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RECESSION AND ADJUSTMENT: THE DOMINICAN CASE
1983 - 1985

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This analysis considers the implementation of an orthodox adjustment program in a small and open economy, with raw material exports and foodstuff and input imports. Such economy also has restrictions concerning capital inflows.

In the case of the Dominican Republic, it as argued that the execution of an orthodox program can aggravate, in the short run, the problem of unemployment and increase the inflation rate, leading the economy to a strong recession.

As an analytical framework, a simple aggregate supply and demand model is used to explain the response of output, prices and the balance of payments to the adjustment program. A dynamic analysis is also used to follow up the program in the medium run.

The conclusion is that, in the short run, with the implementation of the orthodox adjustment program, the instabilities of an economy as the one considered here can be aggravated. And unless structural change measures that have direct effects on the causes of the instabilities are taken long run positive results will not be seen.

En el estudio se analiza la aplicación de un programa de ajuste de tipo ortodoxo en una economía pequeña y abierta, en la que sus exportaciones son de materias primas y sus importaciones de alimentos e insumos, y que se encuentra, además, con restricciones en los flujos de capitales que recibe del exterior.

Estudiando el caso de la República Dominicana se argumenta en el trabajo que la ejecución de un programa de tipo ortodoxo puede agravar, en el corto plazo, el problema del desempleo y aumentar la tasa de inflación, sumiendo a la economía en una fuerte recesión.

Se utiliza como marco analítico un modelo simple de oferta y demanda agregadas para explicar cómo respondieron la producción, los precios y la balanza de pagos a la implantación del programa de ajuste. Asimismo, se utiliza un análisis dinámico para dar segui miento al programa en el mediano plazo.

La conclusión de este estudio es que con la implantación del ajuste ortodoxo en el corto plazo pueden agravarse los desequili brios de una economía como la estudiada y que, sólo si se toman medidas de cambio estructural que afecten directamente las causas de los desequilibrios podrán obtenerse resultados positivos en el largo plazo.

Nesse estudo analisa-se a aplicação de um programa de ajuste ortodoxo a uma economia pequena e aberta, caracterizada pela exportação de matérias primas e pela importação de insumos e alimentos, a qual, ao mesmo tempo, está sujeita a restrições quanto aos fluxos de capital que recebe do exterior.

Fazendo uma análise do caso da República de São Domingos, argumenta-se que a implantação de um programa de tipo ortodoxo poderia, a curto prazo, agravar o problema do desemprêgo e levar ao crescimento do índice de inflação provocando assim uma forte recessão dessa economia.

O marco analítico utilizado é um modêlo simples de oferta e demanda para explicar os efeitos desse programa na produção, nos preços e no saldo de dívidas. Paralelamente, utiliza-se uma análise dinâmica para prever a continuidade do programa num prazo medio.

Os resultados do estudo indicam que a execução de um ajuste ortodoxo poderia, a curto prazo, intensificar o desequilibro interno de uma economia como a estudada e que, sòmente com a aplicação de medidas de transformação estrutural que atinjam diretamente as causas dos desequilibros, será posivel conseguir resultados positivos a longo prazo.

Dans cette étude est analysée l'application d'un programme d'ajustment de type orthodoxe dans une économie petite et ouverte dont les exportations sont des matières premières et ses importations, aliments et facteurs de production et qui a en plus, des restrictions de capitaux venant de l'extérieur.

Dans le cas de la République Dominicaine, on argumente que l'éxecution d'un tel programme peut alourdir au court délai, le problème du chômage et augmenter le taux d'inflation ménant l'économie vers une forte récession.

On utilise comme cadre analytique un modele simple d'offre et demande pour expliquer comment la production, prix, et solde extérieur ont répondu à l'implantation d'un tel programme d'ajustement. En même temps, une analysée dynamique pour le suivi du programme au court terme, est employée.

Comme conclusion, on montre que avec l'implantation de l'ajustement orthodoxe, les déséquilibres d'une économie peuvent s'aggraver et que seulement si l'on prend des mesures de changement structural qui touchent directement les causes de ces déséquilibres, on pourra obtenir des résultats possitifs au long terme.

1. INTRODUCTION

The purpose of this paper is to analyze the short run impact of an orthodox stabilization program applied to a small open economy, with a heavy external debt, whose exports are mainly raw materials, and with highly inelastic imports in the short run, consisting mostly of inputs and food.

The basic hypothesis is that in such an economy, with fiscal and balance of payment deficits, the orthodox stabilization program will not solve the disequilibria in the short run. However it will produce a sharp recession, aggravating the unemployment and price inflation in the economy. The case studied is the adjustment program applied through the period 1983 to 1985 in the Dominican Republic.

The paper is divided into three sections. The first one contains the background of the Dominican economic and financial crisis, as well as a brief description of the 1983-85 adjustment program. In the second part a simple aggregate supply and demand model is developed as an analytical framework to explain the response of different economic variables to the adjustment measures. Later, the model is modified to consider the path of the adjustment program in the medium and long run.

In the third part, the adjustment costs of the program are considered. Finally, there is a section of conclusions and policy recommendations that emerge from the analysis.

2. Background

The average growth rate of the Dominican GDP was 4.5% during the period 1974-1983. This growth was accompanied of a mild inflation, 10.5% on average which is a very low rate according to Latin American standards. A great proportion of the savings required to finance these developments came from external sources, as can be appreciated in Table No. 1.

On the domestic side, before 1977 the public sector deficit relative to the GDP was negligible, but since 1978 it grew rapidly, averaging 5% from 1978 to 1983.

The balance of payments and public finance crises started in 1981, triggered by the sudden increase in the external debt service, due to the jump in the international interest rates and the need to pay some loans. The problems were aggravated by the fall in the terms of trade since 1982.

Some adjustment efforts were started since 1981, but it was not until January 1983 that a comprehensive program was put together. The implementation of the orthodox stabilization program started in 1983 when the country signed an agreement with the International Monetary Fund (IMF). The performance of the economy during the period of the program can be seen in Table 1: stagnation and recession in 1984 and 1985, rise in the inflation rate, reduction in gross investment, and improvement in the current account and in the public sector deficit in 1984, to further deteriorate in 1985.

The following paragraphs are a brief account of the external and domestic background of the crisis and a short descriptive analysis of the stabilization program implemented in the Dominican Republic from 1983 to 1985. For further details on these antecedents and program please refer to Dauhajre (1986), Guilliani (1986), García and Valdivia (1984), and CEPAL (1981-1985), sources of this analysis.

2.1 External shocks

The first external shock received by the Dominican Republic was the oil price hike as well as the rise in the price of its imported inputs and products in the mid seventies.

This adverse impact was financed through external debt and was not absorbed at all through adjustment. This indebtedness was

Table No. 1.- Main Economic Indicators 1975-1985.

Year	Gross Domestic Product	Consumer Prices Index	Trade Account Deficit/GDP	Current Account Deficit/GDP	Public Sector Deficit/GDP a/	Gross Investment/GDP
	Percentual Changes*					
1975	5.19	14.46	-3.36b/	2.07	-	27.3
1976	6.73	7.87	1.19	6.12	0.7	23.4
1977	4.99	12.78	1.48	5.82	1.6	24.1
1978	2.14	-8.8	3.92	7.99	5.1	24.3
1979	4.48	25.6	4.89	6.02	5.7	25.1
1980	6.07	4.6	8.41	10.10	6.0.	25.3
1981	3.98	7.3	3.63	5.58	6.2	21.7
1982	1.73	7.2	6.18	5.59	6.2	20.3
1983	3.94	7.7	5.76	4.87	4.2	19.5
1984c/	0.37	38.1	3.49	4.17	2.8	19.6
1985c/	-2.20	28.4	5.6	6.56	2.0	18.9

* Changes with respect to the previous year.
a/ Since 1981, it does not include the Central Bank deficit.
b/ Surplus.
c/ Preliminary data

Sources: Central Bank of the Dominican Republic, Monthly Bulletin, several issues.
CEPAL, Notas para el Estudio Economico de América Latina: República Domi-nicana, several issues.
García, Norberto and Valdivia, Mario, "Crisis Externa, Ajuste Interno y Mercado de Trabajo, República Dominicana 1980-1983, PREALC, Santiago, Chile 1985.

