate of 3% on service income was established in that date, increased to 10% in July 1992 and reduced again to 3% in January 1996; and temporary controls on tourist income receipts were also established in July 1992.

c) *The magnitude and determinants of capital flows*

Figure 4 and Table 3 summarize the evolution of external financing and the foreign debt of Colombia. There are four noticeable features in Figure 4. First, financing requirements in the 1990s, as measured by the current account deficit as a proportion of GDP at 1994 parity exchange rates, are significantly smaller than in the early 1980s. Secondly, foreign direct investment has become a major source of financing, covering in recent years about half of the total financing requirements. The boom in oil investments are part of the story, but more important

has been the boom of FDI in non-tradable activities, primarily those which were liberalized in the early 1990s (domestic commerce, utilities, investment funds, etc.) Thirdly, net short term capital flows have been of a minor importance, except in 1993; indeed, in some years, they have been negative. Thus, for practical purposes, the current account deficits have been financed in recent years exclusively with long term liabilities, including FDI.

As Table 3 indicates, the rapid decline of the moderate debt ratios of Colombia which had characterized the second half of the 1980s continued in the early 1990s. Since then, they have tended to stabilize. However, there is a significant difference in the evolution of private and public foreign debts. Indeed, the nominal increase in the external debt of Colombia throughout the decade and, particularly, since 1992, has been associated to private indebtedness. Whereas public sector debt ratios have consistently declined, those of the private sector have increase and exceed now those reached in 1986, at the end of the debt boom which had started in the late 1970s.

There have also been important changes in the composition of both private and public foreign debts. In the case of private sector, long term external liabilities have increased fastest. Nonetheless, there has an important increase in short term debts, half of which took place in 1993. In the case of the public sector, long term indebtedness has been dominant throughout the decade. The major change has been the rise of bond financing at the relative decline of bilateral debts; also, within multilateral sources, IDB has gradually replaced the World Bank.

Given the importance of private capital flows, they have been the major focus of major attention in the 1990s. As most of the literature covers periods under which the exchange controls were prevalent, a central issue in the discussion has been to what extent interest arbitrage has filtered through the service or trade

accounts. Different authors have thus designed proxies for private capital flows, any of which may be subject to dispute. Alternatively, the link between domestic and foreign interest rates cum expected devaluation has been directly tested.

Generally, evidence of interest arbitrage and sensitivity of capital flows to interest rate differentials have been found by all authors. A possible explanation of the direct link between domestic and world interest rates cum devaluation is the fact that it has been a rule followed by economic authorities, as suggested by Steiner et al. (1993). In some exercises, the potential capital gains associated to major exchange rate misalignment (either under or overvaluation) have been found to be a more important determinant of capital flows than simple interest rate differentials (see Herrera, 1993, and Steiner et al., 1993). O'Byrne and Reina (1993) have disputed the causal link implicit in most explanations of capital flows, claiming that it runs from capital flows to interest rate differentials (including expected devaluation) rather than the contrary. The relation of drug money to capital flows has also been subject to some dispute (see O'Byrne and Reina, 1993, and Urrutia and Pontón, 1993, for the two opposite views).

We will analyze the determinants of three different components of private capital flows: (a) cash capital flows, as measured by the cash foreign exchange accounts (balanza cambiaria); (b) commercial capital flows, as measured by the difference between import financing and net financing to buyers of Colombian products abroad; the first is measured by the difference between non-oil imports and import payments, the second by the difference between exports and export cash proceeds; and (c) those "filtered" through the non-financial service accounts of balanza cambiaria. However, in this case, we will follow the procedure originally used by Correa (1984), in which interest rate differentials are used as a determinant of capital flows together with other fundamental

determinants of the service account (domestic or external activity variables, the real exchange rate and the ratio of the official to the black market exchange rate, to capture foreign exchange arbitrage between the black and the official markets). Cárdenas and Barrera (1994) used a different procedure, correlating first the service account to the activity variables and using the residuals as a proxy for capital flows, which was then correlated to interest rate differentials and the premium in the black market, but not to the real exchange rate.

It is interesting to note that, using this methodology and quarterly data for 1978-1992, Cárdenas and Barrera (1994) found evidence of interest arbitrage in the cash capital flows and the residuals of the service account, but not in the case of the commercial capital flows. On the contrary, using the alternative methodology suggested here to analyze the service account, Correa (1984) did not find evidence of interest arbitrage in any of the service accounts in 1974-1983.

We thus estimate the following relations:

$$\begin{aligned} K1 &= f (MK, dif) \\ K2 &= g (MK, dif) \\ S &= h (Y, e, prem, dif) \end{aligned}$$

where K1 and K2 are cash and commercial capital flows, S is the non-financial service balance in the cash foreign exchange accounts; the imports of capital goods (MK) is assumed to be the main activity variable determining K1 and K2, whereas non-coffee industrial production is used as the activity variable in the service account; e is the real exchange rate, as measured by Banco de la República; prem is the ratio of the official to the black market exchange rate; and dif is the interest rate differential:

$$dif = \left\{ \frac{(1+i)}{[(1+i^*)(1+dev)]} \right\} - 1$$

where i is the domestic deposit rate, i* the US deposit rate and dev is expected devaluation; for simplicity, it is assumed that expected devaluation is equal to the annualized devaluation of the

past n months (3 and 12, as 1 month is highly unstable and did not give good statistical results). <<In latter versions, alternative models to determine expected devaluation will be used.>>

Figure 5 presents the basic data for interest rate differentials and cash private capital flows. As Figure 5.1 indicates, major incentives for interest arbitrage were present from the second quarter of 1991 through mid or late 1992, and from the third quarter of 1993 through the second quarter of 1995. As Figure 5.2 shows, cash private capital flows were very high in the second period, though they were sharply interrupted by the end of 1994, probably due to regulations imposed in August 1994, which were effective with a lag, due to the significant accumulation of registered private debts in the weeks prior to controls⁴. Commercial capital flows and the balance of non-financial service accounts (not shown) have a different pattern, apparently unrelated to interest rate differentials.

