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Dealing with Negative Oil Shocks: The Venezuelan Experience in the Eighties

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I. The Venezuelan Mess: Dancing out of step or stepping out of line?

The eighties were, by all accounts, a terrible decade for Venezuelan development. GDP per capita, which increased by 234 percent from 1950 to 1980, or 4.0 percent per year, had a cumulative fall of 18.1 percent between 1980 and 1989. The currency, which had only been moderately devalued once in over a century, depreciated tenfold between 1983 and 1989. The yearly inflation rate, which had averaged 3.4 percent for the period 1950-1980, reached 84 percent in 1989. The foreign debt, which was negligible in 1974 totaled 54 percent of GDP or more than 3 years of exports by 1989.

Was this havoc due to a particularly incompetent or irresponsible management of economic policy - i.e. stepping out of line- or to the difficulties found in keeping pace with a very unstable and unpredictable source of revenue, i.e. dancing out of step? After all, the world petroleum market, to which the country traditionally directed over 90 percent of its exports passed through very unsettled waters. As shown in Figure 1, oil exports at 1990 prices reached US$ 24 billion in 1980 and fell to 10.2 billion in 1989, a decline of 66.4 percent in real per-capita terms, or of 17.7 percent of 1980 GDP.

The fall in external income followed the two well known positive shocks of the seventies and came also in two rather discontinuous steps. The first one in 1982-83 was linked to OPEC's attempts to defend oil prices by cutting output. It reduced the real value of exports (at 1990 prices) from US$ 22.4 billion a year for 1979-81 to US$ 15.9 billion for 1983-85. The second one took place when prices collapsed in 1986 and cut real exports down to US$ 9.5 billion for 1986-89. Relative to 1980 GDP, these two negative shocks amounted to 8.5 percent and 8.2 percent respectively.

Furthermore, there were important similarities between the two shocks. In both cases, the shocks hit the economy just after it had gone through a stabilization effort[1] which had left the economy with significant external surpluses and with high international reserves. The fiscal accounts were also brought into surplus. In both cases, just before the shock it was felt that the economy situation had been stabilized, prompting the government to increase in public spending in order to reduce rising unemployment. When the negative schock came, thus wiping out the existing suplus and leaving an important deficit, the government had already committed itself to fiscal expansion and was also well into the five-year constitutional period when hard decisions to make.

Hence, economic policy did not react with sufficient swiftness to these two negative shocks causing, each time, a collapse in the policy regime. In 1983, in the wake of a massive attack against the currency, the traditional fixed exchange rate system was abandoned and a multiple exchange regime was adopte. After the second negative schock, the foreign exchange regime was adopted. After the second negative shock, the foreign exchange premium rose to a point where the government decided to abandon that exchange system in 1989 and replace it with a unified float. Hence, the two shocks took place under rather different control regimes and led to important changes in the regimes themselves. Summary data on the macroeconomic adjustment to the two shocks is presented in Table1.

[1] As will be discussed later, in 1979-1980 the government adopted a contractionary fiscal policy in order to deal with external imbalances and inflationary pressures. In 1983-85, it cut spending, restricted trade, devalued the exchange rate and adopted a multiple exchange rate regime as a reaction to the first negative shock.

The study of external or trade shocks has tended to focus on the windfall side[2]. The general theme has concentrated on the fact that the additional resources have not usually been put to t he best use while they have seriously distorted optimal long-run resource allocation. The dutch disease literature[3] developed this argument into a coherent theoretical framework. Policy discussions dealt mainly with the issue of how best to allocate the windfall which in most cases meant how to save it[4].

This emphasis was to be expected in ligh of the positive commodity shocks of the seventies. However, during the eighties, negative schocks have tended to dominate. Obviously, the models built to explain positive shocks can shed much light into understanding what happens on the down side, but there is an important feature specific to negative shocks: they tend to question the solvency of the government. Private agents may come to realize or believe that the current policy framework is no longer viable and may attempt to secure their assets through speculative attacks in anticipation of debt repudiation, devaluation or regime change. This may lead to capital flight, large inventory shifts or may severely limit the availability of external fnancing needed to cushion the blow. Moreover, these anticipatory reactions of economic agents against future changes in policy may be self-fulfilling (Obstteld 1986a) and may severely constrain public policy. A central message of this paper is that such behaviour may become dominant at the macro-economic level, dwarfing other responses which would otherwise be expected. Moreover, the precise nature of the private sector's anticipatory reaction is highly dependent on the nature of the control regime in place since it will tend to determine the avenues which are open for attack.

The Venezuelan experience in the eighties is a particularly fertile ground for the analysis of negative shocks. Two large shocks took place under very different control regimes thus highlighting the role which the institutional setting plays in determining the response. Moreover, the experience can shed a different light into the convenience of alternative exchange rate regimes for countries subject to large and frequent trade shocks. In addition, the analysis can be simplified for two reasons: first, oil shocks only have direct effects on the public sector, thus implying that it is the policy reaction to the shock that will affect households and firms. Secondly, the supply response of the oil industry is not of macroeconomic interest.[5]

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[2] Gelb (1989) presents and international study of the two positive oil shocks of the seventies.

[3] See Corden and Neary (1982), Corden (1984), Neary and van Wijnbergen (1986).

[4] van Wijnbergen 91984) discusses also the use of production subsidies for non-booming manufactures subject to learning-by-doing.

[5] Basically, there was no supply response. Either output was determined by OPEC quotas, as was the case most of the time, or by installed capacity. Usually, the marginal cost of output is well below price, so increases in price do not bring in new production.

The paper is structured as follows. Section II presents a brief summary of theoretical literature on the impacts negative shocks have under alternative exchange rate regimes. Section III provides a brief description of macroeconomic developments in Venezuela and their relationship to oil market events. Section IV discusses the nature of the two negative oil shocks that will be analyzed in this paper, justifying their permanent nature. Section V presents some aspects of the methodology used to quantify the shocks and the macroeconomic adjustment to them. Sections VI and VII present the detailed analysis of the two negative shocks of the eighties. In section VIII we try to derive the main conclusions and lessons

II. Adjustment to negative permanent shocks: a quick theoretical overview

In this section we review the theoretical literature so as to have some a *priori* assumptions on what we should find when looking at the Venezuelan data. We start by analyzing the optimal adjustment to a negative oil shock as can be derived from the standard small open economy model. We will then turn to some of the complications that arise under fixed, multiple and flexible exchange rate systems.

A. Optimal adjustment to a negative oil shock

A negative oil shock in the Venezuelan context is simultaneously an external and a fiscal shock. As an external shock, optimal adjustment requires a real depreciation and a fall in absorption. Output should remain at full employment (Salter (1959) and Swan (1960)). Now, since the shock is fiscal, something must be done about the increased public deficit. Inaction is dangerous although the precise nature of the costs involved depends on the type of exchange rate regime. If the deficit is cut through a reduction in purchases of tradeables, the internal economy will remain unaffected. If instead, fiscal adjustment is done through an increase in taxes or through a reduction in expenditure on non-tradeables then the shock will be transmitted to the private sector, causing a reduction in private spending. Not much else can be said unless we clarify the nature of the exchange rate regime.

B. Adjustment under Fixed Exchange Rates

The typical fixed or predetermined exchange rate open economy model (Dornbusch (1980), Khan and Lizondo (1987), Montenegro (1989) Hausmann (1990, Chapter 4)) holds that the economy will tend to converge to a long-run equilibrium point where the current account of the balance of payments equals the fiscal deficit, making net private financial wealth constant. However, if there is a fiscal deficit, then reserves will be drawn down or a public foreign debt will be accumulated until a balance of payments crisis appears. It is therefore said that this regime is only quasistable, since nothing prevents it from collapsing when certain exogenous parameters, such as the fiscal deficit, are not adequate.

Obviously, the possibility of collapse will affect the behavior of economic agents. This has prompted a strand of literature which deals with *collapsing regimes.* However, before we turn to this important aspect, let us point out some of the implications of a negative oil shock in the standard model. First, a negative shock will leave the economy unaffected, unless the government adjusts spending on nontradeables or taxes. Otherwise, there will simply be a balance of payments deterioration equal to the increased fiscal deficit, leaving the private sector unscathed.

If the government attempts to reduce the deficit either by means of a cut in spending on non-tradeables or an increase in taxes, and assuming nominal wages adjust sluggishly, there will be a recession which will cause unemployment to rise, private real wealth to be drawn down and nominal wages to fall, leading gradually to a real depreciation.

If instead, the government devalues the currency then (assuming sluggish nominal wage adjustment) there will be an immediate fall in the external and fiscal deficits. This is due to several effects. First, the devaluation will increase the output of and reduce the demand for tradeables causing the resource gap to fall. These effects will tend to have an expansionary influence on output. Secondly, real financial wealth of the private sector will fall due to the jump in the average price level, causing a cut in spending, and an increase in savings needed to restore desired levels of financial wealth. Thirdly, there will be an important income effect due to the rise in real value of oil exports and of imports. Since the government is a net exporter and the private sector is a net importer, a transfer of income will take place, reducing private revenue and the public deficit. These last two effects will have a contractionary impact on output, provided the government does not spend the additional devaluation-induced revenue. The Venezuelan experience during the eighties suggests that contractionary effects dominate in the short run. However, in the long-run, these changes will be reverted and the economy will go back to a balance of payments crisis. Devaluations by themselves have only temporary effects.

These results assume that agents do not foresee a collapse in the policy regime. However, much more interesting results appear if this assumption is relaxed. In one possible framework, agents will be assessing the solvency of the government, i.e. its inter-temporal budget constraint.[6] If they feel that future action on the deficit will not be forthcoming or the ability to borrow may be insufficient[7], they will guess that the government will be forced to default on the real value of its obligations. One way is to default on the nominal value of its liabilities, as the Mexico did in 1982 with the Mexdollars or as Argentina and Brazil did in early 1990 with banking deposits[8]. A simpler way to do so is through a devaluation, which reduces the real value of the monetary base and of domestic bonds. Knowing about these possibilities, domestic agents will try to convert their wealth into foreign assets through capital flight prompting a balance of payments crisis.

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[6] See, for example, Obstfeld (1986a), Buiter (1986b). Froot and Obstfeld (1989) analyze the case in which the regime change is known only with uncertainty.

[7] Buiter (1986a) analyzes the case in which an economy is allowed to borrow in order to defend the exchange rate. He argues that since borrowing is costly, it may actually increase the size of the speculative attack.

[8] The implications of this type of repudiation risks have been used by Ize and Ortiz (1989) and Khan and Ul-Haque (1985) to account for the simultaneous occurence of capital flight and external borrowing.

Also, inventory accumulation of traceable goods in anticipation of the collapse may take place, with stocks falling to normal levels thereafter. This will accentuate the loss of reserves through the current account and may have important output effects since demand for non-tradeables is likely to fall. Also, if domestic tradeables are less than perfect substitutes of foreign goods, their output may rise. After the collapse, these effects will be reversed, meaning that crises may cause significant output effects.

Private fixed capital investment is likely to fall (except for speculative accumulation of traceable equipment in anticipation of the devaluation) because the public expects an eventual recession and does not know the nature of the new regulatory framework[9]. Even if the agents know that there will be a rise in the relative price of tradeables, they do not know whether this will be brought about through more protection or through devaluation, making it difficult to choose between specific projects. Given the option value of waiting, investors will stand by until the dust settles.

C. Adjustment under Multiple Exchange Rates.

The standard models of multiple exchange rates (Dornbusch (1986), Edwards (1989)) assume that all commercial transactions take place at a single official exchange rate and that all financial transactions occur at a free floating parallel rate. It is further assumed that imports are demand determined, making the internal price of tradeables equal to the foreign price calculated at the official exchange rate.

These models are also quasi-stable in the same sense as the fixed exchange rate system, with long-run equilibrium taking place at a point where the current account deficit equals the fiscal deficit. Thus if the government runs a deficit, the balance of payments will eventually collapse [10]. Also, these models show that devaluations have only temporary effects, although their impact on the exchange premium is less than intuitive (see Edwards (1989)). Moreover, if the government does not react to the shock, the economy will, in principle, be unaffected unless agents anticipate a regime collapse.

A slightly different model assumes that official rate imports are rationed by the government (Hausmann (1990, Chapter 7)). This is a plausible hypothesis since it seems unlikely that, in the presence of large exchange premia, official rate imports could be demand determined[11] . In any case, rationing was important in the Venezuelan case. In this model, the internal price of tradeables is endogenous, with importers appropriating a rent.