Guilliani Cury, Hugo, "Distorsiones, ajustes y perspectivas de la economía Dominicana, Banco Central de la República Dominicana, Santo Domingo, Dominican Rep., March 20, 1986.

not only contracted with international institutions but with private banks too, and at variable interest rates.

The industrial countries, after the second interest rate increase, started to implement very restrictive monetary policies aiming at the reduction of their inflation rates at the end of 1979. Consequently, the international interest rates rose and, thus, the external debt service in developing countries. In the Dominican Republic interest payments increased 40% from 1978 to 1979, and 124% from 1975 to 1979, as appears in Table No. 2.

At the same time that interest rates and oil prices were climbing, imports from industrial countries were being reduced because of the recession. This meant a decline in the volume of exports and prices from developing countries.

In the Dominican Republic the terms of trade fell 8.6% on average from 1980 to 1983 1/. The major decline was in the price of the three main export products: sugar, cocoa and coffee. An index with a base of 100 for the period 1970-73, relating each of these products to the main import -oil-, registers a fall to 24.1% for sugar during 1980-83, and to 28.2% and 40.1%, respectively, for cocoa and coffe, as reported by García and Valdivia (1984).

As the Dominican Republic did not adjust its economy since the first oil crisis in the seventies, the trade deficit was increasing continuously. The deficits average around 5% of the GDP during the period studied. It should be pointed out that until 1979 the trade deficit was in part compensated by the service account.

2.2 Domestic policies

A cost-benefit analysis suggests that any loan that is taken should be backed up by an investment, in order to be able to pay the credit taken and obtain some benefits. As the Dominican Republic decided to finance its increasing current account deficit with external debt that have to be paid in foreign currency, the loans should have been used to finance projects able to produce enough foreign exchange. This entails export or import substitution projects.

If the investment in those projects were done, we should observe an increase in exports and an import decline through time. But it is not the pattern in Figure No. 1, which shows the exports and imports in real terms from 1970 to 1983. As it can be seen, exports tend to decline while imports increase, falling only after 1981 when the crisis started.

Table No. 2.- Total External Debt and Interest Payments, 1975-1983*
(Millions of U.S. dollars)

Year	Indebteness	Interest
1975	805.2	97.9
1976	1,006.5	107.3
1977	1,122.2	107.0
1978	1,330.8	156.5
1979	1,632.7	219.6
1980	2,058.9	252.0
1981	2,286.0	304.9
1982	3,076.4	258.5
1983	3,237.2	294.0
1984	3,446.9	247.0

* Public and private external debt due in more than one year, registered in the Central Bank.

Sources: External debt: Guilliani Cury, Hugo, op. cit., p. 10 .
Interest payments 1975-1983: García and Valdivia, op. cit., p. 96.

1984: CEPAL, Notas para el Estudio Económico de América Latina y el Caribe, Rep. Dominicana, 1985.

Dominican Republic Exports and Imports of Goods
(Million dollars, 1970 constant prices)

□ Exports   + Imports
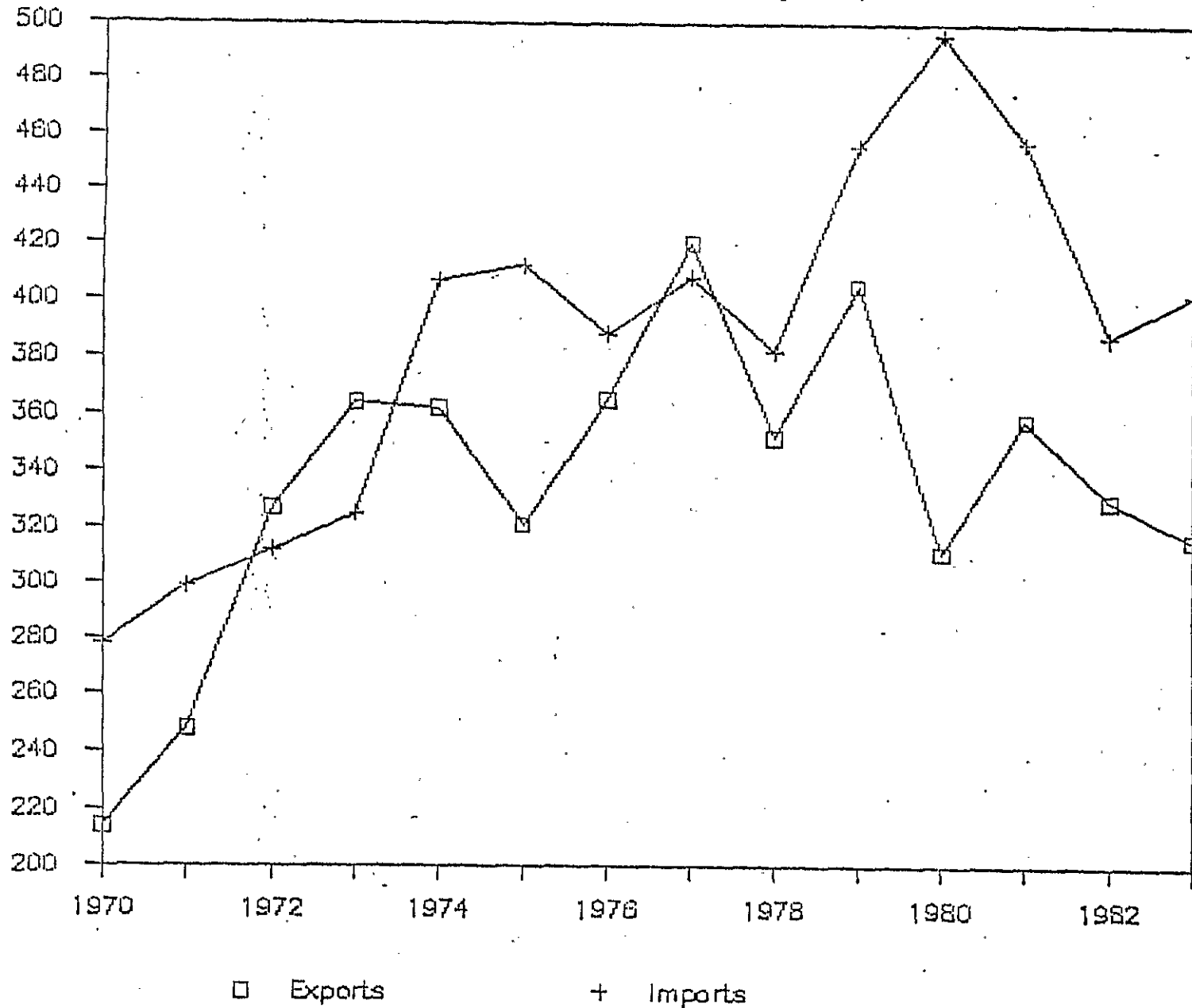
*/ Data in Annex No. 1

It should be pointed out that the investment to GDP coefficient was 22.32% on average from 1973-1982. This means that the problem was not a lack of investment, but investment in nontradeable goods sectors, which cannot contribute very much to solve the external inbalance. This results were caused mainly by the trade policies and the industrial incentives used by the different governments that ruled the country in the last twelve years.

Regarding the export sector, during the period 1976-1980, the Dominican Republic made an effort to increase foreign sales in the agricultural and mining sectors. The effort consisted in a special treatment of foreign investment in mines, in improving the coffee fields, and in new equipment for the Consejo Estatal del Azúcar (CEA).

These efforts were not extended to the diversification of the production of non-traditional agricultural and manufacturing exports, that were instead discouraged because the exchange rate paid to exporters was below the one in the black market. Furthermore, there was not enough support to exports. The first effort in this respect was made at the end of 1979 when the tax credit certificate (CAT) was created. These certificates granted a 25% additional return to non-primary exports. This measure was complemented in November 1982, by an export subsidy on the range of 10 to 20% of the exported FOB value, given by the Central Bank in very liquid certificates.