The econometric exercises try to test for the effects of changing policy rules on capital flows. Preliminary results (not shown) indicate that there is only strong evidence of sensitivity of cash private capital flows to interest rate differentials after September 1993, and in the non-financial service account prior to that date. This tends to confirm that Resolution 21 was an effective liberalization of the capital account and that the service account served as a mechanism to hide capital transactions under previous regulations. There is also evidence on the effectiveness of both the March 1994 and, particularly, the August 1994 restrictions on capital flows (with a lagged effect in that latter case, due to massive registrations prior to its approval). The non-financial service balance is, nonetheless, determined primarily by the official/black market exchange rate differentials

⁴ See Banco de la República (1995).

and by domestic demand. Commercial capital flows are determined by the demand for imports of capital goods.

Finally, Table 4 presents the clearest evidence of the effects of policies on private capital flows on the term structure of private capital flows. Data refers to 1994 and 1995, for which registrations were compulsory for all debts. As it is shown, maturities clearly increased as the result of the March and August 1994 regulations, which increased the minimum maturity for deposit-free loans from 18 months to three years, in the first case, and from three to five years, in the second. As it is more difficult to get longer term financing, average overall import registrations also decreased. It must be emphasized that most of the short-term debts (less than 6 months and some export financing in the 7-18 months range) is associated to import and export financing which are also free of deposit requirements.

(In a latter version of the paper, lags and alternative specifications will be used in the econometric exercises. Also, the relation between interest rates and interest rate margins and policy rules on private capital flows will be directly tested.)

3. Capital flows, savings and investment

The literature on the determinants of savings and investment in Colombia have been extensively surveyed by the author in previous papers, which also include several econometric exercises on the determinants of savings and investment.⁵ We will refer to these surveys for the Colombian literature prior to the 1990s, complemented by more recent analysis of savings-investment determinants.

⁵ See Ocampo *et al.* (1985); Ocampo (1989) and Ocampo *et al.* (1990).

The literature on savings has shown the strong relation between savings and income distribution. It indicates, in particular, the high savings propensities of the government and public and private firms, and the low propensity to save labor income. In time series analysis, this is shown in the positive association of private savings with the share of non-labor income. There is also evidence of significant correlation between external variables and private savings -be the terms of trade and the export ratio (positive effects) or imports and external savings (negative effects). I prefer a particular link, which I have explored in different papers⁶: the substitution of both private and public sector savings for external financing in different periods, which may be interpreted as an effect of liquidity constraints faced by domestic economic agents; for some economic agents (private firms), there is, however, evidence of complementarity between savings and external financing in the 1970s and 1980s.

Whereas some authors have found support for the permanent income hypothesis, others have claimed that there is, in fact, a tendency for the private sector to overconsume transitory income. There is, on the other hand, no evidence of any interest-rate sensitivity of private savings but some on the "forced savings" effects of inflation. There is also some evidence of adverse effects of taxation on private savings, but a positive effect on total savings, due to the high propensity to save of the government. There is, finally, no clear evidence of any "Ricardian" effect of fiscal deficits on private savings.

Recent contributions confirm the high concentration of household savings in the high deciles of the income distribution and the absence of any positive link between private savings and interest rates (Ramírez, 1992). López (1994) has presented strong evidence against the rational expectations permanent income

⁶ See Ocampo (1988 and 1989) and Ocampo *et al.* (1990).

hypothesis, which he interprets as a confirmation of the liquidity constraints faced by many consumers. Sánchez *et al.* (1996) show the strong substitution of savings of private firms for domestic and external financing. Carrasquilla and Rincón (1990) conclude that the strong version of the Ricardian equivalence cannot be accepted, but that some weaker versions can; this work has been severely criticized by López (1994). Finally, Gaviria (1993) has confirmed the positive links between the terms of trade on savings, and Echeverry (1996) that between exports and the latter variable.

With respect to private investment, there is overwhelming evidence in favor of the accelerator hypothesis.⁷ There is also strong evidence of the inelastic effects of the relative price of capital goods on private investment, but none on the interest-rate sensitivity of the said variable. The elasticity of investment to the relative price of capital goods has increased over time. There is some weaker support for the negative effects of real wages on investment. Some authors have also shown the links between the internal funds of the firms on their investment performance, and on the availability of domestic financing on construction activity, but there has been extensive controversy on the latter association. There is also a negative link between private and public sector savings, which may be interpreted as a sign of "crowding out" effects; however, a better interpretation of this correlation is simply that public sector investment has been historically managed in a countercyclical fashion⁸.

Among external variables, there is strong evidence of the link between the real exchange rate and the relative price of capital goods (machinery and equipment, in particular); this implies that investment booms tend to coincide with periods of real exchange rate appreciation. On the other hand, there is also evidence that

⁷ A notable exception is Fainboim (1990).

⁸ See Cárdenas (1991) and Ocampo (1989).

import controls adversely affected in the past investment in machinery and equipment. Several papers have shown in the past the positive effects of external financing on public sector investments from the 1950s to the 1970s; however, this link disappears when more recent data is included in the analysis. On the contrary, there is evidence of positive links between external financing and private investment for the 1970s and 1980s.