This model has very different stability properties. First of all, it is unstable: if the government runs a surplus, the parallel rate will gradually fall back to the official rate until the system becomes a fixed exchange rate regime. If the government runs a deficit, the increased money supply will cause a real appreciation of the official rate, which will deteriorate the fiscal accounts, further increasing the monetary expansion. In this process, the premium will be rising until a point where the official exchange rate looses all credibility, prompting the

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[9] Irreversibility and uncertainty have been introduced in investment models yielding an option price for waiting. See Dixit (1989), Krugman (1989) and Pindyck (1989).

[10] Park and Sachs (1987) show that the breakdown will take place later than in a fixed exchange rate system. If the storage of importables is allowed in the model, then the time gain may not be significant and the speculative attack will take place mainly through the current account. The exchange premium will rise as the collapse nears.

[11] With large exchange premia, over-invoicing reduces the real effective price of imports causing an increase in demand.

government to devalue it. This may be called a *leaping peg* system with large maxi-devaluations taking place periodically. What causes this instability is that agents are unable to reduce the supply of money through a deterioration of the balance of payments, since both the current and the capital accounts are now exogenous. If there is a public sector deficit, a money overhang problem will arise and it will require ever-rising exchange premia.

Interestingly, within a certain range, official rate devaluations do not affect the domestic price of tradeables and may lower inflation since they transfer import rents to the government, thus reducing the fiscal deficit.
Moreover, faced with a negative shock, the government has an additional degree of freedom. It may cut the import ration so as to administratively defend the level of reserves. This policy will have an expansionary impact on output in the short run. It will also increase the premium and speed the rate at which it rises, bringing forward the next official devaluation. Inventories also play here an even more destabilizing role than in the fixed exchange rate case. Since agents are not free to increase imports, hoarding will affect any storable good whose price is likely to rise after the collapse, making the demand for internal output much more affected by the inventory cycle.

D. Adjustment under Flexible Exchange Rates

The standard model of a small open economy with a floating exchange rate generally shows long run global stability, with the inflation tax covering the unfinanced portion of the fiscal deficit (see Kiguel and Lizondo (1989), Hausmann (1990)). Consequently, there is in principle no possibility of regime collapse[12] .

If we assume that the reserve target of the Central Bank is exogenous, then a negative shock will have effects on the economy even if there is no explicit fiscal reaction. The shock will cause the net public sector supply of foreign currency to the exchange markets to fall. This will produce an immediate depreciation of the exchange rate, which will overshoot its long run real level. The jump will be greater if the public sector does not act to reduce the underlying fiscal deficit since, this being the case, economic agents will interpret that the fall in external income will eventually have to be financed through the inflation tax. In order to avoid the tax, agents will shift their portfolios towards foreign assets precipitating the jump in the exchange rate. Thus, the causes of the overshooting are very different from those that arise in the Dornbusch (1976) model.

This jump will have the standard effects of a devaluation: wealth will fall and the fiscal deficit will be reduced (both contractionary effects), while the structure of output and demand will change in reaction to the shift in relative prices (expansionary). The net short run effect on output is uncertain. Interestingly, in spite of the shock, the current account will move to a surplus. This is the result of agents trying to accumulate foreign assets in order to restore wealth and change its structure, given the expected rise inflation.

If, on the other hand, the government fully reacts by adjusting the underlying deficit, then expected inflation will not be affected and the exchange rate will not move but the economy will react with a short run recession caused by the fall in absorption, with the balance of payments remaining in equilibrium.

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[12] If demand for money is assumed to be negatively related to the inflation rate, then the possibility of multiple equilibria exists with at least two very different inflation rates generating the same inflation tax. In this case, the economy may jump from one inflation rate to the other.

E. The Costs of Adjustment

The last section has suggested that the expected reaction of the economy to a negative oil shock is crucially dependent on two aspects. First, the nature of the exchange rate regime; second, the fiscal reaction to the shock. Fortunately, the Venezuelan experience is able to highlight some of these elements as the period that will be analyzed covers all three exchange regimes and all types of fiscal reaction. Nevertheless, it will be important to address the issue of how efficient was the adjustment process. In order to do this we shall distinguish between three concepts of adjustment coststst[13].

Primary adjustment cost is the optimal and unavoidable decline in absorption required to return to general equilibrium. If all domestic output were perfectly traceable then primary costs would simply equal the external shock minus whatever excess of income over absorption which existed at the moment of the shock. However, since not all output is perfectly traceable, part of the fall in absorption may not go to improve the trade balance but to reduce non-traceable output. In this case, the economy does not remain at full employment, output falls below trend generating a further cut in absorption. We refer to this additional effect as *secondary adjustment cost.* Finally, we should distinguish these two costs from the *actual adjustment costs* paid each year, which may be above or below the sum of the two previous effects depending on whether the economy has over- or under-adjusted, leaving an unwarranted surplus or deficit. We will measure these costs in Tables 14 and 25.

III. In Some background on Venezuela

In this section we present a brief historical account of macroeconomic and oil related events in Venezuela. A synopsis is presented in Table 2.

A. The origins and development of oil in Venezuela

Venezuela became a major oil exporter in the 1920's. Important discoveries were made during the 1910's and major investments by Royal Dutch Shell and Standard Oil of New Jersey caused output to boom through the next decade. By 1925, oil became the country's principal export and in 1929 Venezuela became the first oil exporter in the world.

Up to that time, coffee and cocoa were the two major export crops. However, the clutch disease impact of the oil boom in the 1920' s and the Great Depression in the 1930's combined to reduce drastically their importance. Labor moved massively from the countryside to the *campos petroleros,* to the main cities or to work in road and infrastructure construction[14].

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[13] Our framework elaborates on Corden (1988) and Meller (1990) .

[14] This period is analyzed in Hausmann (1981), Baptista (1990).

After the major boom of the 20's, developments in thirties took a much slower pace both in terms of oil expansion and fiscal expenditures. The collapse in crop prices and the decision of the government in 1937 to maintain fixed its gold exchange rate when the U.S. decided to devalue -a move that generated a major real appreciation- further induced resources to move out of traditional uses and into the new oil-fueled development.

In the early 40's, the regulatory framework of the oil industry was redefined through clearer and longer term contracts. Most oil concessions were renewed for a period of 40 years and fiscal participation in the revenues was increased through royalties and an income tax. From 1943 up to 1957, this produced a major expansion of the industry, with output rising by almost 10 percent per year and real prices generally increasing. The non-oil economy boomed throughout this period at an average yearly rate of 9 percent.

B. Venezuela's first oil-induced balance of payments crisis

The 1956-1964 period is of interest in that it constituted the first boom-bust cycle in Venezuelan oil history, with a temporary boom leading to a balance of payments crisist[15]. The closure of the Suez Canal in 1956 generated an increase in the price of Venezuelan oil and heightened the interest of oil companies in Venezuela. The military government which controlled the country at the time decided to expand the area under concession by selling leases on oil fields which were well known to have major reserves. These sales generated almost 2 billion dollars in 1956-57 and helped maintain the huge fiscal expansion. Real public spending tripled between 1950 and 1957.

In January 1958 the military dictatorship was deposed and a democratic regime was put in place with an American-style Presidency and Congress. Elections were held in December 1958 and were won by the social democratic *Acción Democrática* party. Nationalist sentiment against the oil multinationals ran very high and led to important changes in legislation. No more leases were granted, tax rates were increased and a state-owned oil company was promoted. The reopening of the Suez Canal, the fall in international oil prices, the loss of revenue from the suspension of lease sales and the deteriorating oil investment climate produced an important fall in exports, fiscal revenues and capital inflows. The government was late to react to this situation, with spending still rising in 1958 and 1959. By 1960, an attack on the currency forced the adoption of an adjustment package.

The new policy was based on a multiple exchange rate regime, a fiscal contraction and a protectionist trade policy. By early 1964, the adjustment was completed with a return to a single fixed convertible currency after a 35 percent cumulative devaluation. Interestingly, throughout the adjustment, GDP grew at an average rate of 6 percent with the expansion in traceable output compensating for an important contraction in construction.

C. From the tranquil sixties to the shocks of the seventies

The sixties were characterized by stagnant oil revenues but growth of 6.5 percent was maintained

[15] An analysis of this period can be found in Hausmann (199Ob. Chanter 8).

through the impulse of import substitution industrialization. However, as the decade ended the growth rate started to fall reaching 4.5 percent in 1968-69.

The traditional policy regime prior to the oil shocks of the seventies can be characterized by four major principles: a fixed and unified exchange rate, fixed and rather rigid interest rates, fiscal discipline and protectionist trade policy[16]. This regime appeared to guarantee high growth and a very low inflation rate (1.9 percent for the period 1950-1970). Fiscal balance implied that the exchange rate was viable and interest rates were fixed above world levels, thus securing demand for the instruments offered by the rapidly expanding financial system.

When the first oil shock appeared in 1973, policy discussions dealt almost exclusively with the issue of what to do with the additional fiscal resources. The newly elected government of Carlos Andrés Pérez[17] initially decided to sterilize the windfall revenue abroad "until profitable investments appeared locally". However as the five-year presidency progressed, expenditures, mainly on public sector companies, rose very quickly and oil revenues declined so that fiscal balance was reached in 1976 and a deficit of 14 percent of GDP developed by 1978. Growth initially accelerated to over 10 percent in 1975 and then began to fall reaching 3.5 percent in 1978, as shortages of labor and infrastructure became dominant[18].

D. From positive to negative shocks: the treacherous eighties

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[16] Venezuelan policy in this period has been analyzed by Baptista (1990), Hausmann (199Ob Chapter 10).

[17] Presidential elections take place in Venezuela in early December every five years. The ne government takes office in the first quarter of the following year. The reader should keep in mind the recurring coincidence of the political and economic cycles: 1979, 1984 and 1989 are years in which newly elected goverrnents take over and also periods in which stabilization programs are adopted.

[18] On the impact of the oil windfall see Pazos (1979), Rodriguez (1987), Bourgrugnon and Gelb (1989) and Hausmann (199Ob, Chapter 5).

By early 1979, the newly elected government faced a rapidly falling reserve level, an exploding foreign debt[19] and repressed inflation due to severe overheating. It did not foresee the second oil shock which occurred just a few months later. It adopted a policy of fiscal cutbacks, mainly on imported goods and it freed most prices[20]. The economy went into a recession led by a contraction in the construction sector and by a fall in importable output due to the rapidly appreciating real exchange rate, caused by the gradual return of the over-heated economy to its natural rate of unemployment through a rise in real wages. Moreover, political difficulties in adjusting the controlled local interest rates to the jump in international rates led to some capital outflows.

After two years of spending cutbacks (1979-80) and given the apparently permanent character of the second positive oil shock, the government decided to adopt in 1981 an expansionary fiscal policy based on a projected increase in oil revenues of 12 percent per year. As the policy got under way, the first negative shock of the eighties appeared generating current account and fiscal deficits, accompanied by a massive attack on the currency by 1982. In February 1983, after a loss of more than 10 billion dollars in international reserves, the Central Bank decided to abandon the traditional unified and fixed exchange rate system and to adopt multiple rates. Capital account transaction were left to a floating exchange market which depreciated by almost 300 percent in the fallowing six months. Fiscal policy turned contractionary and trade policy became more protectionist as the government attempted to reproduce the 1960 adjustment plan.

By 1984-85 the balance of payments and fiscal accounts were showing impressive surpluses, unemployment had doubled and inflation had remained surprisingly low, prompting the government to adopt an expansionary fiscal policy for 1986. Again, just as the policy got under way, the second oil shock took place almost halving oil exports. In 1986-88, the government attempted to maintain its expansionary policy with increasing difficulty. During 1986, lack of fiscal restraint caused the foreign exchange premium to explode, forcing the government to make a "credible" devaluation of the official rate (93 percent in December 1986). However, since fiscal policy remained expansionary, the premium increased again and reached unsustainable levels by 1988. Throughout, international reserves were plummeting. Given that elections were scheduled for December 1988, the policy was maintained in spite of the deteriorating macroeconomic balance, until the new government took over in February 1989. By that time, little could be done to avoid an explosion of the underlying tensions and the economy went into its worst recession ever with a major jump in the price level as the government decided to unify the exchange rate through a floating arrangement.

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[19] It is interesting to note that on his inaugural address in 1979, President Luis Herrera Carnpins announced that he was receiving an over-indebted country and named a commission to study the problem and propose solutions. As a consequence of this initative the Public Credit Organic Law was made stricter in 1981 and short-term debt of decentralized agencies was restructured. However, this did not stop the fall into the debt crisis which would hit Venezuela in 1983. On this period see Palrna (1985), Rodríguez (1987a), Hausmann (199Ob).