On the other hand, the import substitution process was mainly based on final good production, very intensive in the use of imported inputs and equipment. Thus, it is a process intensive in the use of foreign exchange. This bias in the process was caused by the industrial promotion law that confers import tariff reduction on raw materials and inputs as an incentive to investment, as well as tax exoneration of even 90% for some industrial activities 2/.

If the low tariff on imported equipment and the exchange rate overvaluation are taken into account, then the imported inputs and equipment are a lot cheaper than the domestic ones. Thus, the industrial incentives promoted the use of imported inputs and - equipment, and imports became very inelastic -food and inputs- that require a decline in aggregate expenditure to be reduced.

Thus, the elements in the Dominican balance of payments crisis are, on the one hand, the fall in the terms of trade and the increasing external indebtedness contracted at variable interest rates, which from 1979 started to generate large amounts to be paid as services. On the other hand there is the industrial structure

that requires imported inputs and equipment to work, and the export sector that did not grow enough to respond to the increasing foreign exchange demand, because of the lack of incentives for non-tradi tional exports and overvalued exchange rate, among other problems.

2.3 Public finance

A current account deficit is always accompanied by a desequi librium between savings and investment which generally is a public sector deficit. In the Dominican case, since the mid seventies, mainly after 1979, public finances were deteriorating since public revenue was falling and expenditures were increasing rapidly.

·Table No. 3 shows the current government revenues. As it can be seen, the main decline has been in the revenues from trade taxes and the income tax. The fall in revenue from the income tax is associated to the investment incentives confered in the form of profit tax exemption to corporations and enterprises.·

The most important component in the decline in total revenue is the reduction in the coefficient of trade taxes because of the importance in the total of the import tariffs. The relative fall in the import taxes has been caused by the increase in the proportion of tariff exonerated products in the total, such as oil, food, and inputs protected under the Industrial Promotion Law.

Thus, the public finance crisis is closely related to the present development incentive system, that is mainly based on tax exemptions to enterprises, which made the tax system lose flexibil- ity.

2.4 Adjustment program 1983-1985

Given its balance of payments problems, in early 1983, the Dominican Government signed an agreement with the IMF to obtain 419 millon US dollars in the extended facility framework and another by 48 million US dollars complementary agreement. As it is usual with the IMF agreements, these two loans were tied to the implementation of an adjustment program which should allow to reduce the current account deficit through a reduction in aggregate demand.

During 1983 the program was only partially implemented. The public sector deficit was 4.2% with respect to GDP, and it was mainly financed with domestic resources. The current account deficit, on the other hand, was barely reduced in 15 million dollars.

Table No. 3.— Current Government Revenues (As a percentage of GDP)

	1971–75 (Average)	1976–78 (Average)	1979–83 (Average)
Central Government	16.0	13.5	11.7
• Trade taxes	7.7	6.0	3.7
• Income tax	3.3	2.6	2.5
• Property tax	0.5	0.2	0.1
• Sales tax	2.7	3.3	3.5
• Other revenues	1.8	1.4	1.9
Other Government	1.0	1.0	1.2
Total Government	17.9	14.5	12.9

Source: García and Valdivia, op. cit., p.53.

With these results, the efforts in the implementation of the program were intensified in 1984. In April, there was a devaluation of the exchange rate, accelerating the rate of adjustment to eliminate the dual exchange rates. In this month, all import products -excluding oil- were sent to the parallel market which was at 2.82 pesos per dollar. Non traditional exporters were allowed to keep the revenues from their sales, while the traditional exporters received a preferencial rate of 1.48 pesos. The meaning of all these changes was a 77% devaluation of the peso during the year. It should be pointed our that the official exchange rate was kept in one peso per dollar.

Regarding public finance, the tariff and prices of the public sector were raised and all Government subsidies were reduced. The indirect taxes as well as trade taxes increased and the collection of direct taxes was improved through a reduction in the income tax evasion.

At the same time the outlays, mainly capital, were reduced. Thus, the ratio fiscal deficit to GDP was reduced to 0.6%. On the other hand, the total credit in the economy was reduced and the Government was forced to finance the fiscal deficit with external resources.

The current account deficit was reduced by 50% relative to 1983, when it was at 442 millon US dollars. The improvements in current account and fiscal deficit were obtained at the cost of economic stagnation and a fall in the standard of living of the population. For example, the growth rate of the GDP was less than 1%, and consumption and investment fell by 2 and 3%, respectively, while income per capita declined around 3%. Furthermore, the real wages stagnated because the wage increase (27%) did not compensate the inflation rate (38.1%).

The acceleration in the inflation rate from the level of the previous year (8%) is related to the imports price hike because of the devaluation of the exchange rate and the fiscal policy measures.

In 1985, there was a new agreement with the IMF providing 78.5 million DEG, for one year. This new agreement was a prerequisite for the external debt renegotiation and for enabling the country to take advantage of the benefitis of the Caribbean Basin Initiative.

'After this agreement, the implementation of the adjustment was reinforced: revenues from indirect taxes were increased, making tax collection to rise 43% relative to the previous year. The energy prices were rised and the subsidies to basic food were reduced.

The exchange rate was unified and allowed to float according to market conditions. The average devaluation during the year was 10%. The total credit was reduced, and the interest rates were rised trying to stimulate saving.

It should be pointed out that even though the adjustment program was drastically applied, the balance of payments and public finance disequilibria increased. The current account deficits amounted to 317 million US dollars, a 42% increase relative to 1984, and the fiscal deficit jumped from 64 million pesos in 1984 to 207 million in 1985.

The deterioration of the balance of payments was caused by several factors: a decline of 18% in the exports unit value, and increase of 19% in the factor payments, and 2% increase in imports. Regarding the fiscal deficit, its main causes were that the expenditures increased faster than the revenues, mainly capital expenditures that jumped 81%.

The results of the adjustment this year were a GDP fall of 2%, an increase in the rate of inflation of 28% and a decline in real wages of 2%.

3. An analytical framework

Using a simple aggregate supply and demand model, an analysis can be made of what happened in the Dominican Republic during the implementation of the stabilization program in the 1983-85 period.

3.1 Description of the model

The model used has three equations: aggregate supply and demand, and net exports. The aggregate demand is a increasing function of net exports (NX) and public expenditures (G), but it negative for the interest rate (r).

(1) $Y = a(NX) - br + cG$

  $Y = GDP$

It is assumed that prices are determined by production costs. These costs are unitary wages and the exchange rate is weighted by the imported input coefficient by product unit.

(2) $P = W + \lambda e$

where: P = domestic price level

   W = nominal wage rate

   e = nominal exchange rate

   λ = imported input coefficient by product unit

The wage rate is equal to the rate of the previous year, adjusted according to the state of the economic activity. If it is growing above potential output, the wage is increasing, and viceversa.

(3) $W = W_{-1} [1 + \beta(\frac{Y}{\bar{Y}} - 1)]$

where: $\bar{Y}$ = potential production

   β = adjustment parameter of wages to changes in economic activity

We will make: $y = \frac{Y}{\bar{Y}} - 1$

To obtain the aggregate supply, we combine equations (2) and (3):

$$(4) \quad P = P_{-1}(1 + \beta y) + \lambda(e - e_{-1}) - \lambda e_{-1} \, \beta y \, \underline{3/}$$