Among recent contributions, we should emphasize the work by Cárdenas and Olivera (1995) and Sánchez (1994). The first of these papers confirm the links between investment, economic activity and the relative price of capital goods; it also presents some evidence of interest rate sensitivity of investment but not of the effects of taxation on the said variable. More importantly, it indicates that the price sensitivity of investment may have increased in the 1990s, which the authors interpret as evidence of the effects of liberalization ^{9/}. The second paper indicates, on the other hand, that there are positive effects of infrastructure on the profitability of private investment and, thus, on the said variable.

The evolution of savings and investment in the 1990s is shown in Figures 6 and 7. Three major trends can be noticed. First of all, there has been a sharp cycle in investment, particularly private investment. The real investment ratio (relative to GDP) reached a three-decade minimum in 1991 but then increased sharply, and in 1994 and 1995 was at a three decade peak. Secondly, the cycle has been sharper for real rather than nominal investment, indicating strong fluctuations in the relative price of capital goods. The latter reflect, in turn, variations of the real exchange rate. Particularly, appreciation of the peso and reduced tariffs on

^{9/} A basic flaw to these results is, however, the high real levels of accumulation of inventories which are implicit in the post-1992 data, which may be due to deficiencies in the deflators used to calculate them.

capital goods have led to a strong reduction of the relative price of capital goods since 1992. The nominal investment ratio -i.e., the savings effort required to finance private investment-- is not particularly high: it not very different from those reached in the late 1970s and in some years in the second half of the 1980s, and it is significantly lower than the peaks of the early 1970s. This indicates that the high real private investment ratio is basically a reflection of the reduction in the relative price of capital goods or, what is equivalent, that there has been a massive transfer of resources towards private capital accumulation associated to the real appreciation of the peso and lower tariffs.

Thirdly, the increase in private investment has coincided with a collapse of private savings. As a result, whereas the private sector ran consistent surpluses since the mid-1970s, which peaked at 4% of GDP in 1991, they fell dramatically, turning to a record quarter-century deficit of over 5% of GDP in 1994. There is no comparable deterioration of the private sector balance in Colombian economic history. It is associated to both households and private sector firms. Whereas the structural surpluses of the former have disappeared in recent years, the rising trend of the savings ratio of private firms, which was quite noticeable in the second half of the 1980s, suddenly collapsed in the early 1990s and has not recovered since. It should be emphasized that, despite the recent deterioration in the public sector savings, they remain high by historical standards and the consolidated public sector deficit continues to be moderate.

What has determined this contrasting evolution of private savings and investment? To answer this question, a series of economic exercises on the determinants of savings and investment ratios by economic agents in 1970-1995 have been tried, including in the regression analysis all those determinants which have been found to be important in previous work. Preliminary results indicate the following:

- There is evidence of a very strong substitution of household savings for external and domestic credit. There is, however, no evidence of a similar process for private sector firms, for which rising taxes may be the clue to falling savings (a relation which is not confirmed for households). Overall, about half of the increase in external private capital flows has been reflected in a decline in private savings.

- Contrary to the strong link between capital flows and private savings, there is no statistically significant link between private savings and trade liberalization. Thus, the hypothesis according to which the collapse of private savings in the 1990s is associated to a consumption boom due to import liberalization may be rejected.

- There is again no evidence of any links between savings and real interest rates. Thus, the fear that the low interest rates of 1992-1993 depressed private savings is not confirmed.

- Econometric exercises confirm the high propensity to save of private and public sector firms and the government. On the contrary, distributive variables do not have the expected effect on household savings. They may be a structural change in this regard which should be further explored.

- Household investment seems to bear no relation to external financing. On the contrary, external financing has a strong positive effect on investment by private firms, together with economic growth (the accelerator), cheaper capital goods and infrastructure (with unclear statistical significance in the latter case). About half of private external financing is reflected in higher investment by private firms. Neither domestic financing nor domestic interest rates seem to be statistically significant. Thus, the boom of investment by private sector firms in the 1990s can be associated to the boom in external financing, reduced relative

prices for capital goods (associated, as we have seen, to appreciation and reduced tariffs) and to the business upswing.

- The attempt to differentiate the difference sources of private external financing (short and long term debt, and FDI) did not give satisfactory statistical results.

- There are no comparable substitution effect of external capital flows for public sector savings. Foreign public sector indebtedness has positive effects on investment by public sector firms.

(In latter versions of this paper, these links will be further explored, with simulations added. Other statistical exercises may be added, particularly cointegration exercises to analyze the link between private savings and investment and external financing. Finally, using the only available monthly time series for investment -the imports of capital goods-, some short term exercises similar to those of Cárdenas and Barrera (1994) may be tried.)

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TABLE 3 COLOMBIA: EXTERNAL DEBT (US\$ MILLIONS)										
	1970	1978	1986	1990	1991	1992	1993	1994	1995	
1.- PRIVATE DEBT	1375	1584	3318	3027	2532	3256	5056	7589	8378	
a) SHORT TERM	1050	1221	1711	1914	1551	2006	3009	3684	3839	
b) LONG TERM	325	363	1607	1113	981	1250	2046	3905	4540	
2.- PUBLIC SECTOR DEBT	1319	2896	12463	14586	14464	13487	13259	13568	14068	
a) MULTILATERAL	467	1108	4596	6021	6174	5886	5728	5519	6009	
b) BILATERAL	667	992	2357	2707	2571	2165	1803	1654	1793	
c) COMMERCIAL BANKS	39	523	4865	4719	4536	4304	4293	4689	4503	
d) BONDS	21	45	46	275	359	419	776	1083	1133	
e) SUPPLIERS	125	228	599	864	824	713	659	623	630	
TOTAL	2694	4480	15781	17613	16996	16743	18315	21157	22446	
3.- DEBT AS % OF EXPORTS OF GOODS AND SERVICES	347.16	139.17	295.98	248.79	226.36	230.53	246.55	253.87	219.29	
a) PRIVATE	177.19	49.21	62.23	42.76	33.72	44.83	68.06	91.06	81.85	
b) PUBLIC	169.97	89.96	233.75	206.03	192.64	185.70	178.49	162.81	137.44	
4.- DEBT AS % OF GDP AT 1994 PARITY EXCHANGE RATES	59.19	24.73	45.73	37.69	35.48	31.79	30.72	31.03	28.23	
a) PRIVATE	30.21	8.74	9.61	6.47	5.28	6.18	8.48	11.13	10.54	
b) PUBLIC	28.98	15.99	36.12	31.22	30.20	25.61	22.24	19.90	17.69	