[20] Even though total public sector spending increased by only 0.5 percent in 1979-80, expenditureson non-tradeables rose by 5.1 percent while those on tradeables fell by 11.1 percent. Consequently, the policy alleviated the balance of payments more than it did the internal imbalance.

IV. The nature of the shocks

In this section we analyze the nature of the negative shocks of the eighties and argue that they were *permanent* in nature. We further claim that they were *exclusive*, in the sense that they were fundamentally inconsistent with prior anticipations and *revised* in that they led to a major change in income expectations. The reasons for this being the case for oil and not for other commodities is addressed.

A. Expectations and realizations

Oil projections are made regularly in Venezuela for planning and budgetary purposes by the national petroleum company PDVSA (pronounced PeDeVeSa) and are revised by the Ministries of Energy and Finance. Since they affect major political decisions, these projections are the object of intense scrutiny and bickering between government agencies, political parties and the press. Hence, they must obey a legitimacy constraint which usually implies adopting some sort of international standard: expectations must be consistent with the conventional wisdom in the world oil market. In this section we present data produced for the medium-term plans and the yearly national budgets. The VI medium term National Plan covering the period 19811985 was presented in September 1981 while the VII Plan, covering 1984-1988 was made public in November 1984.

Table 3 contrasts the projected oil exports of the VI Plan with the actual values. Notice that a stable increase was expected instead of the marked decline observed. The difference represents 40.4 percent of expected income in 1983 and 54.3 percent in 1985. Moreover, exports never returned to forecasted levels. Since all the resources available had been assigned by the Plan, which also included some borrowing, the shortfall was bound to make fiscal policy unsustainable.

The VII National Plan was written after the dramatic forecasting error of its predecessor which was severely criticized for the inadequacy of its planning techniques (Matus, 1985). Consequently, the government decided to allow for contingencies by presenting three scenarios of oil exports. Table 4 shows the data for the planning period 1985-1988 and compares it with actual developments. Again, we notice that real income was about 40 percent below the levels expected by the worst scenario. Furthermore, income never returned to the projected trend. Notice also that in every projection, exports are expected to rise smoothly in value. This is consistent with Hotelling's rule, since otherwise it would be profitable for suppliers with different expectations to change their desired level of output.

Table 5 shows yearly projections for Venezuelan oil exports. The projected data, presented in column 1, is taken from the yearly budget laws approved by Congress in the last quarter of each year. These numbers are also based on projections made by PDVSA and approved by the Ministry of Energy and by the Presidential Budget Office. They are used to estimate oil tax revenues which averaged around 60 percent of central government current income during this period. Column 2 shows the actual value of exports. Column 3 calculates the percentage difference between the first two columns. Column 4 computes the implied rate of growth between the actual value of exports of the present year and the predicted value for the next year. Column 5 indicates the difference between the actual rate of growth and the predicted rate of growth.

As can be seen, predicted exports tend to be similar and on average somewhat higher than actual exports of the previous year. This is indicated by the positive average expected growth and by the low standard deviation for the series as a whole. Part of the deviations can be explained by the fact that the information

available in the fourth quarter of the year may differ from the yearly average. This is particularly important for the two years where the predicted growth was highest (1979 and 1986). In 1979, the oil shock took place in September-October and thus affected estimates for the following year. In July 1986 OPEC reacted strongly to the sharp fall in prices, so that by October, prices were well above the low levels reached in May-July. Thus it appears as if each year, or more specifically, each month of October, becomes the basis of the following years estimate. This is what you would expect if the underlying stochastic process was a Martingale instead of trend stationary.

As is well known, in Maringales all shocks are interpreted as permanent since the current price becomes the best estimate of future prices thus leading to a full revision of expectations. If the process was trend stationary, today's price rise (above a certain level) would imply expectations of a decline in next year's price. So, part of the instability in the series would be predicted. However, this does not happen in Table 5 as can be seen by boticing that the level and growth rate prediction errors of the series (columns 3 and 5) have similar standard deviations.

Moreover, the data clearly show that the three shocks which took place between 1978 and 1989 were not predicted and that they were inconsistent with previous expectations and that they caused these expectations to be altered. In the terminology of Bevan *el al* (1989) they would qualify as *exclusive* and *revised.* Thus, for instance, exports in 1978 were below predicted levels, and generated a bearish view of the market for the following year. Thus during the 1979-1980 oil shock, major underprediction errors were made. Notice that the 1980 predicted level was very similar to the actual 1979 level and 33.2 percent below the actual value. This induced the agents in the oil markets to revise their expectations upwards and a rapid positive trend of 12 percent per year became the new conventional wisdom, and was reflected in the VI National Plan[21]. However, major over-prediction errors were made in 1981-83, thus indicating that the first negative oil shock came as a surprise. Nevertheless, after each fall it was expected that prices would remain on their upward trend, but starting from a lower base.

After 1983, the market seemed to have determined a new much lower plateau and expectations of more moderate nominal increases became the norm. The oil market, however, surprised everyone again by falling significantly and causing huge over-prediction errors in 1985 and 1986. Again, each new year's actual data became the basis for next years prediction, just as in a Martingale.

B. Ex-post interpretations: a brief recount of changing diagnosis

It is interesting to contrast this view of the stochastic process with the arguments used at the time to justify both expectations and policies. As mentioned above, the VI National Plan announced in September 1981 projected an increase in the real price of crude oil of 12 percent per year for the planning period. As the Plan was being printed, the oil market turned bearish. It suddenly became clear that anticipation of future price rises, linked to the Iran-Irak war had caused heavy speculative accumulation of inventories during 1979-80. This behavior, more than any other, effectively caused the rise in prices, which averaged 29.7 dollars per barrel in 1981 for the Venezuelan mix, up from 12.0 dollars per barrel in 1978. As inventories reached a ceiling and interest rates increased to the highest levels ever, the market weakened dramatically.

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[21] If the process was trend stationary the prediction would have implied a price fall.

After this event took place, four aspects changed the medium term outlook in the opinion of experts[22]. First, it was argued that the price elasticity of demand, which had remained very low after the 1973 shock, increased significantly as thermo-electric plants switched quickly to coal and gas. Secondly, apparent income elasticity of demand fell dramatically and experts associated this fall to the delayed impact of investments in conservation, prompted by the first oil shock, and to a change in the technological pattern of world growth. Thirdly, the world entered into the 1981-1982 recession and fourthly, major new non-OPEC sources of supply had appeared in Mexico and the North Sea.

To contain the fall in prices, OPEC adopted the strategy of output cuts. Mandatory quotas were fixed on all members who were required to sell at official prices. Saudi Arabia adopted the role of swing producer adjusting its output in order to defend the agreed price structure. OPEC output, which had reached 30 million barrels a day in 1980, was reduced almost by half. This strategy meant that the volume of Venezuelan oil output in 1983 was 29 percent below 1979 levels.

Conventional wisdom during 1983-1984 held that as the world economy recovered from the 1981-82 recession, demand for oil would grow allowing OPEC to progressively relax its control on output. The experience during 1984 appeared to falta pa 18, 19, 20, 21,22,23,24 justify this optimism as prices strengthened. Consequently, when the Venezuelan government asked again the oil company in 1984 to produce new medium term projections for the VII National Plan, PDVSA presented the three scenarios shown in Table 4 characterized by stable real prices for oil and growing OPEC quotas.

[22] Wack (1985) recounts the way in which Royal Dutch Shell interpreted these changes in their strategic planning process.

However, during 1985 world demand for oil fell and non-OPEC supply increased forcing Saudi Arabia to cut its output to under 3 million barrels a day in order to defend the price structure. This appeared as too much of a sacrifice to the Saudi government given that its production potential, which had been effectively reached in 1980, was still at 10 million barrels a day. Hence it decided to abandon its role as swing producer in the second semester of 1985 and increased its output to its established "notional" quota of 4.5 million barrels a day. Soon after, in January 1986, prices crashed causing Venezuelan oil income to fall to almost half the level projected by the worst scenario provided by the oil industry[23].

After the shock, the new conventional wisdom argued that OPEC's strategy during 1981-1985, which was based on defending prices through quotas, had collapsed because oil had priced itself out of the energy market and because high cost non-OPEC producers were filling the gap created by the output cutbacks. The new strategy had to be based on recapturing market share both within the oil market and in the broader energy market. Consequently, a much lower price level had to be maintained for a sianificant period of time.

In conclusion, the negative shocks were unpredicted and caused expectations to change in line with the new information set. A consistent ex-post interpretation of events has always been developed to explain the new price level and to guide policy. From then on, prices were always expected to rise smoothly, until the next shock.

Economists may have trouble believing that prices of goods do not revert back to some fundamental long run cost. In the case of tree crops, this intuition seems to be well founded since long-run supply curves are likely to be very flat. Large shifts in price may take place because of short-run inelasticities of supply, but in the longer term the possibility to expand output with mostly constant marginal costs will act as a strong stabilizer. At any time, cost differences between producers are small. It is the inadequacy of the tree stock vis-a vis current demand that creates most of the price dynamics.

By contrast, currrent oil output is produced at wildly different long-run marginal costs due to geological differences between suppliers. This means that supply or demand shifts may require very large and permanent changes in vice.

V. Some methodological considerations

In this section we present some methodological aspects behind the tables that are analyzed below. We start with a technique to measure the oil shocks in terms of domestic non-oil GDP and then develop it further to express domestic adjustment in similar units.

A. A method to measure the size of the external shocks?

[23] Not even Saudi Arabia expected this turn of events, as was made clear by the dismissal of the Oil Minister Sheikh Ahmed Zaki el-Yamani in November 1986, the architect of Saudi oil strategy.

The oil sector can be taken to be an enclave with its final demand forming part of public sector spending and its production requiring only specific factors of production. Exports then resemble an international transfer, and the relevant GDP indicator is non-oil GDP[24]. The ratio of oil exports to non-oil GDP, call it +, can be written as:

$$\phi = (e\ P^*\ X)/(P\ Q) \qquad (1)$$

where e is the nominal exchange rate, P*is the foreign price of oil, X is the volume of exports, P is the non-oil GDP deflator and Q is non-oil GDP.

For reasons that will become obvious below, it is convenient to multiply and divide ϕ by a relevant world price index. We shall use the US wholesale price index (WPI):

$$\phi = (e\ P^*\ X\ WPI)/(P\ Q\ WPI) \qquad (2)$$

The percentage change in can be decomposed by log differentiation equation 2:

where the symbol "^" over a letter indicates the percentage change of the variable.

$$\hat{\phi}_t = \phi_{t-1} * (\hat{e} + \hat{P}^* + \hat{X} + \hat{WH} - \hat{P} - \hat{Q} - \hat{WH}) \qquad (3)$$

Reorganizing the previous expression we have:

The first term in square brackets of equation 4 measures the *relative external shock* as a share of GDP. This term has two components: the *absolute external shock*, in round brackets, measures the impact of changes in export volume and real price, while the second one takes account of the fact that

$$\hat{\phi}_t = \phi_{t-1} \{[\hat{P}^* + \hat{X} - \hat{WH}) - \hat{Q}] + [(\hat{WH} - \hat{P}) + \hat{e}]\} \qquad (4)$$

[24] Throughout the text, unless otherwise specified, GDP will simply refer to non-oil GDP.

non-oil GDP changes, thus affecting the denominator of ϕ. In an expanding economy, homothetic growth will require a constant increase in oil revenue so that its relative share remains constant. The relative external shock measures how much faster or slower than non-oil GDP has real oil revenue been changing.

The second term in square brackets of equation 4 takes account of the real depreciation effect which affects the domestic value of oil exports. For convenience we divide it into two components: the "underlying" depreciation (in round brackets) which consists of the inflation differential, and the change in the nominal exchange rate.

Figure 2 shows the accumulated changes since 1968 in both the absolute and the relative external shock[25]25. As can be seen, the first positive oil shock of the seventies had an initial absolute magnitude of over 50 percent of GDP. The govertment quickly reacted to it by imposing a major cut in output in order to conserve the resource. Production in 1975 was 34 percent below its 1973 level and kept falling slowly thereafter. From 1975 to 1978, the first oil shock represented on average 30 percent of GDP in absolute terms. However, given the large acceleration in GDP growth, by 1978 its relative size with respect to the economy had gone back to its pre-shock level. By contrast, the second oil shock represented some 20 percentage points of GDP in 198081 with respect to 1978 in absolute terms and a slightly smaller amount in relative terms due to the stagnation in growth, which occurred in this period.