This equation shows a direct relationship between present and previous year prices, the level of production and the difference between actual and previous year exchange rates. The present prices are a function of the previous year prices adjusted for the cyclical conditions in the economy and the difference between the present and previous year exchange rate.
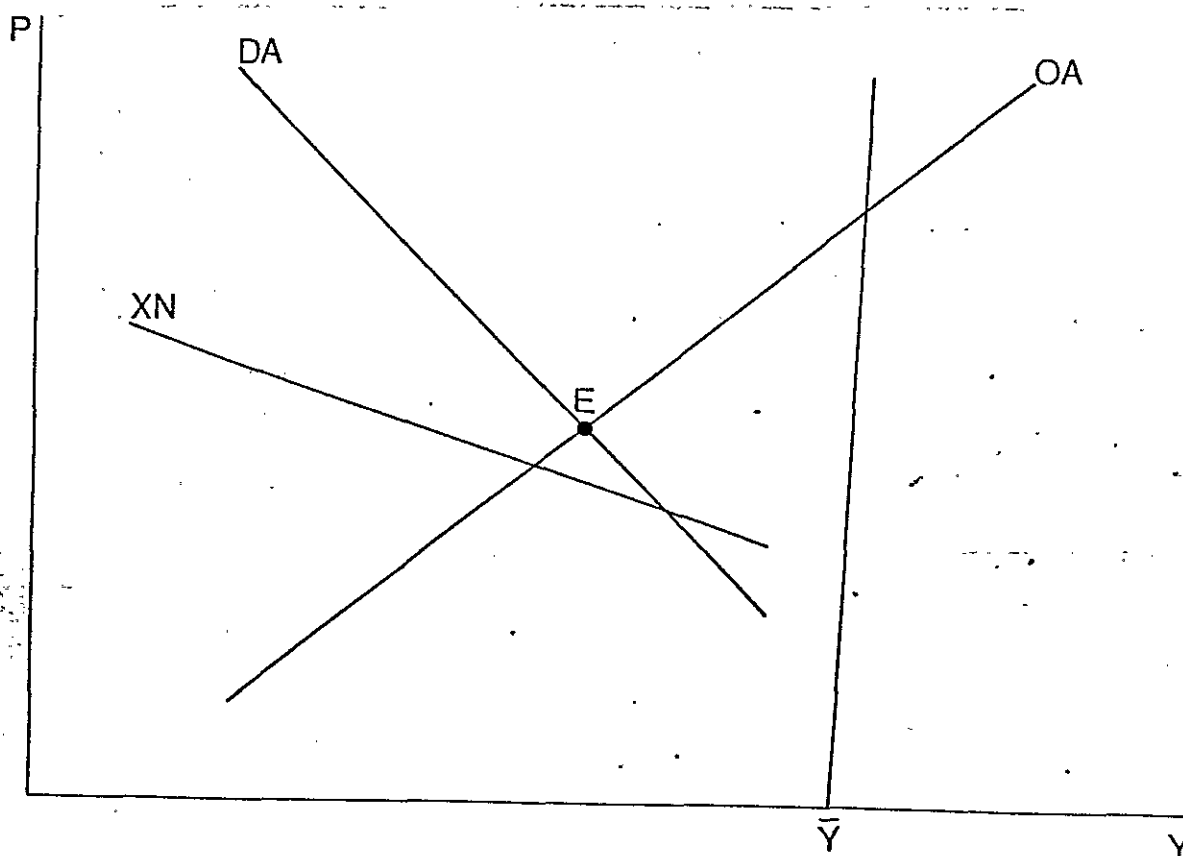
Net exports are an increasing function of the difference between export and import prices, weighted by the real exchange rate net of taxes and subsidies, and a negative function of the economic activity.

$$(5) \quad NX = h \left[\frac{e - (t + s)}{P} \right] (Px - Pm) - jY$$

where: t = implicit and explicit export taxes

s = implicit and explicit import subsidies

Figure No. 2

In figure No. 2, the relationships mentioned are represented in graphical form.

OA is the aggregate supply curve. It is upward sloping because prices increase with the output level. A higher production level implies more employment, then, higher labor costs. The curve position will depend in the past level of prices, because $P = P_{-1}$ only when the economy is at full employment. If the output level is above the potential there is more employment than at the potential output and $P > P_{-1}$. This implies an upward shift in the curve, and viceversa, when there is a level of employment below that of the potential output. The position of the curve will also depend on the exchange rate policy: a devaluation will shift up the curve because of higher costs due to higher imported input prices.

The aggregate demand DA is downward sloping. A price increase induces less expenditures for two reasons: first, a higher level of prices induces higher interest rates through a reduction in real balances 4/ and, second, a price increase makes domestic products less competitive relative to foreign products, given the exchange rate net of subsidies and taxes.

The net export curve is downward sloping. As income increases, more imports are demanded, which worsens the trade account. Thus, to go back to external balance a domestic price reduction is required relative to foreign goods to make the domestic ones competitive. It should be noticed that it is assumed that imports are very responsive to prices. To the right of XN there is a trade account deficit and a surplus to the left. A foreign exchange devaluation will shift the curve to the right and revaluations will shift it to the left.

In a point like E, in figure 2, there is unemployment in the economy because the short run equilibrium is to the left of the full employment curve ($\bar{Y}$). It is also a point where there is trade account deficit, given that it is to the right of XN.

3.2 What happened with the stabilization program?

The main measures taken to adjust the Dominican economy were the following:

1. Foreign exchange devaluation;

2. Total credit reduction and interest rate increases;

3. Increases in public sector prices;

4. Tax increases and reduction in public sector expenditures.

According to the model explained, measures 1) and 3) shift up aggregate supply, because they reduce investment and public, expenditures, thus reducing aggregate demand. On the other hand, keeping other things constant, measure 1) shifts XN to the right, reducing the trade account deficit. Figure No. 3 shows all these movements.

Figure No. 3
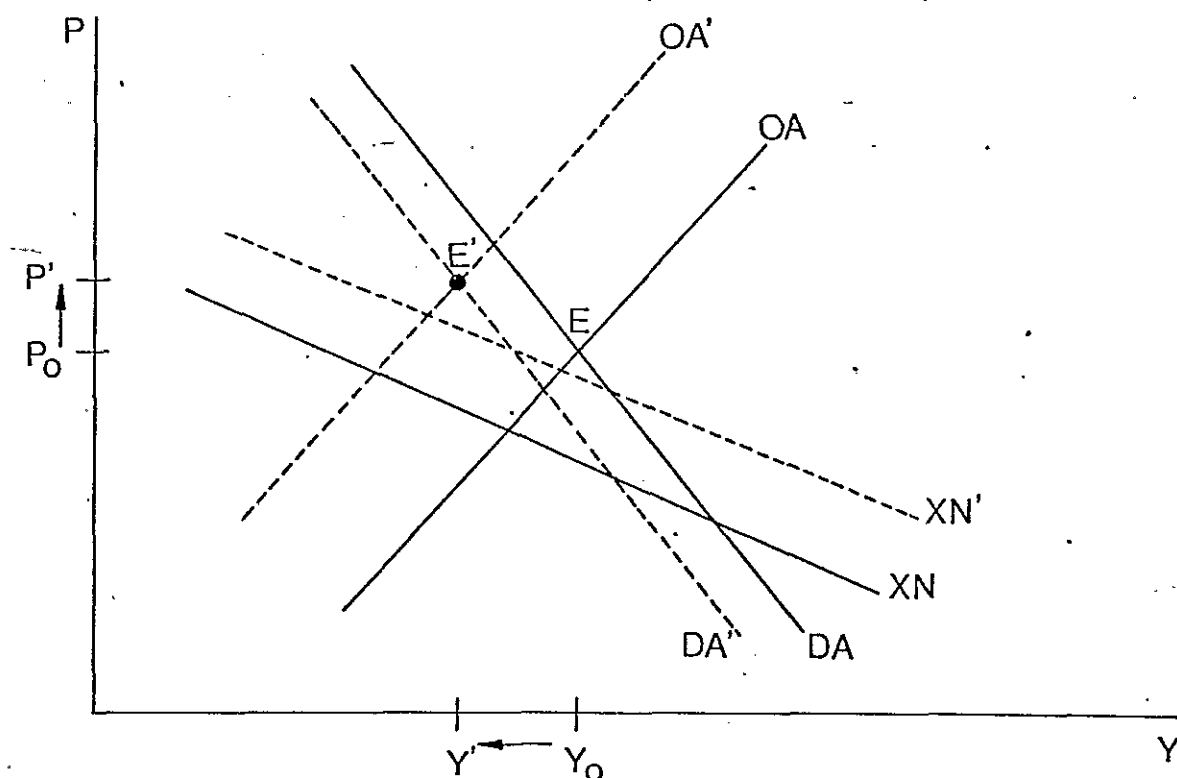
When the program started, the economy was at a point like E, with unemployment 5/ and trade account deficit. With the increase in production costs and the aggregate demand fall, the economy went to a point like E', with higher unemployment and prices, but with an improvement in the trade account because of the shift in net exports and the fall in aggregate demand.

Notice that after the adjustment, at point E', the economy is in greater disequilibrium than at E, with higher unemployment

and inflation, and still with an unbalanced external sector.