TABLE 4 MATURITY OF PRIVATE DEBT REGISTRATIONS (million dollars and % of total registrations)						
	0-6 months	7-18 months	19-36 months	37-60 months	more than 60 months	Total
a) million dollars						
1994						
January-March	156.50	6.40	1282.50	416.70	55.40	1917.50
April-August	368.60	148.00	321.10	1317.10	302.30	2457.10
September-December	116.80	379.20	54.80	60.60	1219.20	1830.60
1995						
January-October	1048.40	776.80	178.30	132.00	2879.90	5015.40
b) % of Total						
1994						
January-March	8.16	0.33	66.88	21.73	2.89	100.00
April-August	15.00	6.02	13.07	53.60	12.30	100.00
September-December	6.38	20.71	2.99	3.31	66.60	100.00
1995						
January-October	20.90	15.49	3.56	2.63	57.42	100.00

FIGURE 1.1
**GDP & AGGREGATE DOMESTIC DEMAND
 (GROWTH RATES)**

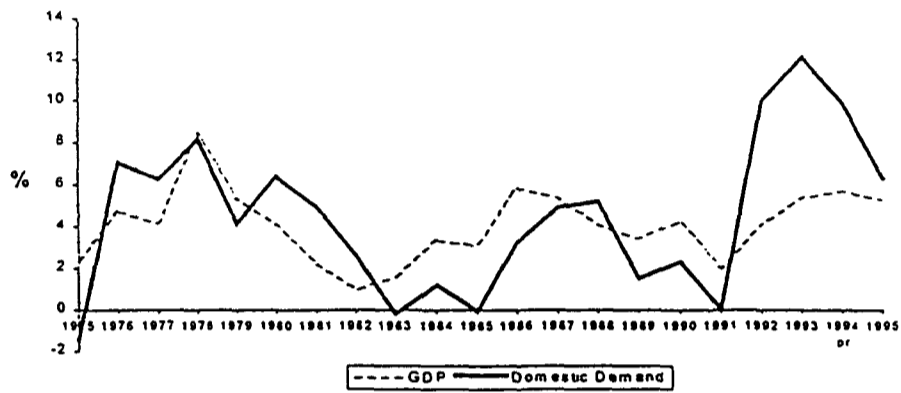
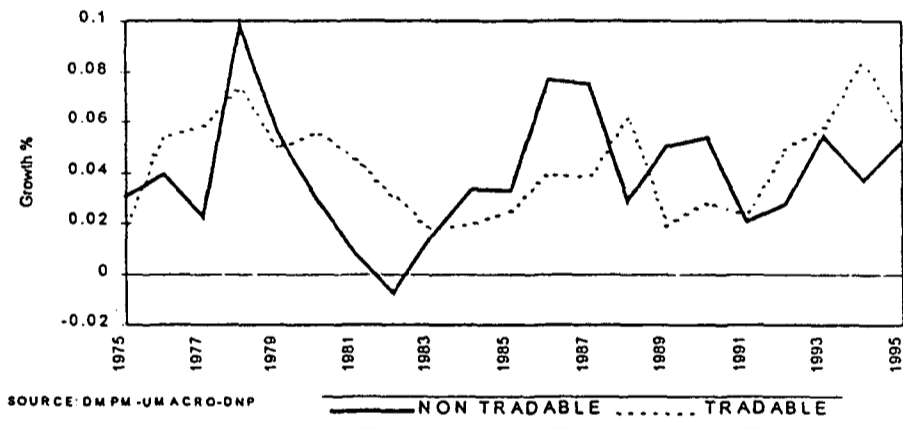


Figure 1.2
VALUE ADDED GROWTH BY ECONOMIC SECTOR



SOURCE: DMPM-UMACRO-DNP

FIGURE 1.3
INFLATION (CPI end year)



FIGURE 2.1
REAL INTEREST RATES
 1990 - 1995

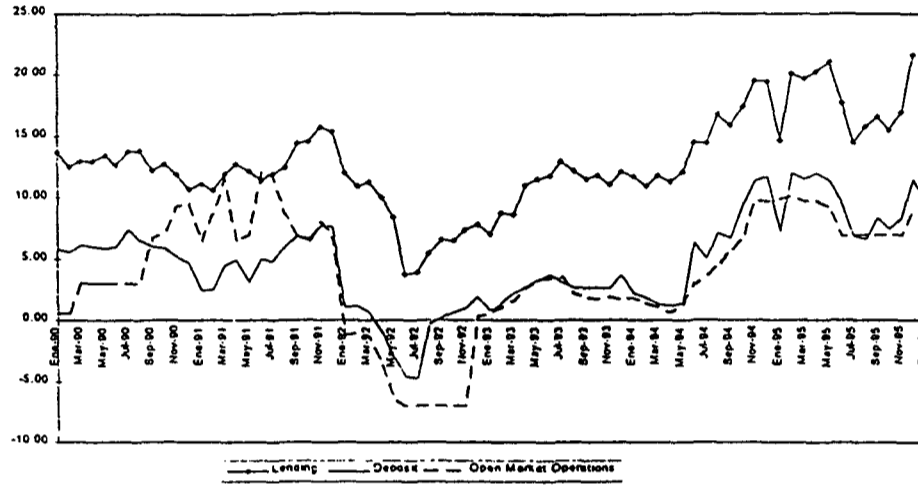


FIGURE 2.2
Growth of Real Domestic Credit
 (1990-1995)