The size of the first and second negative oil shocks is presented in Tables 6 and 16 and will be analyzed below.

B. A method to measure the macroeconomic adjustment to the shocks

One way to describe the economy's adjustment to the shock is to start from the national accounting identities. Nominal GDP must equal aggregate expenditure:

where A is real absorption, P_A is the price of absorption and TB is the trade balance. This expression is only approximately accurate since we have substituted oil GDP by oil exports.

Dividing this expression by nominal non-oil GDP (P Q), log-differentiating and rearranging terms

$$P\,Q + e\,P^{*}\,X\,WPI/WPI = P_A\,A + TB \qquad (5)$$

[25] Unless otherwise specified, all numbers for the 1968-1984 period come from the CORDIPLAN/ILPES database. Information for the 1984-1989 period is taken from the National Accounts Statistics for 1989.

$$\phi_t(\hat{P}^* + \hat{X} - \hat{WH} - \hat{Q}) = \alpha_{t-1}(\hat{A} - \hat{Q}) + \left(\frac{TB}{PQ}\right)^t - \left(\frac{TB}{PQ}\right)^{t-1}$$

$$+[\alpha_{t-1}(\hat{P}_A - \hat{P}) - \phi_{t-1}(\hat{WH} + \hat{e} - \hat{P})] \quad (6)$$

we obtain:

The term on the left hand side is the relative real external shock. The first term on the right hand side, which we call the *relative absoprtion effect*, measures the excess growth of absorption relative to output, as a share of non-oil GDP. The second term is the shift in the *nominal* trade balance, also as a share of GDP. The change in the *real* or constant-price trade balance is simply the difference between the real relative external shock and the relative absorption growth. The gap between the current price and the constant price measure of the trade balance is due to relative price shifts. For instance, a real depreciation will increase the value of a trade surplus measured in unit non-oil GDP.

The third term takes into account these relative price effects. It indicates how the much of the shock has been converted into a negative income effect generated by shifts in relative prices. A real depreciation has two effects: it increases the real value of exports and of imports. We call the first effect the *real depreciation effect*. We call the second one the *relative absorption price effect*, which indirectly measures the impact of the devaluation on imports since these exlplain the difference between the price of absorption and the price of non-oil GDP. In general terms, a negative shock is transformed either into reduced relative absorption, a deteriorated nominal trade balance or a change in relative prices.

Using this approach, data for the shocks are presented in Tables 7 and 17. The real relative absorption effect is further decomposed in Tables 9 and 21. Savings and investment by agents are presented in Tables 8 and 18. Changes in relative prices are studied in Tables 13 and **Error! Bookmark not defined.**. The impact of real depreciation on the domestic value of the oil surplus is estimated in Tables 10 and 19. Transfers of resources to the public sector through real depreciation, exchange profits and seniorage are studied in Tables 11 and 20. Changes in output are analyzed in Tables 12 and 23. Relative prices are presented in Tables 13 and **Error! Bookmark not defined.**. The overall efficiency of adjustment is estimated in Tables 14 and 25.

VI. The analysis of the first negative shock 1982-1985

In this section we analyze the first negative oil shock. We will start by studying the medium term changes. Then we will turn to the study of the adjustment path distinguishing between the period of non-adjustment (1982), the initial reaction to the regime collapse (1983) and the further adjustment effort (1984-85).

A. Medium term adjustment 1981-1985

Compared to the levels reached by the oil income in 1981, the real relative external shock amounted to 14.1 percent of non-oil GDP by 1985 (Table 6). Aggregate adjustment took mainly the form of a cut in real absorption which fell 22.6 percent of GDP more than output (Table 7) determining a substantial improvement in the real trade balance.

Decomposing the real relative absorption effect (Table 9) we notice that the cut in spending affected mainly investment (12.5 percent) but also private consumption (3.7 percent). Public consumption was barely cut (0.9 percent). It also affected mainly tradeables which fell by 19.9 percent of GDP while private non-tradeables declined by only 4.7 percent, indicating strong demand shifts.

From the viewpoint of the savings and investment balance (Table 8), the cut in absorption took mainly the form of a decline in the gross fixed investment rate which dropped by 12.5 percentage points of GDP, in line with domestic savings (11.1 percent of GDP). Accordingly, neither inventories nor foreign savings played a major role in the process[26]. Most of the savings and investment cuts between 1981 and 1985 were public (8.2 percent and 12.4 percent respectively), while little change took place in private rates (2.9 percent and 0.1 percent, respectively), which is is consistent with our previous finding that most of the consumption cut was private.

[26] This conclusion is only valid when comparing the two end points 1981 and 1985. In the process of adjustment both foreign savings and inventories play a major role.

Even though the external shock had only a direct impact on the public sector given that the oil industry was fully nationalized, there were significant income transfers during this period. By devaluing the real exchange rate, the public sector's external surplus increases in domestic value causing a transfer of real income from the private sector. Depending on the exchange rate given to the oil industry relative to other rates, this effect may appear either as an increase in the operating surplus of PDVSA or as exchange proSts at the Central Bank. Tables 10 and 11 calculate these effects and show that they amounted to 6.3 percentage points of GDP[27]. In addition, in 1985 the public sector was able to appropriate 2.3 percentage points of GDP through seniorage [28]. These income transfers explain in part the decline in private consumption.

In respect to output[29](Table 12), the tradeable sector grew much more than non-tradeables. In fact, between 1982 and 1984 private non-tradeables showed a negative growth rate while tradeables only declined in 1983. In 1985 tradeables grew at more than double the rate of non-tradeables, explaining more than half of the aggregate growth.

This result is in line with the movements in relative prices (Table 13). There was a real depreciation after 1982 both measured as the relative price of tradeables with respect to non-tradeables and as the IMF definition of the real exchange rate. This change in relative prices is also consistent with the shift in demand from tradeables towards non-tradeables.

A major construction bust took place throughout the period as can be seen from the fact that demand for non-traded capital goods declined by 9.4 percent of GDP more than output (Table 9) between 1981 and 1985. Moreover, as shown in Table 12, the construction sector declined every year between 1981 and 1985, falling by a cumulative 76 percent. In addition, the relative price of construction with respect to total nontraded goods declined (Table 13).

The efficiency of adjustment is analyzed in Table 14. To do so, we compare the actual values to a counter-factual in which the economy exhibits homothetic growth of 3 percent per year, including its real oil revenue. We chose a low growth rate because the economy was very close to full employment in 1981 and productivity trends had been negative. Anyway, a more optimistic counter-factual would only make the adjustment more inefficient.

Table 14-shows the results of our calculation. The first row measures the external oil shock with respect to its 3 percent growth trend, in units of trend non-oil GDP. The second row deducts from the external shock an amount equal to the initial output absorption gap (i.e. the excess current account surplus),

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[27] The real depreciation effect of Table 6 captures this same phenomenon since it corresponds to the change in the relative price of oil income in terms of domestic output. It estimates it at 5 percentage points of GDP.

[28] Given the multiple exchange rate system in place, seniorage could be increased but at the cost of a rise in the foreign exchange premium. In December 1985 the premium was 96 percent (see Table 1).

[29]Notice that Table 12 presents the sectoral growth rates weighted by the share of each sector in total non-oil output. It represents the contribution of each sector to the aggregate growth rate. Since the tradeable sector is less than half the size of the non-tradeable sector, the same contribution implies a much higher growth rate.

which we take to be equal to 2 percentage points of GDP in 1981. This row indicates the unavoidable disabsorption costs of the shock.

The third row shows the difference between actual non-oil GDP and trend GDP in units of trend GDP. This represents the loss of potential output given the path taken by the economy and we call it secondary adjustment costs. In an optimal adjustment process, these would be avoided. The sum of primary and secondary adjustment costs are called total adjustment costs.

In the fifth row we indicate how much actual absorption differed from the 3 percent trend, measured in units of trend GDP. The final row indicates the difference between total adjustment costs and the actual adjustment which took place. If the difference is positive, then there is excess adjustment expressed in terms of an excessive balance of payments surplus. If the difference is negative, then the economy is reducing its net foreign assets in order to finance absorption, and has consequently adjusted insufficiently.

By 1985 the economy had incurred adjustment costs of 28.2 percent of GDP, composed of 15.4 percent in primary absorption costs, 11.1 percent of secondary adjustment costs and 3.7 percent of excess adjustment. The secondary adjustment costs are broadly consistent with Okun's Law given the rise in the unemployment rate of 6.0 percent (Table 1).

Let us summarize our findings. An external shock of 14.1 percent of GDP was adjusted by means of a fall in absorption and a real depreciation. The composition of absorption shifted towards non-tradeables while that of output towards tradeables. All these findings are in line with the (negative) clutch disease effect.

Moreover, a major construction bust took place with a significant drop in demand for non-traded capital goods and a decline in its relative price. This bust occurred in the context of a negative permanent shock.

B. **1982: The private reaction to public non-adjustment**

The relatively standard results obtained in the previous section for the medium term adjustment contrast markedly with the initial path taken by the economy. In 1982 there was a real relative negative shock of 8.9 percent of GDP (Table 6). Instead of adjusting through a reduction in relative absorption and a real depreciation, the economy increased absorption by 1.2 percent more than output and appreciated the real exchange rate[30]. The trade balance, as a result, deteriorated by 12.3 percent of GDP (Table 7). Domestic savings fell by 9.7 percent of GDP. Furthermore, real appreciation produced a negative oil exchange taz of 1.6 percent (Table 11) due to the decline in the domestic value of oil output, thius deterioring further the public sector accounts.

This clear pattern of non-adjustment was to give significant signals to the private sector. The expectation that the policy regime would have to be reformed and that changes would include a nominal devaluation, (i.e. a default on the real value of money and other government liabilities) caused the private

[30] The relative price of tradeables declined 4.2 percent while the IMF style real exchange rate appreciated 10.9 percent (Table 13).

sector to react through three channels: capital flight, inventroy accumulation of tradeable goods (imports) and a reduccion in the purchase of non-tradeable goods (imports) and a reduction in the purchase of non-tradeable capital goods.

In effect, as shown in Table 5 capital flight, defined as privte non-financial short-term capital outflows plus errors and omissions reached 6.5 billion dollars which explain most of the 8.2 billion dollars in international reserve losses. These were financed only in a small proportion by a reduction in base money (756 million dollars). Most of the resources came through an increase in the private flow of financial savings generaed by a cut in demand for fixed investment. Private gross fixed capital formation decline by 3.6 percent of GDP (Table 8), a fall of 23.6 percent in its own terms. In fact, aggregate fixed investment fell, thwarting the expansionary designs of government policy.

There was a also positive inventory swing equal to 3.2 percent of GDP (Table 9). In fact, all of the increase in absorption is ecplained by inventories (consumption and fixed investment fell by 2 percentage points of GDP). Furthermore, all of the increase in absorption wa in tradeables, since non-tradeables declined by 0.5 percent.

Hence private behavior can be explained as an anticipated response to regime collapse becaus of insufficient fiscal adjustment to the shock. The construction bust, on the other hand, was not the consequence of a decline in absorption but of a change in the pattern of private asset accumulation.

C. 1983: the reaction to the balance of payments collapse

In 1983, the year of the balance of payments crisis, there was a further deterioration of real relative oil income (2.4 percent of GDP). However, the real trade balance showed a positive swing (25.1 percent) through a major decline in absorption (27.8 percent, Table 7). In nominal terms, the swing in foreign savings amounted to 13.5 percentage points of GDP (Table 8). How did such a drastic cut in absorption take place?

More remarkably, this drop in absorption happened in spite of a fall in aggregate savings of 8.6 percent of GDP. Thus, the whole adjustment took the form of a fall in total investment: 10.8 percent in fixed capital formation and 13.5 percent in inventories. Decomposing the real relative absorption effect we notice that the decline in consumption, investment and inventories amounted to 3.9 percent, 7.3 percent and 19.2 percent, respectively. Hence, inventories explain the bulk of the adjustment. Also, demand for tradeables fell by 25.7 percent more than GDP compared to the 1.1 percent decline for non-tradeables.

In this occasion, the drop in savings was mainly private (8.9 percent of GDP). This can be explained by the sudden shift of resources to the public sector through the real depreciation and seniorage mechanisms described in Table 11, a swing of 7.9 percent of GDP.