In 1985 the aggregate supply continued its leftward shift because of the energy price increase and the devaluation, which could not be compensated by the fall in real wages. The aggregate demand fell again this year and the net export curve shifted down because of the decline in the main export products prices. This means that the economy continued in disequilibrium, with increasing unemployment, inflation and balance of payment deficit.

3.3 Why the adjustment program does not result in equilibrium?

To follow a medium term adjustment program, like the one introduced in the Dominican Republic, a dynamic analysis is required. Thus, to do this, a modified model is needed where the initial equations are changed a little, a devaluation rule was incorporated, and another equation is added to show how the inflation rate changes through time. To simplify the analysis the equations are specified in logarithms.

The starting point is the goods market equilibrium, thus, supply equals demand, which is a direct function of the real exchange rate (θ) and the fiscal deficit net of international interest payments (f), and an inverse function of the real interest rate (r).

(1') $y = \delta\theta - br + cf$

where: y = gap between actual and potential output

$\theta = e - p$

On the supply side the same assumptions are used, and the inflation rate is determined by the real value of the previous year imported inputs, and by the devaluation rate adjusted for the level of economic activity.

(5') $\dot{p} = \lambda\theta_{-1} + [\dot{e} + \beta y ((P_{-1}/\lambda e_{-1}) -1)]$ 6/

Regarding the balance of payments, the current account is used instead of the trade account, and it is assumed that it is a positive function of the real exchange rate and negative of real income and the international interest rate (r^*).

(7) $cc = h\theta - jy - kr^*$ 7/

From (1') and the definition of the domestic interest rate, equation (7) could be rewritten as a negative function of the fiscal deficit and the interest rate.

(7') $cc = (h-j)\theta - jcg - (k-jb)r + k\dot{e}$

The devaluation rule applied is a decreasing devaluation proportional to the difference between the present and target exchange rate. The target exchange rate was 2.8 pesos per dollar.

The devaluation rule is:

$$e = \Upsilon(e - \bar{e})$$

where: $0 \leq \Upsilon \leq 1$

This rule facilitates the modelling of the strategy followed by the Dominican authorities trying to keep the nominal exchange rate around the value of 2.8 pesos per dollar, which was assumed to be the equilibrium exchange rate 8/.

If the devaluation rule is combined with equations (1') and (5'), the inflation rate will be a positive function of the real value of previous year imported inputs, of the nominal exchange rate and the fiscal deficit, and negative of the real exchange rate and the exchange rate target.

(5") $\dot{p} = \lambda\theta_{-1} + [e\,\mu - \Upsilon\bar{e} + \beta(cg-br)\,\emptyset]$

where: $\mu = \Upsilon + \beta\dfrac{\delta}{P}\emptyset$

$\emptyset = (P_{-1}/\lambda e_{-1}) - 1$

If the derivative with respect to time of $\dot{p}$ is taken, then the result is that the changes in inflation through time $(\ddot{p})$ will be a positive function of the changes in the real value of previous year imported inputs and the fiscal deficit. Thus, $\ddot{p}$ represents the changes in inflation through time..

(8) $\ddot{p} = \lambda\theta_{-1} + \beta\emptyset cg/\psi$ 9/

To keep the inflation constant, an increase in the depreciation of the previous year must be compensated for a decline in the fiscal deficit.

The dynamic adjustment is shown in figure No. 4.

Figure No. 4
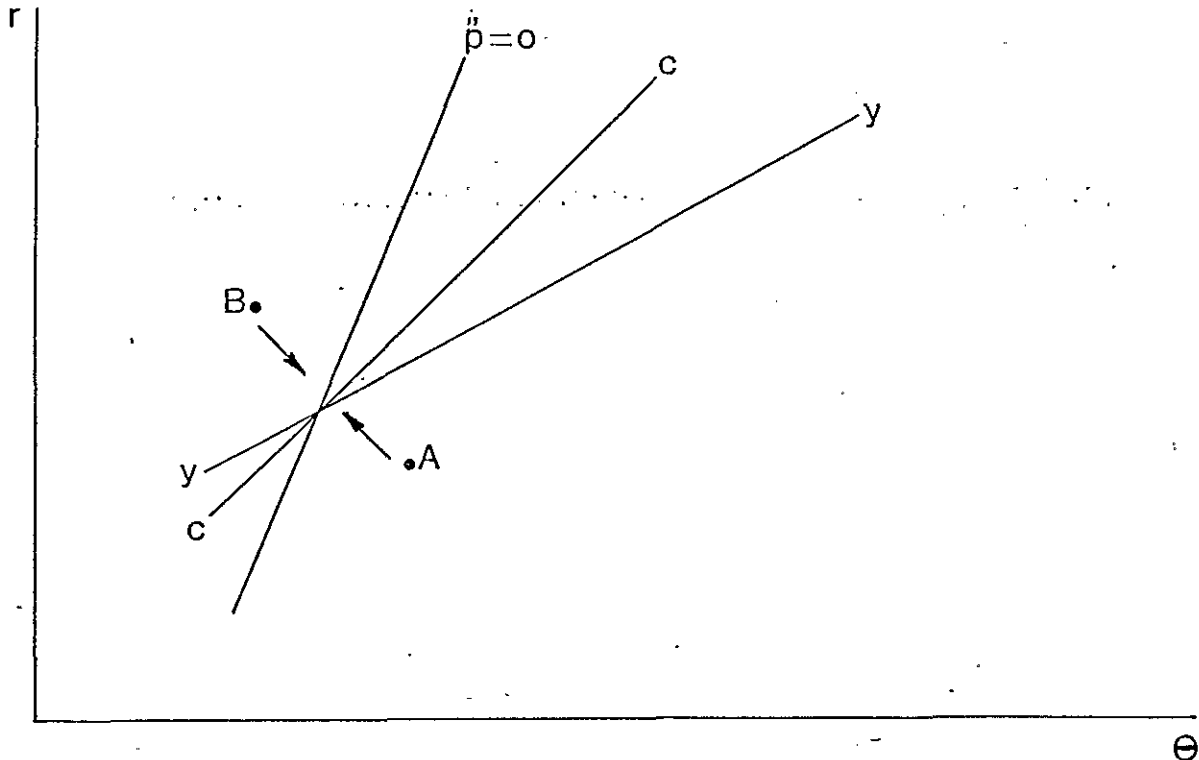
The curve yy shows the combinations of real interest rates and real exchange rates that keep the domestic equilibrium of the economy. A real depreciation of the exchange rate increases the demand for domestic goods because it makes the nontraded goods relatively cheaper than traded, and also it makes on traditional exports more competitive.

Thus, to keep the domestic equilibrium, a real interest rate increase is required to reduce aggregate demand and compensate the increase produced by the depreciation. This implies that yy is upward sloping. A point to the right of this curve signifies that present output is above potential, hence there is overemployment; while a point to the left means underemployment.

The cc curve shows current account equilibrium, an increase in the international interest rate means a service account deterioration, and to keep external equilibrium, a real depreciation of the exchange rate is required to compensate for the increase in external debt service, which implies that the curve is upward sloping. Along

the curve the real exchange rate is in equilibrium, while a point to the right signifies an overvalued real exchange rate and a current account surplus. A point to the left of cc signifies a current account deficit.

The curve $\ddot{p}$ = 0 represents constant inflation. It is in the middle of the yy and cc curves, because to keep inflation constant an increase in real depreciation --to the left of cc- must be compensated for with a recession --to the right of yy-. This curve is upward sloping. To the right of $\ddot{p}$ = 0 inflation is accelerating and to the left it is slowing down.

Given the slopes and position of these curves, if the economy is at point A, with overemployment and current account surplus, and if the authorities try to comply with the devaluation rule by keeping the nominal exchange rate around the target value, the real rate will be appreciating with the price increase caused by the economic activity, and if the fiscal deficit is kept constant, inflation will slow down according to equation (5").

At the same time, the interest rate will tend to increase by the fall in the real balances and income 10/, then, the economic activity will decline by the fall in net exports and investment, going back to external and domestic equilibrium. If the economy is at point B, there is current account deficit, unemployment, and inflation is slowing down.