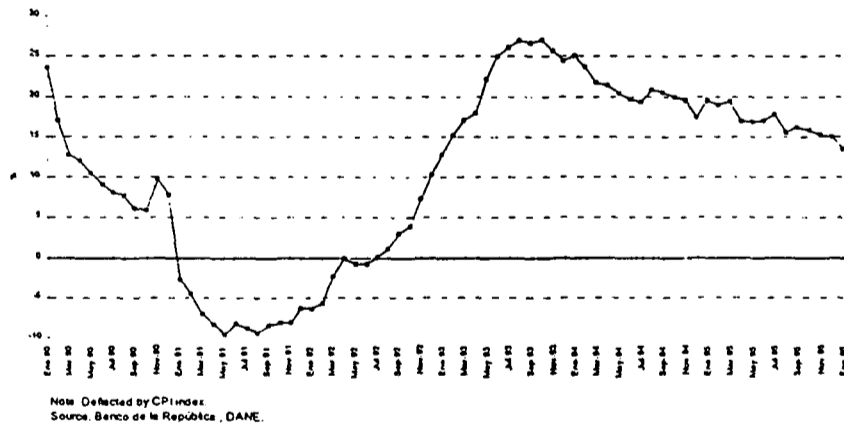


FIGURE 3.1
NOMINAL DEVALUATION

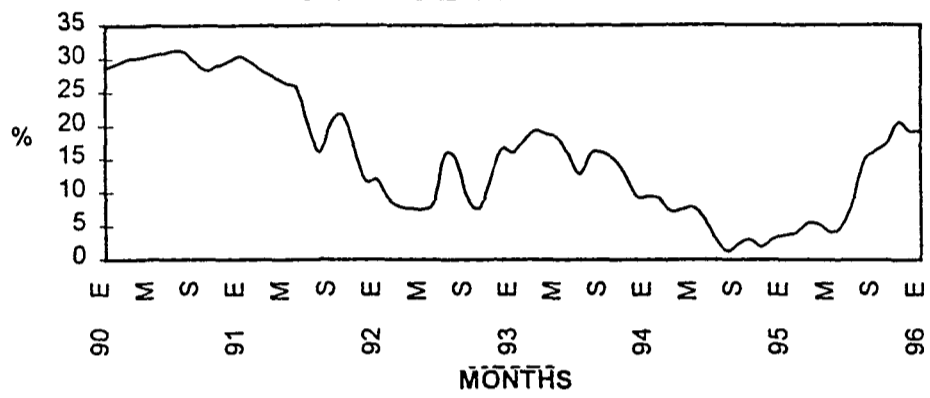


FIGURE 3.2
REAL EXCHANGE RATE

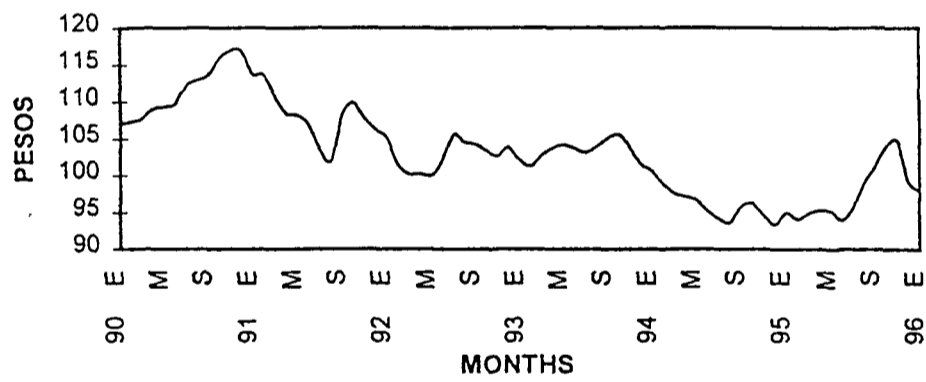


FIGURE 3.3
CHANGE OF INTERNATIONAL RESERVES

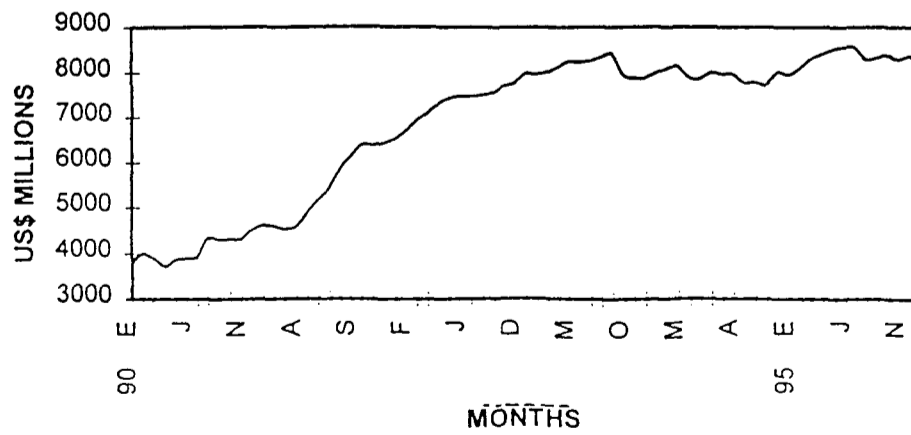


FIGURE 4.1
SOURCES OF EXTERNAL FINANCING
 (% GDP at 1994 Parity Prices)