Seniorage was possible because the abandonement of the fixed exchange rate regime eliminated the Central Bank's obligation to sell its foreign reserves at a fixed price. By renouncing to this comitment it was possible to increase domestic credit to the public sector without the offsetting effect of a decline in reserves. In fact, as the private sector tried to convert its excess holdings of money into foreign assets, the

exchange rate in the parallel market depreciated by 223 percent between February 18 1983 (the day of the balance of payments collapse) and December 31 of that same year.

This depreciation implied a 3.5 billion dollar decline in the value of the money base (Table 15). Furthermore, since the nominal supply of base money was allowed to increase rapidly, the government was able to appropriate a further 940 million dollars through seniorage. It is these sorts of default costs that agents were trying to avoid.

As mentioned above, the decline in absorption of 27.8 percent fell disproportionately on tradeables (26.7 percent). This explains not only the drastic improvement in the trade balance but also the relatively moderate recession: non-oil GDP fell "only" by 3.7 percent. However this swing in the composition of demand happened in spite of small and contradictory changes in relative prices. As Table 13 shows, the real exchange rate (IMF definition) *depreciated* scarcely by 3.4 percent while the relative price of tradeables *appreciated* 4.2 percent.

Hence there are two questions to be addressed. First, why did the composition of demand change so drastically without a large shift in relative price? Secondly, why did the relative domestic price of tradeables not increase in spite of a nominal exchange rate depreciation and a large increase in the level of implicit protection?

The following interpretation is advanced. Assume inventories depreciate because of perishability or other reasons. This implies that the stocks accumulated in 1982 had to be consumed in 1983. Hence, in spite of a 50 percent drop in imports, the decline in demand and the dishoarding of stocks created effectively an excess domestic supply of tradeables. This forced down their relative price. The new protective system set up with the adoption of multiple exchange rates, therefore, was not a binding constraint for most goods during 1983. In fact, the volume of dishoarding was such that demand for domestically produced importables fell, explaining the decline in the output of tradeables (Table 12).

Summing up, in 1983 the balance of payments crisis was followed by a mayor improvement in the trade balance which was not generated by a rise in savings but mainly by a massive decline in inventories and, to a lesser degree, in investment. The adoption of multiple rates implied that the goverment defaulted on the dollar value of its monetary liabilities with the private sector, by 3.5 billion dollars. Moreover, under this exchange regime the government could use seniorage to finance its deficit. In addition, exchange profits further increased the transfer of real resources to the public sector. Consequently, the cut in spending was mostly private. Given the previous accumulation of inventories, the decline in absorption was highly concentrated in tradeables, thus explaining the large improvement in the trade balance without a major
decline in output.

D. 1984-1985: longer lasting adjustment.

Inventory change is not a durable form of demand reduction since it is limited by a non-negativity constraint on stocks. Hence, the balance of trade improvement of 1983 was unsustainable. Other adjustments to absorption were needed in 1984 since the inventory effect would now provide an important demand push. Moreover, the reliance on seniorage as a major source of public finance would lead to an even larger exchange premium. In February 1984, one year after the balance of payments crisis, the newly

elected government adopted additional and more lasting adjustment measures consisting mainly of an further devaluation and a major cut in public spending. They were to generate a relatively smooth aggregate transition but with major changes in its composition.

There was a 10 percent jump in the aggregate savings rate (Table 8), due mainly to internal reasons since the oil picture showed only a very slight improvement (1.5 percent of GDP, Table 6). Savings were used mainly to finance the now positive swing in inventories of 11 percent of GDP, caused by the end of dishoarding. Fixed investment declined in real relative terms by 4 percentage points of GDP (Table 9). The nominal trade balance as a share of GDP actually improved, but this was mostly due to relative price effects[31], since real absorption increased.

The rise in savings was mainly a private phenomenon (7.2 percent), but public savings increased also (2.7 percent), due to the improvement in oil income, the transfer of resources through depreciation (see Table 11) and a cut in consumption (0.5 percent of GDP). However, most of the amelioration in the fiscal deficit came from a decline in investment (9.8 percent of GDP or 41.5 percent in its own terms). This improvement led to a stop in the use of seniorage, allowing the parallel rate to stabilize in nominal terms and the premium to fall. It is in these circumstances that the increase in private savings, the end of capital flight and the recovery of private investment must be understood.

In fact, fixed private investment increased by 8.1 percent of GDP of 47.6 percent in their own terms, but remained still 13 percent below their already low 1982 levels. Moreover, since aggregate investment fell, there was a further decline in nontraded capital goods output and relative price (Tables 12 and 13), confirming the durability of the construction bust.

With the end of dishoarding and the additional nominal devaluation, there was a real depreciation and a rise in the relative price of tradeables as would be expected under the adjustment to a permanent negative shock. Resources shifted towards the production of tradeables, but so did demand, given the inventory swing.

The situation was to remain very similar in 1985, except that a negative oil shock was allowed to reduce public savings and the trade balance, without much internal impact. By then, the fiscal and external accounts were in surplus, inflation was at 9.1 percent and unemployment had risen to 12.1 percent. A confident look at the future convinced the government that stability had been achieved and that there was room for growth through additional public investment. However, the second oil shock was to change matters dramatically.

VII. *The analysis of the second negative oil shock 1986-1989*

[31] Real depreciation increased the value of the trade surplus measured in units of non-oil GDP.

While it took about a year for the balance of payments to collapse after prices declined in 1982, it took three years for reserves to run out once prices crashed in 1986 This much longer period of non-adjustment was made possible by the presence of multiple exchange rates[32], which limited the volume of capital flight In fact, while, under fixed exchange rates, in the single year of 1982 reserve losses amounted to 8.2 billion dollars, mostly through capital outflows, in the multiple exchange rate interval of 1986-1988 the loss reached even higher figures (9.6 billion), but spread out in a much longer period and linked mostly to current account deficits (see Tables 15 and 26). The balance of payments finally collapsed in 1989, the last year for which we have a full set of accounts. As in 1983, however, a sustainable adjustment was not achieved since the inventory cycle had not yet played itself out. Hence the analysis will lack an adequate epilogue.

A. **1986-1988: a long period of non-adjustment**

Real relative oil income declined by a cumulative 13.4 percent in the period 1986-1988 (Table 16). At the macroeconomic level, most of the adjustment took place through a deterioration of the nominal trade balance of 11.9 percent (Table 17). Real absorption grew less than output in 1986, but this trend was reversed from 1987 onwards so that by 1988 it had expanded in line with non-oil GDP. In other words, internal demand had not adjusted to the shock.

At the aggregate level, savings in 1988 were only 4.5 percent of GDP below their 1985 levels (Table 18), while fixed investment actually increased by 5.2 percent so that foreign savings declined by 13.1 percent of GDP. Again, we notice a significant accumulation of inventories in the period prior to the balance of payments collapse.

These aggregate figures hide very different behaviour by the public and private sectors. Savings declined by 8.7 percent of GDP in the public sector while they increased 4.2 percent in the private sector. Public investment increased by 3.4 percent of GDP indicating a complete absence of fiscal adjustment.

Confronted by this absence of response, the private sector deduced that the situation could not be maintained, meaning that when fiscal adjustment would eventually take place, private income would fall. Consequently, current income was thought to be above sustainable levels warranting an increase in savings, instead of the decline that would be expected under a negative shock.

In fact, the lack of fiscal response became evident already in 1986 when public savings declined by 6.9 percent, and investment increased by 2.1 percent, causing a major deterioration in the fiscal and external account. The private sector attempted to convert its portfolio into foreign assets, which, given the presence of multiple exchange rates, generated a 71 percent depreciation of the parallel rate between December 1985 and November 1986, causing the dollar value of the monetary base to fall by 1 billion dollars (Table 26) and the exchange premium to reach 235 percent. This prompted the December 1986 depreciation of the official exchange rate by 93 percent.

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[32]As mentioned in section II.C., models such as Park and Sachs (1987) predict that the balance of payments crisis will take longer to occur under multiple exchange rates.

However this devaluation did not have the same fiscal consequences as those of 1983 and 1984. Since the government's external surplus was now much smaller, the income appropriated through real depreciation was now smaller. Nevertheless, as indicated in Table 20, in 1987 the oil exchange tax increased by 2.6 percent of GDP relative to 1986. However, since the government maintained a subsidized rate for food, medicines and registered debt, much of that rise was returned to the economy through foreign exchange losses at the Central Bank, leaving a negligible fiscal effect.

During 1987 and 1988, fiscal policy was clearly expansionary. Public savings fell while investment increased from 8.6 percent of GDP in 1985 to 12 percent in 1988. This was an important element in determining private behavior. The representative agent must have interpreted that the absence of fiscal adjustment to a large oil shock meant that the policy regime was unsustainable.

Agents tried to move away from domestic currency as can be seen by examining the dollar value of the money base, which continued to fall in 1987 and 1988, through parallel rate depreciation. Given the prevailing exchange regime, this did not prevent the government from using seniorage to finance the fiscal deficit (see Tables 20 and 26)[33].

Again, inventories were a crucial channel through which the private sector could adjust to the expected collapse. Stock accumulation averaged 5.1 percent of GDP in 1987-1988, indicating an anticipation of a jump in the price level. Finally, private investment remained high throughout the period .

The composition of absorption stayed remarkably stable throughout the 19861988 period (Table 21 22). Output growth accelerated in 1986 because of the public investment expansion while consumption lagged behind. However, the situation tended to be reversed from 1987 onwards so that by 1988 both consumption and investment had expanded in line with output.

[33]The simultaneous presence of positive seniorage and of a fall in the dollar value of base money indicates that the public did not demand the additional supply of money and tried to convert it into foreign assets.

There are also no significant differences in the composition of absorption between tradeables and non-tradeables, even though the first increased slightly more than the second, indicating the lack of adjustment. This result is consistent with the observed decline in the relative price of tradeables vs non-tradeables throughout the period (Table **Error! Bookmark not defined.)**. Part of this fall is explained by the fact that in the December 1986 reform, non-traditional exports, which had previously been assigned to the parallel exchange rate, were transferred to the new depreciated official rate. This implied a significant nominal and real appreciation for exports of non-oil tradeables[34]. However, the real exchange rate (IMF definition) for imports shows a major depreciation in 1987, as a consequence of the December 1986 devaluation.

We have already advanced one reason why this shift did not affect the domestic relative price of tradeables: the new regime appreciated of the exchange rate for nontraditional exports. One more cause is the fact that under multiple exchange rates and import controls, a devaluation will reduce the implicit tariff appropriated by importers thus lessening the effect on domestic prices. Partial support to this explanation comes from analyzing the ratio of the wholesale (domestic) price of imported goods to the CPI. Since the first is mainly composed of tradeables while the second measures mostly non-tradeables, this relative price is a proxi for the real exchange rate at domestic prices. As can be seen in Table **Error! Bookmark not defined.,** this ratio increases much less in 1987 than the IMF definition and falls much faster in 1988, indicating that the December 1986 devaluation did not increase significantly the relative price of importables. Hence, since it reduced the relative price of non-oil exportables and did not increase significantly the domestic price of importables, the overall impact on tradeables (importables plus non-oil exportables) was negative.

In spite of the negative oil shock, there was no construction bust in the nonadjustment period 1986-1988. The construction sector averaged a rate of growth of 5.2 percent over the period, in line with the rise of GDP. Its relative price remained fairly stable. This result contrasts with that observed in 1982, when the government also tried to prop up the economy through public investment, but the decline in private investment declined by more, leaving an important aggregate slump in construction. In 1982, the reaction of the private sector was geared to increase its financial savings and transform it into capital flight. However, in 1986-1988 the presence of multiple exchange rates left private agents with real goods as the only hedges against the eventual jump in the price level. In this context, construction competed with inventories as a store of value[35].

Also, the presence of the multiple exchange rate regime affected the nature of the inventory build-up. If a devaluation is expected and capital flight is limited, then the best investment is to buy imports, given that their domestic price will rise in line with the depreciation. However, since agents were unable to satisfy their demand for foreign goods given quantitative restrictions on imports, they accumulated any storable domestic good. This shows up in Table 22 as a strong demand for domestically produced tradeables.

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[34]At the time of the December 1986 devaluation the parallel rate had reached 25.2 Bs./US$, while the new official rate was devalued from 7.5 to 14.5 Bs./US$.