The fall in the inflation rate will cause an increase in real balances, which means that the interest rate will fall, thus, investment increases as well as economic activity. On the other hand, the decline in inflation induces a real exchange rate depreciation improving the current account. In this case the devaluation rule implies a real depreciation of the exchange rate, because the goal is to keep the nominal value around the target value and not to keep the real parity.

3.4 The adjustment program

At the end of 1983 the Dominican economy was in a point like A in figure No. 5, with unemployment, current account deficit and price stability.

Figure No. 5
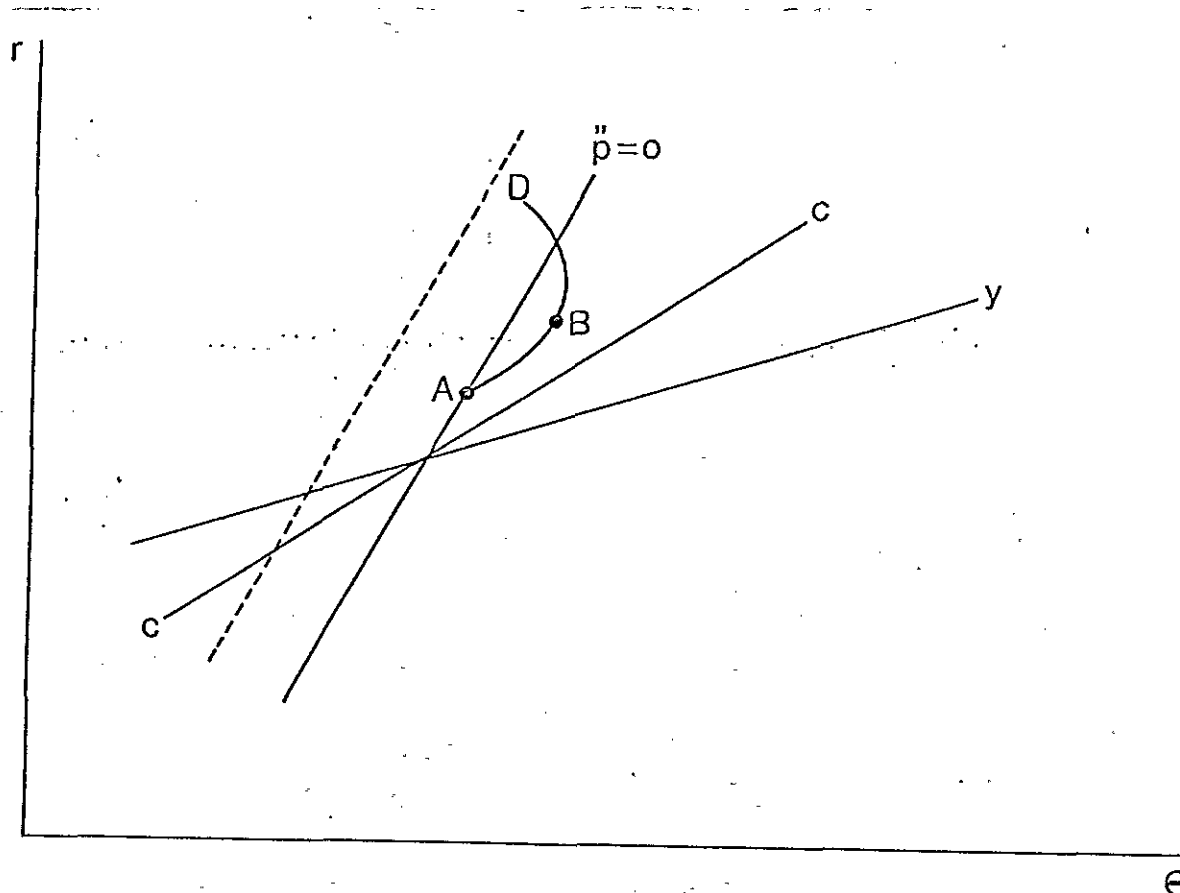
The measures taken in April 1984 (foreign exchange devaluation, fiscal deficit reduction and credit restrictions) pushed up the inflation due to the increase in the exchange rate, in accordance with equation (5') and increased the interest rate due to the foreign exchange devaluation, moving the economy to a point such as B, where there is unemployment, accelerating inflation and an improved current account. It should be pointed out, that the unemployment and the reduction in the fiscal deficit moderate the surge in inflation.

During the year 1985 the $\ddot{p} = 0$ curve must have shifted to the left, as it is pointed out by the term $\lambda\theta_{-1}$ in equation (8), due to the increase in the real cost of previous year imported inputs. This means that a new combination of higher real interest rate and reduced real exchange rate is required to keep the inflation rate constant.

With this new constraint, the economic measures taken during 1985, such as interest rates increases, subsidies reduction, taxes

and public sector price increases, credit restrictions, and a devalua
tion rate lower than the inflation rate, pushed the economy toward
a point like D, with higher unemployment, and real appreciation
of the exchange rate that led to a higher current account deficit.

It also resulted in an increase in the real interest rate
because of the fall in real balances and the increase in the nominal
rate.   In point D, the economy is moving out of the long run
equilibrium path, even though inflation is moderating due to the
real appreciation of the exchange rate and to the increase in the
interest rates.

Notice that the real exchange rate was very close to the
real parity in 1984, but in 1985 it was moving out.   It is so,
because the Dominican real exchange rate must have been calculated
net of taxes on exports and subsidies on imports. As it was pointed
out, in 1985 there were temporary charges on exports and a lot of
tariff exonerations on imports, which means that in spite of the
devaluation the net real foreign exchange should have been
appreciating.

Table No. 4 shows the quarterly evolution of the variables
used in the analysis. As it can be seen in the table, the variables
behaved in the same way as predicted by the model. After the April
1984 devaluation the real exchange rate appreciated continuously,
the inflation rate accelerated in 1984 and first quarter of 1985,
declining after that. Real balances remained approximately constant
during 1984, and declined in 1985. Even though it is not shown
in the table, the interest rates increased during the whole period
studied 11/.

Table No. 4.- Evolution of Main Economic Variables 1982-1985

	Real Balances M1/CPI a/	Inflation Rate (%) b/	Exchange Rate devaluation (%) b/	Real Exchange Rate ER/CPI
	Million Pesos	(Rate of Growth)		
1982				
I	457.8	0.5	1.26	0.89
II	440.8	0.6	2.36	0.92
III	444.7	-0.01	6.67	1.01
IV	514.8	1.22	-1.58	1.05
1983				
II	451.9	0.95	0.19	1.05
III	453.5	0.54	1.93	0.94
IV	537.3	1.56	13.92	1.03
1984				
I	500.6	1.63	35.00	1.32
II	493.2	3.68	13.58	1.39
III	490.4	2.77	1.09	1.28
IV	551.8	2.89	6.09	1.22
1985				
I	482.3	3.97	10.47	1.22
II	475.8	2.19	-3.06	1.11
III	473.9	0.71	-5.36	1.01
IV	534.4	1.60	-0.33	0.97

a/ Cash deposits of Central Government included.
 Quarterly average deflated by CPI 1977=100.

b/ Quarterly average rate of growth.

Source: Central Bank of the Dominican Republic, Monthly Bulletin, several issues.
 IMF, International Financial Statistics, 1985.

4. Stabilization program difficulties

There are three issues emphasized in the literature relative to stabilization programs. These aspects could help to the success of the program at the least cost 12/.

a) To identify properly the disequilibria to be corrected and what are the causes, to adopt adequate measures to directly counterbalance the causes.

b) The adjustment programs are usually recessive; thus, some measures that help to moderate unemployment and the decline in economic activity should be considered.

c) The cooperation of economic agents is essential to the success of the program and to reduce its costs. Thus, public approval before and during the implementation of the program is required.

Much of the problems faced by the Dominican adjustment program were because these issues were not taken into account when the program was implemented.

4.1 Basic disequilibria

The basic disequilibria to be corrected were two: the current account and the fiscal deficit. As it was mentioned before, there were three main causes for the current account deficit: inelastic imports -food and inputs-, external debt service, and price decline of the main export products.