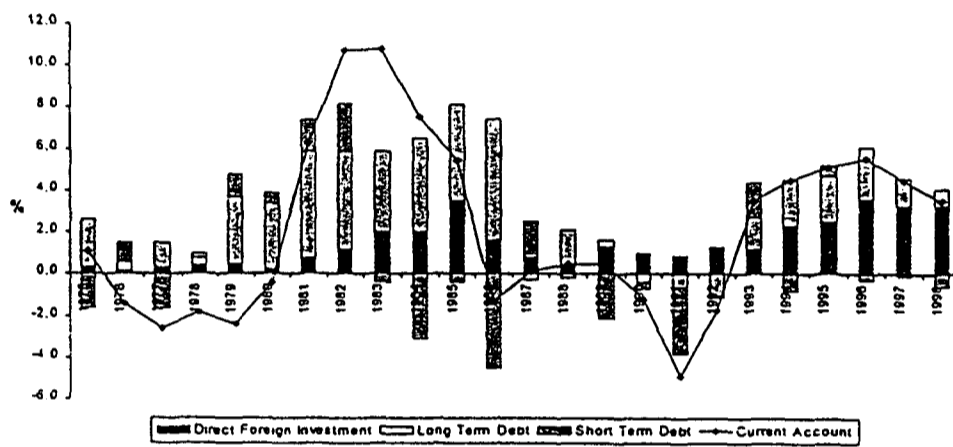
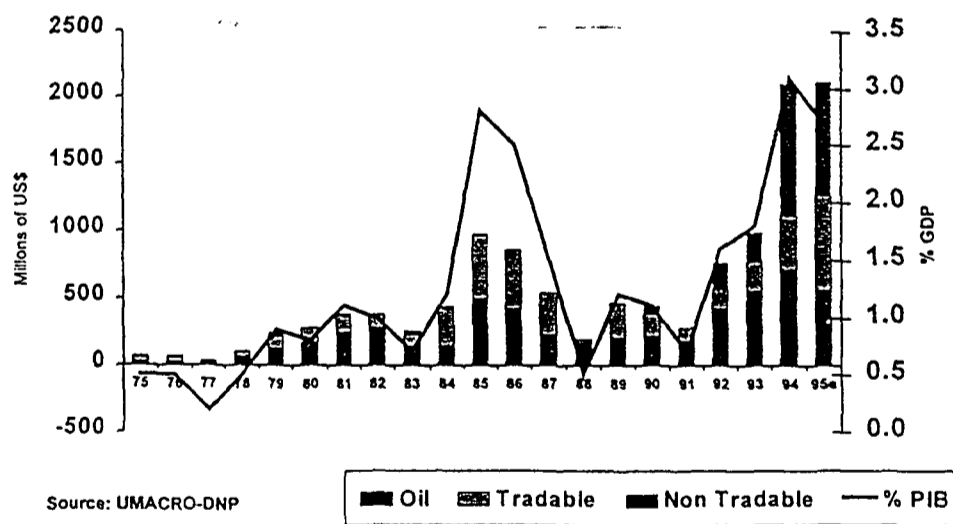