[35]One could venture the hipothesis that real estate vis a vis inventories, has a lower correlation with the exchange rate but a smaller rate of depreciation (perishability). Hence, as the date of the collapse nears, there should be a declining emphasis in construction and a hightened demand for inventories. This trend appears to be present in Tables 18 and **Error! Bookmark not defined..**

Hence, the flight out of money had an expansionary impact on demand for domestic goods which, given the prevailing high rates of unemployment left by the adjustment to the first shock, generated an important expansion in output. As shown in Table 23, GDP grew at rates in excess of 5 percent throughout the period. As a consequence of this growth, the unemployment rate fell by 5.2 percentage points between the end of 1985 and 1988.

To analyze the efficiency of adjustment, we assume a counterfactual in which output, absorption and real external oil income follow a 4 percent homothetic growth[36]. We also assume an initial output absorption gap of 2 percentage points of GDP given the size of the current account surplus in 1985.

Table 25 shows that by 1988, primary absorption costs were 11.3 percentage points of trend non-oil GDP. Interestingly, secondary adjustment costs were negative, as the economy grew at rates higher than 4 percent. Hence, total adjustment costs were only 5.5 percent of trend GDP by 1988. However, since absorption grew more than in the counterfactual, actual adjustment costs were negative. This meant that by 1988 the adjustment was insufficient by the amount of the primary absorption costs. Excess growth in output compensated for excess expansion of absorption. Consequently, contrary to the first shock, non-adjustment did not have output costs.

B. **1989: the balance of payments collapse**

As in 1983, when the balance of payments finally collapsed, drastic improvements did take place in the current account through a major fall in absorption. As shown in Table 16, there was a 2.3 percent improvement in the absolute real external shock (3.6 percent in relative terms given the decline in output of 9.7 percent). Absorption fell by 19 percent in real terms, i.e. 10.4 percent more than output (Table 17). This meant that the real trade balance improved by 14.4 percent of GDP. However, the improvement in the nominal trade balance was much greater given the important real depreciation which took place when the exchange rate was unified in March 1989.

The improvement in the trade balance can be accounted for by a rise in savings (7.8 percent), a fall in fixed investment (3.7 percent) and a major swing in inventories (11.3 percent, see Table 18). The rise in savings was exclusively due to the public sector (7.8 percent) since private savings actually fell (S.1 percent). Furthermore, most of the investment cut also took place in the private sector (3.6 percent)[37].

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[36]The fact that unemployment was higher in 1985 than in 1981 leads us to assume a slightly higher counterfactual growth rate.

[37]These numbers refer to savings and investment rates as they appear in Table 18. In real terms, i.e., nost including changes in relative prices or in GDP, public and private investment fell by 2.4 and 4.7 percent of GDP, respectively. See Table 21.

The jump in public sector savings is explained mainly by the 10.2 percent increase in the oil exchange tax (Tables 19 and 20), caused by devaluation[38]. Faced with such a drastic reduction in income, the private sector reduced both savings and consumption, each by an amount equal to 5.1 percent of GDP. Moreover, investment and inventories were cut by 4.7 and 10.1 percent respectively, leaving a total decline in private absorption of 18.9 percent compared to only 2.4 percent for the public sector (Table 21).

The decline in private absorption exceeded the fall in income generating an increase in financial savings. These resources were used by the private sector to purchase base money[39] (2.2 percent of GDP or 636 million dollars, see Tables 20 and 26) and to cancel import letters of credit for 3.3 billion dollars[40].

The decline in absorption fell mostly on tradeables (14 percent of GDP) but also affected non-tradeables (5.4 percent). Within tradeables, it fell by 7.8 percent on imports and 6.2 percent on domestic goods. Within non-tradeables, it fell by 1.7 percent in consumer goods and by 3.7 percent in investment goods, indicating the presence of a major construction bust. These figures contrast with those of 1983. Then, the drop in absorption of non-tradeables was marginal and the fall in tradeables was mostly concentrated on imports. Hence, in 1989 the much larger downturn in domestic demand caused a much greater fall in GDP (9.7 percent). As Table 23 shows, the decline was evenly split between tradeables, non-traceable consumer goods and construction[41].

The drop in traceable output took place in spite of a major real depreciation. The IMF-style real

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[38]Part of this increase had to be transferred abroad through the increase in the value of debt service measured in units of domestic non-oil GDP. Notice that exchange subsidies remained stable at around 2 percent of GDP. Another contributing factor to the increase in public savings was the rise in oil income.

[39]As shown in Table 26, in 1989, for the first time since the start of the second oil shock, seniorage was not accompanied by a decline in the dollar value of the money base, indicating that a good portion of it was actually demanded given the sudden increase in the price level.

[40]Under the multiple exchange rate system in place, imports had to be financed for a minimum period of 180 days and were guaranteed a fixed official rate. When the balance of payments collapsed in 1989, the government gave only partial coverage for this exchange rate guarantee. Moreover, the minimum financing period requirement for imports was lifted. Both of changes induced private agents to reduce their short-term foreign liabilities.

[41]Given that construction has the smallest share in output, it showed the largest proportional decline, falling by 25 percent. This compares to a drop of 7 percent for other private non-traded goods and to a descent of 12.9 percent in private tradeables.

exchange rate rose by 13.1, the relative price of tradeables vs. nontradeables by 7.7 percent and the ratio of the WPI for imports to the CPI by 6.1 percent (Table **Error! Bookmark not defined.).** The decline in output can be explained by the fact that inventory dishoarding increased the effective supply of goods at a moment when final demand was crumpling. This effect was further amplified by the fact that inventories were mostly composed of domestic goods and not imports, due to the presence of controls during the period of non-adjustment. Moreover, trade liberalization and the unification and devaluation of the nominal exchange reduced the value of implicit tariffs, thus causing domestic relative prices to shift less than border prices, which are those measured in the IMF-definition of the real exchange rate.

Even though the proportional decline in construction was much larger than the fall in other other private non-tradeables (25 percent vs. 7 percent) its relative price was not affected. However, both sectors did fall with respect to tradeables given real depreciation. However, the construction bust cannot be explained by a fall in aggregate savings, since these actually increased.

Turning now to the issue of the efficiency of adjustment (Table 25) we see an increase in the secondary costs of adjustment of 13.5 percent of GDP, leaving output 8.3 percent below the trend. Under-adjustment was eliminated leaving a small excess adjustment of 1.9 percent of GDP. Actual adjustment costs amounted to 17.9 percent, 46.4 percent of which were secondary (i.e. inefficient). This contrasts markedly with the figures for 1983, when less than one quarter of the much larger actual adjustment costs were secondary. Thus, it can be concluded that adjustment in 1989 was more inefficient than in 1983[42].

VIII. Lessons and Conclusions

We have analyzed two permanent negative oil shocks and concentrated on the feature which distinguish a them form positive shocks: the fact that the solvency of the government is questioned, making the policy regime unsustainable unless prompt fiscal action is taken. The two shocks were similar in many respects: they were unexpected, of comparable magnitudes, they struck the economy just after the completion of stabilization efforts which had left the public and external accounts in surplus and had increased unemployment. Moreover, the shocks appeared at similar points in the five year political cycle and with the government committed to fiscal expansion. In both cases, the arrival of the shock was followed by a period of non-adjustment: real relative absorption was not cut leaving the trade balance to bear the brunt of the fall in external income.

Due to the lack of fiscal adjustment, the reaction of private agents was dominated by strategies designed to avoid the costs associated with the eventual public default. However, since the two shocks took place under very different exchange rate regimes, the strategies open to private agents and the policy instruments available to the government were quite different. In 1982, under a single fixed exchange rate, private agents could protect the value of their domestic financial assets by converting them into dollars at the set peg. They did so to the tune of 6.5 billion dollars in 1982. Moreover, they could stockpile imported goods. By contrast, in 1986 the multiple exchange rate regime severely limited the efficacy of these strategies. The attempt to transform domestic assets into foreign assets led to a rise in the exchange rate premium and to a fall in the dollar value of domestic assets, rather than to an increase in the stock of

[42]Said differently, more of the actual adjustment costs went to reduce output and less to improve the balance of payments.

dollars. Thus, in spite of more than 1 billion dollars of seniorage issued between 1986 and 1988, the dollar value of base money fell by 1.2 billion dollars. Furthermore, since imports were rationed, speculative stockpiling had to take place through the purchase of domestic storable goods.

This more restricted set of defensive strategies on the part of private agents explains why the government was able to maintain the period of non-adjustment for three years before being forced to take corrective measures, a fact which is in stark contrast with the swiftness of the collapse in 1982-1983. From the macroeconomic point of view, this would imply that multiple exchange rate regimes are more robust to external shocks than single pre-determined pegs.

There are other characteristics which make non-adjustment under multiple regimes politically more attractive. Since inventory accumulation is directed towards domestic goods, it has a positive impact on output. Also, since imports are restricted, the relative price of domestic tradeables is protected from severe real appreciation as implicit tariffs rise with excess demand for foreign exchange. By contrast, under fixed exchange rates, stockpiling affects mostly imports and is financed through a reduction in spending on non-tradeables and on domestically produced tradeables, thus having a contractionary impact on output. This effect is enhanced by the fact that the fixed exchange rate does not provide a compensating stimulus to traceable output. In the Venezuelan case, there was significant real appreciation in 1982. Hence, nonadjustment is expansionary under multiple exchange rates and contractionary under fixed rates.

Many of these advantages work in the opposite direction as soon as the balance of payments collapse forces the government to act. As agents now try to restructure their wealth portfolios, they quickly run down their inventories. In the case of fixed exchange rates, these are constituted mostly of imported goods, while with multiple rates they are composed of domestic goods. Therefore, dishoarding has rather different effects: it mostly improves the balance of payments in the first case, while it brings down domestic output in the second. This explains in part why the recession was much more severe and the adjustment more inefficient in 1989 than in 1983, even though the cut in absorption was smaller.

The inventory cycle plays itself out in three periods: stockpiling during nonadjustment, dishoarding immediately after the collapse and a return to balance thereafter. This means that part of the sudden improvement in the trade balance during the year of the collapse is not sustainable, as it is based on dishoarding, but inventory change will not remain negative for long. Hence, while the negative swing in 1983 reduced real relative absorption by 19 percent of GDP, explaining about two thirds of the improvement in the trade balance, in 1984 there was a positive inventory swing of 11.7 percent of GDP, as dishoarding ended. This expansionary effect took place in the context of a major fiscal adjustment which reduced other forms of absorption.

During the second shock, the decline in inventories in 1989 amounted to 12.5 percent of GDP (Table 21). This means that in 1990 the end of dishoarding must have had an important positive impact on absorption. How that effect was accommodated is not discussed for lack of data, but evidence of GDP growth of approximately 4 percent and stagnant imports suggests that domestic output accommodated the increase in demand. Hence, the fall in GDP during the first year of adjustment may be mostly a short-run phenomenon that will disappear in the next phase of the inventory cycle.

Also, during the years of balance of payments crisis, i.e. 1983 and 1989, dishoarding generated excess

domestic supply of tradeables causing output in this sector to drop, in spite of an important depreciation in the IMF measure of the real exchange rate. Domestic relative prices changed by much less than border prices or in fact moved in opposite directions, as happened in 1983. Only in the following year after the collapse do you get a supply response of tradeables, which takes place in the context of an increase in demand given the now positive swing in inventories.

The analysis presented leads to some insights into the issue of construction busts. While both shocks were eventually followed by a decline in construction activity, the start of the collapse was very different. During the first shock, construction output declined in 1982, i.e. the period of non-adjustment, in spite of an important increase in public investment. By contrast, the construction sector grew in line with aggregate output during the 1986-88 period of non-adjustment, in spite of an important decline in domestic savings. We have explained this disparity by noting that different exchange regimes affect the relative attractiveness of real estate as a form of safeguarding assets, when a regime collapse is expected. Under fixed exchange rates, foreign assets and imported goods are preferred. Under multiple rates, real estate competes mostly with domestically produced stocks of goods as a store of value. In this context, it has the advantage of a lower rate of depreciation.

From a political economy viewpoint, it is not at all clear that the ability of multiple exchange regimes to prevent capital flight makes for better policymaking. It is reasonable to expect politicians faced with a negative shock to put off decisions until after the next election. In our two cases, the government attempted to do just that. In 1983, it fell short of the target in spite of the short distances involved. By contrast, the multiple exchange rate regime, by allowing a postponement of adjustment through a limitation of the ability of economic agents to protect themselves against the eventual default losses, permitted the government to drag its feet for three years in 1986-1988. Hence, robustness may limit the degree to which markets discipline governments into responsible behaviour. Furthermore, we find evidence that the collapse under multiple exchange rates may lead to more inefficient adjustment with heavier costs in terms of output.