To face the mentioned balance of payments problems a partial devaluation of the exchange rate for imports in 1983 was implemented. This devaluation was extended in 1984 to cover almost all imports, and to improve export rewards; in 1985 the devaluation was completed with the unification of the foreign exchange market.

Also, two renegotiation of the external debt to private banks, at the end of 1983, and the beginning of 1985 were made. And in this year there was a rescheduling, through the Paris Club, of part of the external debt contracted directly with Governments of other countries.

Were these measures the most adequate to solve the current account problems? As it was mentioned in Chapter I, the inelasticity of the imported inputs comes from the present industrial promo-

tion system. It makes cheaper the use of imported inputs relative to domestic inputs. Thus, it promotes that the import substitution industries be intensive in imported inputs.

This means that these imports will be reduced only through an economic recession in the short run, but not as result of devaluation. For example, during the first two years of adjustment, 1983 and 1984, the rate of growth of these imports were 3.5% and 4.8%, while they fell in 1985 when the GDP declined 2%.

There are several measures that could have been taken to solve the problem in the medium and long term, such as modifying the Industrial Promotion Law to reduce incentives for using imported inputs and increase incentives for using domestic inputs; imposing imports controls on inputs produced or that could be produced domestically. The imported inputs licenses should be tied to export quotas of the final product, etc. These measures reduce "s" in the net export equation.

/ inputs

It should be pointed out that these and other measures that could be taken to improve the industrial structure and reduce its vulnerability to external shocks, will not have any effect in the short run, but are required to solve the problems in the long run.

On the other hand, the import inelasticity and the fall in the terms of trade could be counterbalanced increasing the volume exported and diversifying the exported output. In this respect some measure adopted in the adjustment program were hurting instead of promoting the exported output: traditional exports amount to 80% of the total exported output, and precisely when their prices fell, they were allowed to receive and exchange rate for their sales, that was approximately half of the one received by other exporters.

Furthermore, when the foreign exchange market was unified in 1985, the traditional exports were charged with an exchange tax of 36%, while non-traditional were only taxed 5%. This latter measure was modified in January 1986, when the tax on non-traditional exports was eliminated but it was kept on traditional products, reduced to 18%. All these measures affect "t" in the net export equation.

ld ⌈ʇ

If the Dominican authorities are willing to promote the export sector, they will need to have a comprehensive export promotion policy, which must give clear signals to investors of the support they will receive. Among these signals, the most important is a foreign exchange policy to keep the parity around its equilibrium value. Thus, it will be a policy to reward not to punish exporters.

Regarding the external debt service, the debt renegotiation made at the end of 1983, only included the debt contracted with the private banks. It amounted to 565 million US dollars, which is around 18% of the total debt. This amount was rescheduled for six years, with a grace period of two years. The operation cost was a commission payment of 1-1/4% at once, and the interest rate was fixed at 2-1/4% above LIBOR, or 2-1/8% above the PRIME rate. Thus, this renegotiation implied higher interest payments for the country.

The following renegotiation of the private debt took place in May 1985, now the amount renegotiated was 787 million US dollars. In this new agreement the tenor was extended thirteen years, with a grace period of three years and a quasi-grace period of two years. The interest rate agreed was 1-3/8% above LIBOR, without any commission payment 13/. The conditionality of the external debt service improved a lot with this agreement.

As it could be appreciated in the brief description of the renegotiation, the economic authorities have very few degrees of freedom in the interest rate that they should pay on the external debt. The other interest payment component is the balance on which the rate is applied. The average rate of growth during the last three years of this balance was 6.9%. Among the causes of this growth are the finance of the public deficit in 1984 and 1985, made with external funds; thus, aggravating the future interest payments on the external debt.

Regarding the public sector deficit, the measures taken to improve the public finances, taxes and public sector price increases, as well as reduction in public sector expenditures, even though they changed the declining trend in the public revenue to GDP ratio, they were not enough to solve the public sector deficit. It was caused mainly by the lack of freedom of the authorities to make a real fiscal reform, and to modify the development incentives system, given that, as it was mentioned before, the incentives are mainly based upon tax exoneration.

Thus the adjustment program did not affect the causes of the basic disequilibria in the economy.

4.2 Economic recovery

This is an aspect that is generally overseen in the adjustment programs. The programs generally use some instruments that may be very efficient in reducing aggregate demand but very costly in output and employment terms.

Two instruments widely used are total credit restriction and public expenditures cuts, without distinction between current expenditure and public investment. Both instruments were used in the Dominican program contributing to increase its costs. For example, Table No. 5 shows commercial loans growth rate by sectors, It could be seen that the total credit growth rate was below the inflation rate (38.1% in 1984 and 28.4% in 1985). Thus, there was a strong decline in real terms in the credit for all sectors, with exception of the sugar industry in 1984.

The sectoral credit might have been more selectively reduced by concentrating it in the sectors the authorities were willing to promote, such as agriculture, manufacturing and exports. If the latter measures would have been taken it would have ameliorated the recession and, at the same time, it would have incentivated output in those key sectors needed to counterbalance the disequilibria in the economy.

Regarding the reduction in public sector expenditures, the government consumption increased during the three years studied at an average growth rate of 26.9%, while investment expenditures had a strong decline in 1984, but improved in 1985.

Table No. 5.- Commercial Bank Loans Sectors
(Growth rate)

Sectors	1983-1984	1984-1985 [a/]
Total	9.2	16.9
Agriculture and cattle raising	15.9	23.1
Sugar Industry	41.4	14.6
Manufacturing Industries	10.5	24.8
Construction	16.2	6.3
Commerce	–	14.8
Public sector	4.6	14.8
Imports	4.3	-1.4
Exports	32.0	9.8
Others	7.9	19.0

a/ Preliminary data
Source: CEPAL, "Notes ... 1985"

4.3 The cooperation of economic agents.

Generally, the stabilization programs imply a decline in the standard of living of the population and an income redistribution among the different economic sectors. Thus, they imply material hardships to the population. In this regard, for having at least an opportunity to succeed, the adjustment program must have the support of economic agents. This support is very important to avoid that their expectations cancel the results wished by the authorities and to avoid a behavior that might be in disagreement with the adjustment targets.

The stabilization program was introduced in the Dominican Republic without any explanation to the population about the need to implement it given the constraints faced by the country, and without trying to win public support for it. This fact made more difficult the implementation of the program and its acceptance.

The reaction of the population caused the interruption of the program and some measures already taken had to be reversed. Furthermore, it increased the cost of the program beyond those expected.

5. Conclusions and recommendations

5.1 Conclusions

The purpose of this paper was to analyse the impact of the implementation of an orthodox adjustment program in a small open economy, which has structural problems that constrain its balance of payments as well as its public finances.

In this regard the adjustment program applied in the Dominican Republic since 1983 was studied using an analytical framework consisting of a simple aggregate demand and supply model. The analysis found that the results of the main measures taken were the following: the foreign exchange devaluation and the public sector prices increase pushed up production costs and, then, induced an aggregate supply fall and a jump in prices, given the high share of imported input in the production components.

The fall in aggregate demand caused by the increase in interest rates, credit restrictions and tax increases was not enough to counterbalance the price hike and the economy ended up with higher inflation and unemployment after two years of adjustment.

Furthermore, the net export did not improve with the devaluation, given the import inelasticity, the price decline of the main exports, and the discriminatory treatment given to them.

On the other hand, the fiscal deficit did not disappear because the tax system that originated it was maintained, and the only corrective measure taken was to impose some additional indirect taxes.

A dynamic analysis was made to follow the adjustment program in the medium run. The variables used were inflation, the output gap and the current account. To explain the changes in the mentioned variables two instruments were used the real exchange rate and the real interest rate.

In this latter analysis it was found that after the second year of adjustment, the trend of the economy is out of a constant growth with price stability path. This situation is caused by the impact of the devaluation on the cost of imported input that have a lagged effect on inflation. Furthermore, the real exchange rate is appreciating, thus deteriorating the current account.

5.2 Recommendations

From the model used in the analysis and from the third part

of the paper that deals with the basic disequilibria, it could be deduced that an adjustment program that does not take measures to solve the basic problems in the economy, will not succeed in stabilizing the economy but will create new disequilibria as in this case, where employment and inflation increased.