FIGURE 4.2
DIRECT FOREIGN INVESTMENT



Source: UMACRO-DNP

Figure 5.1
Interest Rate Differentials

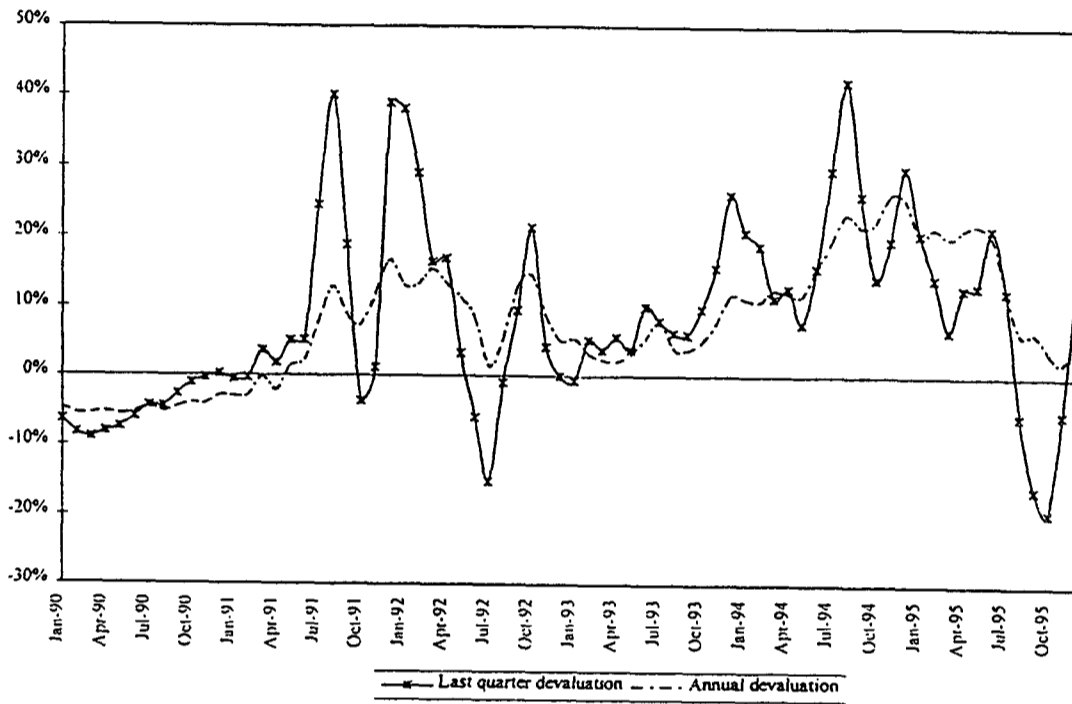


Figure 5.2
Cash Private Capital Flows

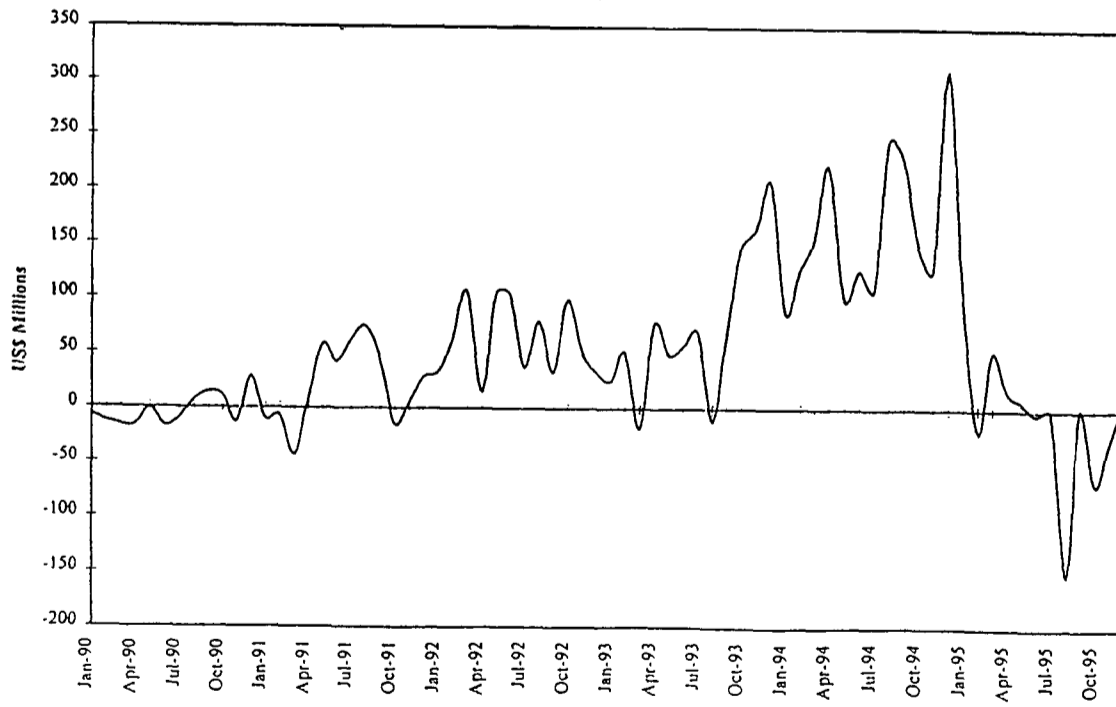


FIGURE 6.1
FIXED CAPITAL FORMATION

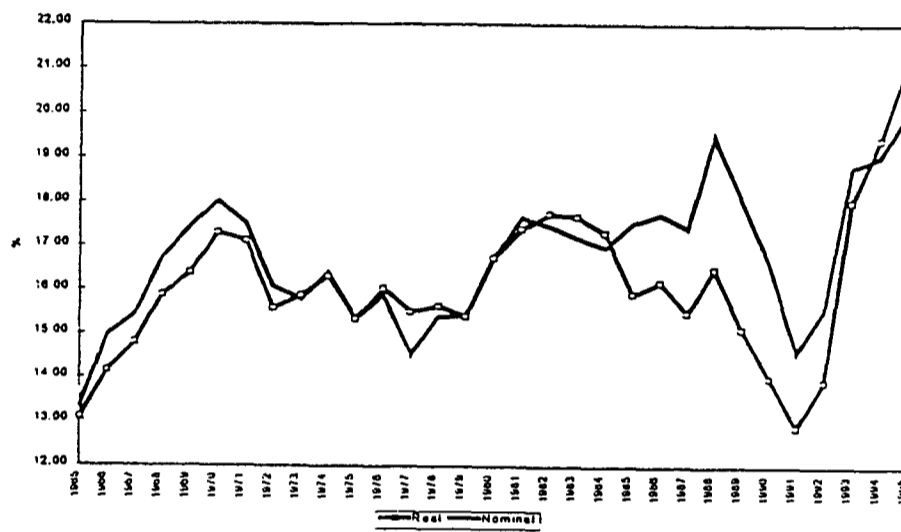


FIGURE 6.2
FIXED CAPITAL FORMATION
(% GDP)