Managing instability in an oil exporting economy is an unresolved problem. The traditional idea of stabilization funds may be quite unworkable. In this framework, the government starts by fixing a baseline projection of oil income and then saves or dissaves the difference between that level and actual income. If we assume export revenues to follow a Martingale process, then there is no justification for any baseline projection. In this sense, the dismal Venezuelan experience at this guessing game is very telling.

Moreover, matters get more complicated once we take into account the asymmetry between positive and negative shocks. If a negative shock occurs and the government decides to finance the gap by drawing down the resources it has saved in its stabilization fund, economic agents may interpret this behavior as non-adjustment to a permanent shock and will launch a pre-emptive attack.

Finally, we may now turn to the initial question: was the Venezuelan mess a case of dancing out of step or of stepping out of line? Clearly, there was a bit of both. With shocks appearing just as the government had committed itself to fiscal expansion, there was clearly a lack of the needed synchrony that makes for elegant dancing. But putting off adjustment must definitely count as a misdemeanor. Government spending is too rigid a process to make for an adequate partner to the frivolous oil revenue. In its attempt to dance to such a boisterous tune, the government is bound to find itself stepping out of line.

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X. Tables

Table 1
Summary Data on the Two Shocks

	1981	1985	1989	85-81	89-85
Balance of Payments (Bill US$)	19.1	12.8	9.9	-6.3	-2.9 a
Oil Exports	12.4	7.5	7.1	-4.9	-0.4 a
Imports of Goods F.O.B.	7.8	6.8	5.9	-1.0	-0.9 a
Trade Balance	2.1	3.3	2.5	1.2	-0.8 a
Current Account					
Net Int. Reserves (exc. gold)	16.3	12.0	2.5	-4.3	-9.5 a
Non-oil GDP	336.7	326.9	350.5	-0.7%	1.8% b
Absorption	444.3	376.2	370.5	-4.1%	-0.4% b
Public Sector Def. (% of GDP)					
Unemployment (1)	-1.6	0.1	-1.7		
CPI Inflation (2)	6.1	12.1	9.8	6.0	-2.3 a
	11.4	9.1	81.0	13.6	43.4 b
Nominal exchange rates (bolivars per dollar)					
Official Exchange Rate (3)					
Parallel Rate	4.3	7.5	43.8	14.9%	55.5% b
Exchange	(-)	14.7	(-)		
Premium	(-)	96.0	(-)		
Relative Prices					
-Trad. vs. non-tradeables	100.0	103.6	102.2	3.6%	-1.4% c
NT capital vs. NT	100.0	94.6	94.7	-5.4%	0.0% c

(1) Second Semester of each year (2) December-December (3) December of each year (a) Arithmetic Difference
(b) Annual Rate of Change (c) Accumulated percentage change
Source: Central Bank of Venezuela

Table 2. A summary of macroeconomic events in Venezuela.

Period	External Situation	Policy orientation	Principal results
1964-1973	Stagnant oil income	1- Fixed unified exchange rates 2- Fiscal discipline 3- Import substitution indutrialization	1- High but falling rate of growth (average 6.8percent) 2- Very low inflation (1.7%) 3- External balance
1974-1976	First oil shock Higher world inflation	1- Expansionary fiscal policy 2- Emphasis on publicly owned basic industries 3- Nationalizations and restrictions on foreign investment	1- Acceleration in growth (9 percent) 2- Higher inflation but lower than world levels (9 percent) 3- Large and declining surpluses in fiscal and external accounts. Balance achieved in 1976.
1977-1978	Declining oil income	1- Increase in public spending mainly in state enterprises 2- Some attempts to cut back spending and credit	1- Decline in growth (3.5% in 1978) 2- Major external and fiscal deficits 3- Extensive supply bottlenecks: labor and installed capacity
1979-1980	1- Second oil shock 2- Jump in world interest rates	1- Stong fiscal contraction (mainly in imports) 2- Price liberalization 3- Wage increase law 4- Some trade liberalization 5- Interest ceilings do not adjust fully for the rise in world rates	1- Growth falls to zero. 2- Unemployment grows slowly. 3- Inflation accelerates to record levels (21 percent in 1980) 4- Real exchange rate appreciates strongly 5- External and fiscal balance achieved. 6- Capital outflows begin.
1981-1982	Oil incomevery high starts to fall	1- Fiscal expansion in public works 2- Interest rates are freed but monetary policy is expansionary 3- Large deficits in public enterprise sector financed through foreign borrowing	1- Mediocre growth (1 percent) 2- High but falling inflation (16 percent) 3- Large current account deficit and massive capital outflow (8bUS$ in 1982)
1983	1- Fall in oil income 2- Start of debt crisis	1- Adoption of a multiple exchange rate regime, average devaluation 30% 2-Import controls 3-Contractionary fiscal policy 4-Monetary policy expansionary 5-Generalized price controls are adopted	1- GDP falls 5 percent. 2- Inflation kept at 7 percent 3- Large balance of payments 4- Still important fiscal deficit 5- Large expansion in money supply 6- Floating rate depreciates over 200 percent
1984-1985	Oil income stable at lower level (13bUS$)	1-Devaluation of official rate 2- Maintenance of import controls 3- Fiscal cuts 4- Interest rate controls adopted 5- Price controls are relaxed 6- Debt strategy: simple rescheduling	1- After an additional contraction in 1984 (-2%), economy starts to grow in 1985 (3.5%). Unemployment reaches peak. 2- Inflation increases to moderate levels (15%) 3- Large fiscal and balance of payments surpluses.
1986-1988	Oil income collapses (8b US$)	1- Fiscal expansion adopted 2- Forced financing of imports 3- Major devaluation when 4- No change in interest rate ceilings	1- Economy grows at 5 % average. Unemployment falls back to 7% 2- Major balance of payments and fiscal deficit 3- Acceleration of inflation to over 30 %. 4- Floating rate depreciates by almost 200 % over the period
1989	Small oil income increase	1- Exchange rate system unified in a floating arrangement 2- Interest rates and prices freed. 3- Trade and foreign investment liberalized 4- Subsidies cut, public sector prices increased	1- GDP drops by almost 10 points and inflation exceeds 80 percent 2- Exchange rate unified close to parallel rate 3- Current account surplus and small fiscal deficit

Table 3

Oil Exports: actual and projected by the VI National Plan (1981-1985)
(Millions of US $)

	1981	1982	1983	1984	1985
Projected exports	18273	20466	22922	25672	28753
Actual exports	19094	15659	13667	14634	13144
Percentage difference	4.5%	-23.5%	-40.4%	-43.0%	-54.3%

Source: VI National Plan, CORDIPLAN (1981) and Central Bank of Venezuela.

Table 4
Oil Exports: actual and projected by ~e VI National Plan (1981-1985)
(Millions of US $)

	1985	1986	1987	1988
High Scenario	15280	16800	19180	21400
Baseline Scenario	14800	15740	17360	19300
Low Scenario	13060	13740	14580	16120
Actual	13144	7592	9104	8158
Percentage difference				
-High	-14.0%	-54.8%	-52.5%	-61.9%
-Baseline	-11.2%	-51.8%	-47.6%	-57.7%
-Low	0.6%	-44.7%	-37.6%	-49.4%

Source: VII National Plan, CORDIPLAN (1984) and Central Bank of Venezuela.

Table 5
Estimated and actual oil exports
(millions of dollars)

		Predicted Exports	Actual Exports	% Diff.	Predicted Growth		Growth Error
	1978	10737	8535	-20.5%			
	1979	gg41	13517	36.0%	16.5%		16.7%
	1980	13482	17959	33.2%	-0.3%		33.ó%
	1981	20189	18863	-ó.ó%	12.4%		-16.9%
	1982	20894	15395	-26.3%	10.8%		-33.5%
	1983	16013	13714	-14.4%	4.0%		-17.7%
	1984	13912	14670	5.4%	1.4%		4.0%
	1985	14824	12820	-13.5%	1.1 %		-14.4%
	1986	12774	7117	-44.3%	-0.4%		-44.1 %
	1987	8700	9054	4.1 %	22.2%		-14.9 %
	1988	9265	8136	-12.2%	2.3%		-14.2%
	1989	8877	9862	11.1 %	9.1 %		1.8%
		Average	-4.0%	7.2%			-9.0%
		Standard	23.9%	7.ó%			21.9%
		Deviation					

Source: *Exposición de Motivos del Proyocto de Ley de Preso Duesto,* various years, Oficina Central de Presupuesto and *Petróleo y Otros Datos Estadísticos*, Ministerio de Energía y Minas, various issues.

Table 6
The decomposition of the first oil shock
Accumulated Effects as Shares of Non-oil GDP

	1982	1983	1984	1985
Relative Real External Shock	-8.9%	-11.3%	-9.8%	-14.1 %
-Absolute Reai External Shock	-8.4%	-11.8%	-10.6%	-14.1 %
-Export Volume effect	-4.7%	-5.7%	-5.3%	-7.3%
-Real price effect	-3.8%	-6.4%	-5.6%	-7.3%
-0il Price effect	-3.0%	-5.3%	-3.8%	-5.1 %
-Import Price effect	0.8%	1.2%	1.9%	2.4%
-GDP growth effect	0.ó%	-0.ó%	-0.9%	0.0%
Real Depreciation	-2.0%	-0.7%	6.1 %	5.0%
-Inflation differential	-2.0%	-4.0%	-6.6%	-8.6%
-Nominal devaluation	0.0%	3.4%	13.5%	14.8%
Total Decomposed Effect	-10.7%	-11.9%	-4.4%	-9.9%
Actual Change	-10.1 %	-11.5%	-4.2%	-9.5%
Statistical discrepancy	-0.7%	-0.5%	-0.1%	0.2%

Table 7
Macroeconomic Adjusmtent to the First Oil Shock
Cumulative effects as shares of non-oil GDP

	1982	1983	1984	1985
Relative Real External Shock	-8.9%	-11.3%	-9.8%	-14.1 %
Change in Trade Balance	-12.3%	12.8%	16.1 %	11.9%
Relative absorption growth	1.2%	-26.ó%	-20.3%	-22.ó%
Relative price effects	3.4%	8.0%	-2.0%	0.7%
-real depreciation effect	-2.0%	-0.7 %	6.1 %	5.0%
-relative absorption price effect	1.3%	7.2%	3.9%	5.7%
Statistical Discrepancy	-0.7 %	-0.8 %	-0.5 %	- 1.5 %

Table 8
Savings and Investment by type of agent
(as share of non-oil GDP)

	1980	1981	1982	1983	1984	1985
Domestic Savings	46.0	39.3	29.6	21.0	31.0	28.2
-Public	26.9	21.5	12.6	12.9	15.6	13.3
-Private	19.1	17.8	17.0	8.1	15.3	14.9
Total Investment	35.1	32.4	35.7	13.6	22.9	23.4
Fixed Investment	35.8	34.4	33.5	22.7	21.0	21.9
-Public	17.5	21.0	23.6	17.1	7.3	8.6
-Private	18.3	13.4	9.8	5.6	13.7	13.3
Inventories	-0.7	-2.1	2.3	-9.1	1.9	1.5
Foreign Savings	-10.9	-7.0	6.1	-7.4	-8.1	-4.8

Source: International Monetary Fund and Central Bank of Venezuela

Table 9
Decomposition of the relative absorption effect
Cumulative changes as shares of non-oil GNP

	1982	1983	1984	1985
Total Absorption	1 . 2 %	-26. 6%	-20.3%	-22.6 %
-Non-tradeables	-0.5%	-1.1 %	-2.6%	-3.4%
-Public	0.4%	1.0%	1.5%	0.9%
-Private	-1 .0 %	-2.3 %	-4.5 %	-4.7 %
-Tradeables	-1.7%	-25.7%	-18.2%	-19.9%
-Consumption	-0.2%	-4.1 %	-4.4%	-7.8%
-Public	-0.8%	-0.4%	-0.9%	-0.9%
-Private	0.6%	-3.8%	-3.7%	-3.7%
-Tradeables	-1.3%	-7.0%	-9.1 %	-12.1 %
-Non-tradeables	1 . 2 %	2.9 %	5.6 %	5.2 %
-Investment	-1 . 8 %	-9.1 %	- 13.1 %	- 12.5 %
-Tradeables	-0. 1%	-4.4 %	-4.6 %	-3.5 %
-Local	0.0%	-1.5%	-1.5%	-1.2%
-Imported	-0.3%	-2.3%	-2.7%	-1.9%
-Non-tradeables	-1 .9 %	-4.5 %	-9.0%	-9.4 %
-Inventories	3.2%	-15.8%	-4.1 %	-4.1 %

Table 10
Calculation of the oil exchange tax 1981-1985

	1981	1982	1983	1984	1985
(1) 0il operating surplus (Bs.)	7119	5706	5098	8029	7287
	4	9	9	2	9
(2) 0il Exports ($)	1909	1565	1377	1462	1276
	4	9	8	7	1
Implicit surplus share* (Bs./$)	3.73	3.64	3.70	5.49	5.71
(3) Constant real surplus share* (Bs./$)	373	3 93	4.20	4.64	5.16
(4) **Corresponding** oil surplus (2*3.)	7119	6149	5792	6790	6580
	4	0	5	8	3
(5) 0il exchange tax (1-4)	.0	-4421	-6936	1238	7076
				4	
-as a share of non-oil GDP (%)	0.0	-1.6	-2.4	3.9	2.0

*: Calculated by multiplying the implicit surplus share by the non-oil GDP deflator and dividing by the US Wholesale price index.
Source: International Monetary Fund

Table 11
Estimated real transfers to the public sector
(as shares of non-oil GDP)

		1982	1983	1984	1985
	Seniorage	-1.2	4.0	-0.5	2.3
	Exchange profits	0.0	3.6	4.2	4.3
	0il exchange tax	-1.6	-2.4	3.9	2.0
	Total transfers	-2.8	5.1	7.6	8.6

Source: International Monetary Fund for Base Money, Exchange Profits and nonoil GDP. Table 10 for oil exchange tax.