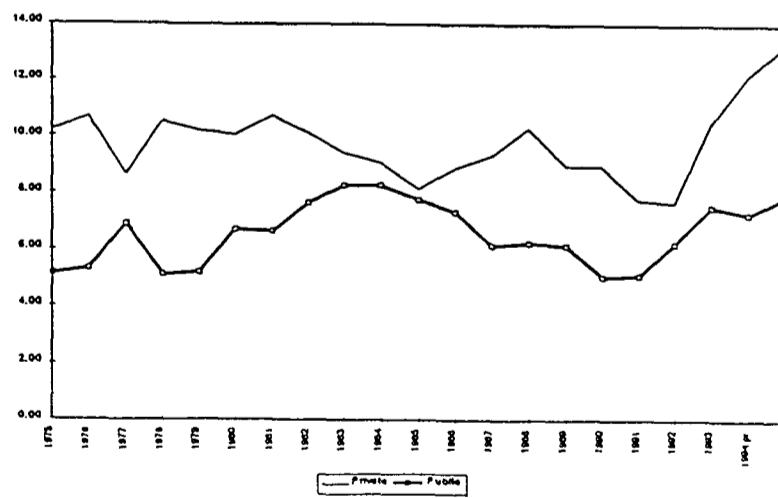


Figure 7.1
Savings and Investment of Private Sector

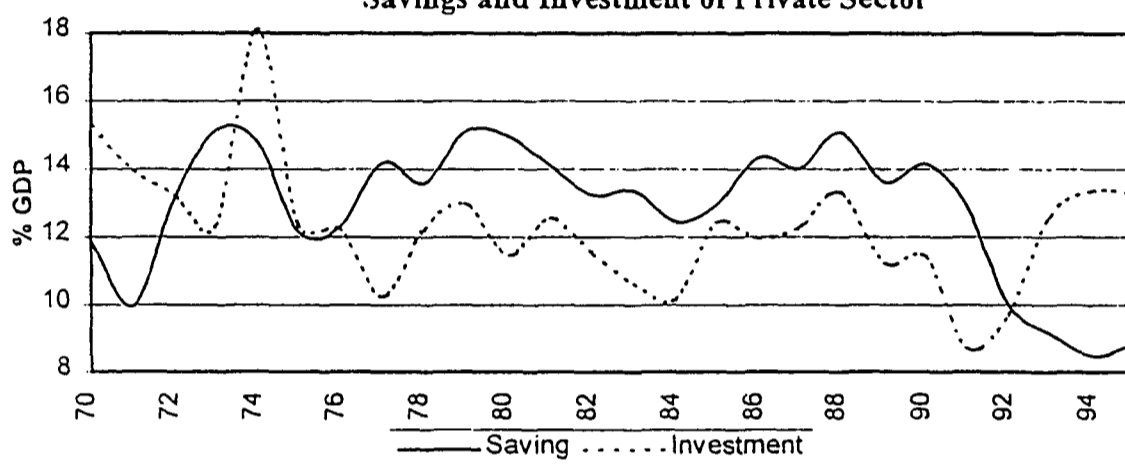


Figure 7.2
Savings and Investment of Public Sector

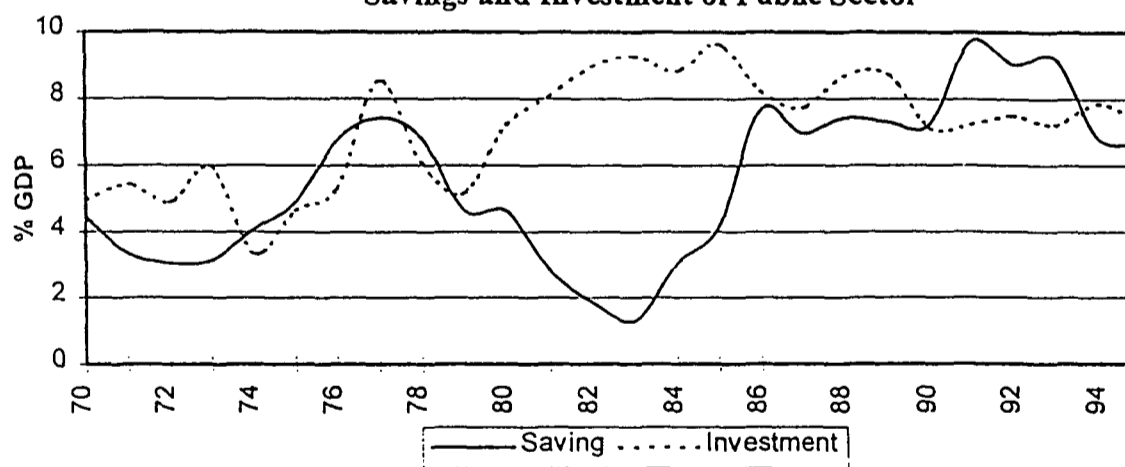


Figure 8.1
Investment and Saving of Households

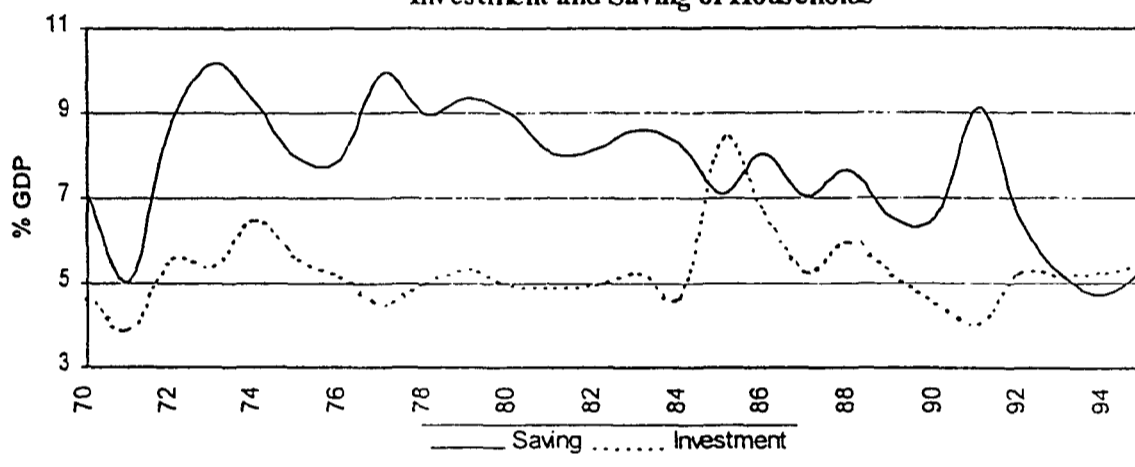


Figure 8.2
Investment and Saving of Private Firms