Table 12
GDP growth by sector
percentane chanae as shares of non oil GDP

		1981	1982	1983	1984	1985
	Non-oil GDP	0.4%	1.8%	-3.7%	-1.2%	3.3%
	-Private	-0.3%	0.3%	-3.8%	-1.9%	3.0%
	-Tradeables	-0.3%	0.5%	-0.5%	0.7%	1.4%
	-Non-tradeables	0.0%	-0.2%	-3.3%	-2.7%	1.6%
	-Construction	-0.2 %	-0.6 %	-0.8 %	- 1.4%	-0.4%
	-Other	0.2%	0.4%	-2.5%	-0.8%	2.0%
	-Public	0.7%	1.5%	0.1 %	0.6%	0.3%
	-Tradeables	-0.2%	0.8%	0.5%	0.6%	0.5%
	-Non-tradeables	1.0%	0.7%	-0.2%	0.2%	-0.2%

Table 13
Relative price shifts 1981-1985
(Index 1980 = 100)

		1981	1982	1983	1984	1985
	Trad. vs. non-trad.*	98.0	94.7	90.7	95.7	101.5
	Real exchange rate#	89.3	79.6	82.3	96.2	97.8
	Construction vs. non-trad&	94.6	94.4	90.1	88.5	89.5

Ratio of GDP deflators for tradeables (agriculture and manufacturing) vs. non-tradeables (construction, commerce, transport, services).
IMF definition of the real exchange rate, trade weighted average.
& Ratio of Construction GDP deflator to total non-traceable deflator. Source: CORDIPLAN/ILPES database (for deflators) and Central Bank for the real exchange rate.

Table 14
How Efficient was the Adjustment to the First Shock?
as percentage of trend non-oil GNP

	1982	1983	1984	1985
External Shock	9.8%	12.8%	11.6%	15.9%
Primary Absorption Costs	7.8 %	11.8 %	10.4%	15.4%
Secondary Adjustment Costs	1.5%	7.9%	11.7%	11.1%
Total Adjustment Costs	9.4%	20.7%	23.3%	28.2%
Actual Adjustment	0.8%	33.9%	30.8%	32.9%
Excess Adjustment	-7.9%	11.0%	6.1%	3.7%

Note: Primary adjustment cost Is equal to the external shock minus the initial output absorption gap.

Table 1 5
Assets changes during the first oil shock

(millions of dollars)

Table 1 6
The decomposition of the second oil shock
Accumulated Effects as Shares of Non-oil GDP

		1986	1987	1988	1989
	Relative Real Externai Shock	-10.3%	-9.1%	-13.4%	-9.8%
	-Absolute Real External Shock	-9.1 %	-7.2%	-10.8%	-8.S%
	-Export Volume effect	2.6%	2.5%	4.3%	4.1%
	-Real price effect	-11.4%	-9.5%	-14.5%	-12.1%
	-0il Price effect	-10.8%	-7.7%	-10.7%	-7.2%
	-Import Price effect	0.7%	1.9%	4.4%	5.5%
	-GDP growth effect	1.3%	2.0%	3.0%	1.5%
	Real Depreciation	3.7%	8.2%	12.3%	27.5%
	-Inflation differential	-1.5%	-3.1%	-4.6%	-11.3%
	-Nominal devaluation	5.2%	11.7%	17.8%	43.7%
	Total Decomposed Effect	-7.0%	-1.6%	-2.8%	14.9%
	Actual Change	-8.8%	-4.1 %	-6.0%	8. 2%
	Statistical discrepancy	-1.8%	-2.5%	-3.2%	-5.8%

Table 1 7
Macroeconomic Adjustment to the Second Oil Shock
Cumulative effects as shares of non-oil GDP

		1986		**1987**	**1988**	**1989**
	Relative Real External Shock	-10.3%		-9.1%	-13.4%	-9.8%
	Change in Trade Balance	-8.0%		-6.7%	-11.9%	9.6%
	Relative absorption growth	-2.7%		-2.2%	0.3%	-10.4%
	Relative price effects	-1.3%		-0.2%	-3.5%	-13.8%
	-real depreciation effect	3.7%		8.2%	12.3%	27.5%
	-relative absorption price effect	2.3%		8.1 %	8.4%	9.9%
	Statistical Discrepancy	1.6%		-0.2%	1.4%	6.5%

Table 18
Savings and Investment by type of agent
(as share of non-oil GDP)

		1984	**1985**	**1986**	**1987**	**1988**	**1989**
	Domestic Savings	31.0%	28.2%	22.3%	27.6%	23.7%	26.4%
	-Public (1)	15.6%	13.3%	6.4%	7.2%	4.6%	12.4%
	-Private	15.3%	14.9%	15.8%	20.3%	19.1%	14.0%
	Total Investment	22.9%	23.4%	23.6%	29.7%	31.9%	17.0%
	Fixed Investment	21.0%	21.9%	23.0%	25.4%	26.1%	22.4%
	-Public	7.3%	8.6%	10.7%	10.9%	12.0%	11.9%
	-Private	13.7%	13.3%	12.3%	14.5%	14.1%	10.5%
	Inventories	1.9%	1.5%	0.6%	4.3%	5.9%	-5.4%
	Foreign Savings	-8.1%	-4.8%	1.3%	2.2%	8.3%	-9.4%
	-Resource Balance	-10.2%	-7.4%	0.5%	2.3%	7.6%	-16.1 %
	-Current transfers	2.1 %	2.6%	0.9%	-0.1 %	0.6%	6.7%

Source: Central Bank of Venezuela: National Accounts for 1 984-1989. (1) As calculated by the Central Bank's Public Finance Division.

Table 1 9
Calculation of the oil exchange tax 1985-1989

		1985	1986	1987	1988	1989
	(1) 0il operating surplus (Bs.)	72879	51130	92472	99631	305606
	(2) 0il Exports ($)	12761	7049	8927	8023	9862
	Implicit surplus share (1/2)	5.71	7.25	10.36	12.42	30.99
	(Bs./$)					
	(3) Constant real surplus share	5.71	6.49	7.88	9.41	15.10
	(4) Corresponding oil surplus	72879	45782	70385	75528	148903
	(2*3.)					
	(5) 0il exchange tax (1-4)	0	5348	22087	24103	156703
	-as a share of non-oil GDP (%)	0.0	1.3	3.9	3.2	13.9

*: Calculated by multiplying the implicit surplus share by the non-oil GDP deflator and dividing by the US Wholesale price index.
Source: International Monetary Fund.

Table 20
Estimated real transfers to the public sector
(as shares of non-oil GDP)

		1985	1986	1987	1988	1989
	Real value of Seniorage	2.3	1.1	1.8	1.7	2.2
	Real value of exchange profits	4.3	1.6	-2.1	-2.9	-2.7
	0il exchange tax	0.0	1.3	3.9	3.2	13.9
	Total transfers	6.6	4.0	3.6	2.0	13.4

Source: international Monetary Fund for Base Money, Exchange Profits and non-oil GDP. Table 19 for oil exchange tax.

Table 21
Decomposition of the absolute absorption effect
Yearly changes as shares of non-oil GDP

	1985	1986	1987	1988	1989
Relative Absorption Effect	-2.9	-2.7	0.5	2.6	-10.5
Absolute Absorption Effect	1.0	4.2	7.1	9.9	-20.9
-Public	1.6	3.5	0.1	3.0	-2.4
-Consumption	-0.2	0.7	0.4	1.4	-0.2
-Investment	1.8	2.7	-0.3	1.7	-2.4
-Private	-0.6	0.6	6.9	6.7	-18.9
-Consumption	0.2	2.4	3.2	4.0	-5.1
-Investment	-0.4	-0.9	0.5	0.5	-4.7
-Inventories	-0.4	-0.9	3.2	2.4	-10.1
-Statistical Discrepancy	0.0	0.0	-0.1	-0.1	-

0.3

Table 22

Table 23.
GDP growth by sector
percentage change as shares of non-oil GDP

	1985	1986	1987	1988	1989
Non-oil GDP	3.4%	5.9%	5.4%	5.7%	-9.7°/0
-Private	3.0%	5.0%	4.5%	4.9%	-9.8%
-Tradeables	1.4%	2.6%	1.8%	0.4%	-3.7%
-Non-tradeabies	1.6%	2.5%	2.8%	4.6%	-6.4%
-Construction	-0.4%	0.9%	0.3%	0.9%	-3.3%
-Other	2.0%	1.6%	2.5%	3.7%	-3.1 %
-Public	0.3%	0.8%	0.8%	0.6%	0.2%
-Tradeables	0.5%	0.4%	0.6%	0.5%	-0.2%
-Non-tradeabies	-0.2%	0.5%	0.4%	0.2%	0.5%

Table 24
Relative price shifts 1985-1989
(Index 1984 = 100)

	1985	1986	1987	1988	1989
Trad. vs. non-trad.	104.2	104.2	97.9	95.4	102.7
Real exchange rate#	101.7	103.7	169.2	157.9	178.6
Construction vs. non-trad &	101.5	99.7	100.4	101.1	101.5
WPI (imported) vs. CPI@	106.1	110.1	123.2	114.0	120.9

Ratio of GDP deflators for tradeables (agriculture and manufacturing) vs. non-tradeabies (construction, commerce, transport, services).
IMF definition of the real exchange rate, trade weighted average.
& Ratio of Construction GDP deflator to total non-traceable deflator.
@ Ratio of wholesale price index of imported goods to consumer price index.
Source: Central 8ank of Venezuela.

Table 25
How Efficient was the Adjustment to the Second Shock?
As shares of trend non-oil GDP

	1986	1987	1988	1989
Ext ernal Shock	9.9 %	8.5 %	12.6 %	9 0 %
Primary Absorption Costs	7.9 %	6.2 %	11.3 %	6 8 %
Secondary Adjustment Costs	-2.0%	-3.5%	-5.2%	8.3%
Total Adjustment Costs	5.8 %	2.5 %	5.5 %	15.7 %
Actual Adjustment	0.5%	-1.7%	-ó.1 %	17.9%
Excess Adjustment	-5.0%	-4 1 %	-11.0%	1.9%

Note: Primary adjustment cost is equal to the external shock minus the initial output absorption gap.

Table 26
Assets changes during the second oil shock
(millions of dollars)

	Levels	1985	1986	1987	1988	1989	1990
	International Reserves	1197	8206	7280	2385	2452	4506
		6					
	Dollar value of Base Money	3112	2156	1998	1880	2251	3913
	Yearly changes						
	International Reserves	1692	-3770	-926	-4895	67	2054
	Dollar value of Base Money	110	-956	-157	-119	371	1662
	Dollar value of seniorage#	583	223	356	371	636	2057

Year-end nominal value of the base money divided by the year-end financial exchange rate.

Year-end nominal increase in base money divided by the yearly average financial exchange rate.

Source: IMF Recent Economic Developments several Years.

XI. Graphs

Figure 1
Oil exports at constant 1990 prices

Figure 2
Absolute and Reiative External Oil Shocks
cumulative Effects 1969-1989