In this specific case, for the Dominican economy to return to a stable path with economic growth and price stability, it will be needed to take measures to reduce the burden of devaluation on production costs, to break the link between cost and prices, in such a way that the real exchange rate does not tend to appreciate and the price stability curve does not shift. Measures that could be taken in this respect are: to reduce incentives for using imported inputs, to promote the use of the domestic substitutes, and to reduce export taxes that ameliorate the nominal devaluation effect on the export side.

Another measure that could shift down again the price stability curve is to balance the public finances. This balance should be obtained through an adequate tax reform not through arbitrary public sector prices increase, far beyond cost increases. Because this latter measure has a direct effect on private production costs and, hence, on prices.

An adequate tax reform will not only reduce the inelasticity of public revenues but also reduce an erroneous incentives system that leads to the production of inadequate goods, very far from the one that really enhances the comparative advantage of the country.

FOOTNOTES

1) CEPAL, Doc. E/CEPAL 1040, August 2, 1977.

2) In 1982, according to the Law of Industrial Promotion, 50% of the imported inputs -not including oil- and equipments were tariff exonerated. Of this fraction, 56% had access to the official foreign exchange market in 1982.

3) $P_{-1} = W_{-1} + \lambda e_{-1}$ → $W_{-1} = P_{-1} - \lambda e_{-1}$

4) We are assuming a money demand positive function of income and negative of the interest rate:

$$\frac{m}{p} = f(\overset{+}{y}, \overset{-}{r})$$

5) According to a survey made by ONAPLAN in Santo Domingo City, the unemployment rate as percentage of the economically active population, was 21.4% en 1983. In November 1984 it was 24.5%.

6) Annex 2 contains the derivation of this equation. Notice that a point over a variable shows its derivative with respect to time.

7) The international interest rate determine the domestic interest rate because the opportunity cost of borrowing money is that rate, thus, the domestic interest rate is:
$r = r^* + \dot{e}$ even though there are barriers to capital flows.

8) See Guilliani (1986), p. 53

9) $\Psi = e \mu + \beta(c\dot{g}-br) \phi - \gamma \bar{e}$

10) We are assuming that the nominal interest rate is a positive function of income and negative of real balances: $i = ay - dm$. The real balances required for external and domestic equilibrium will be obtained from the equalization of the interest rates that equilibrate both the current account and the goods and money markets. The real interest rate that equilibrates the current account is:

$$\dot{r} = \frac{\Theta(h + k\gamma - j\delta) - jcg + k\dot{e}}{k - jb}$$

while the one that equilibrates the domestic market is:
$r = i-p$. From both we obtain that the real balances required
are an increasing function of the real exchange rate, the
devaluation rate and negative of the fiscal deficit and the
inflation rate:

$$\frac{M}{P} = f \ (\overset{+}{\theta}, \ \overset{+}{\dot{e}}, \ \overset{-}{\dot{p}}, \ \overset{-}{g})$$

1I) Dahuajre (1986) mentions that in 1985 mortgage banks, develop-
ment banks, and savings and loans associations were authorized
to charge a 12% interest rate plus a free comission on their
loans. There was an increase in the interest rate ceiling,
raising it to 18% on financial certificates of commercial
banks, savings and loans associations, mortgage banks, and
development banks. CEPAL (1985) also mentions that in 1985
the Central Bank discount rate was raised from 6.5% and 9%
to 12%.
The interest rate charged by FIDE to financial intermediaries
was fixed at 12%.

12) In his studies of the stabilization programs in the South Cone,
Díaz Alejandro (1981) points out toward these issues. Grey
(1986) specifically mentions these issues with three others, –
as essential for the succes of a program to stop inflation.
Dell (1983) also deals with these matters.

13) Renegotiation information obtained in CEPAL "Notes ...
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Annex No. 1.- Dominican Republic: Export and Import of Goods.
(Millions of US dollars; base 1970)

Year	Exports	Percentage [1]	Imports	Percentage [1]
1970	214.0	17.6	278.0	24.1
1971	248.0	15.9	299.0	7.5
1972	327.0	31.8	312.0	4.3
1973	364.0	11.3	325.0	4.2
1974	362.0	-0.5	407.0	25.2
1975	321.0	-11.3	412.0	1.2
1976	365.0	13.7	388.0	-5.8
1977	420.0	15.1	408.0	5.1
1978	352.0	-16.2	382.0	-6.4
1979	405.0	15.1	456.0	19.4
1980	311.0	-23.2	496.0	8.8
1981	358.0	15.1	457.0	-7.9
1982	330.0	-7.8	387.0	-15.3
1983	316.0	-4.2	402.0	3.9

[1] Percentage variation with respect to previous year.

Fuente: CEPAL, América Latina y El Caribe: Balance de Pagos 1950-1984, Cuadernos Estadísticos No. 10.

$$\frac{P}{P_{-1}} = \lambda\theta_{-1}\left[\dot{e} + \frac{\dot{P}_{-1}}{\lambda e_{-1}}(1 + \beta y) - \beta y\right]$$

$$\frac{P}{P_{-1}} = \lambda\theta_{-1}(\dot{e} - \beta y) + (1 + \beta y)$$

$$\frac{P}{P_{-1}} - 1 = \lambda\theta_{-1}\left[\dot{e} + \beta y \left(\frac{P_{-1}}{\lambda e_{-1}} - 1\right)\right]$$

$$\dot{P} = \lambda\theta_{-1}\left[\dot{e} + \beta\dot{y} \left(\frac{P_{-1}}{\lambda e_{-1}} - 1\right)\right]$$

<u>Taking logarithm and substituting y for its value</u>

$$\dot{p} = \lambda\theta_{-1} + \left[\dot{e} + \beta(\delta\theta - br + cg)\left(\frac{P_{-1}}{\lambda e_{-1}} - 1\right)\right]$$

<u>Substituting e by its value and making</u> $\phi = \dfrac{P_{-1}}{\lambda e_{-1}} - 1$

$$\dot{p} = \lambda\theta_{-1} + \left[\gamma(e-\bar{e}) + \beta\left(\delta\frac{e}{p} - br + cg\right)\phi\right]$$

$$\dot{p} = \lambda\theta_{-1} + \left[e\left(\gamma + \beta\frac{\delta}{p}\phi\right) + \beta(cg-br)\phi - \gamma\bar{e}\right]$$

<u>Making</u> $\mu = \gamma + \beta\dfrac{\delta}{p}\phi$

$$\dot{p} = \lambda\theta_{-1} + \left[e\mu + \beta(cg-br)\phi - \gamma\bar{e}\right]$$

Inflation equation

$$P = W + \lambda e$$

$$W = W_{-1} (1 + \beta y)$$

$$P_{-1} = W_{-1} + \lambda e_{-1} \rightarrow W_{-1} = P_{-1} - \lambda e_{-1}$$

$$P = (P_{-1} - \lambda e_{-1})(1 + \beta y) + \lambda e$$

$$P = P_{-1}(1 + \beta y) + \lambda (e - e_{-1}) - \lambda e_{-1} \beta y$$

Dividing by P_{-1}

$$\frac{P}{P_{-1}} = (1 + \beta y) + \frac{\lambda}{P_{-1}} [e - e_{-1}(1 + \beta y)]$$

$$\frac{P}{P_{-1}} = [e - (1 + \beta y)(e - \frac{P_{-1}}{\lambda})]$$

Multiplying and dividing by e_{-1}

$$\frac{P}{P_{-1}} = \frac{\lambda e_{-1}}{P_{-1}} [e/e_{-1} - (1 + \beta y)(1 - \frac{P_{-1}}{\lambda e_{-1}})]$$

Making :

$$\frac{e_{-1}}{P_{-1}} = \theta_{-1}$$

$$\frac{P}{P_{-1}} = \lambda \theta_{-1} [\frac{e}{e_{-1}} - (1 + \beta y)(1 - \frac{P_{-1}}{\lambda e_{-1}})]$$

Rearranging

$$\frac{P}{P_{-1}} = \lambda \theta_{-1} [(\frac{e}{e_{-1}} - 1) + \frac{P_{-1}}{\lambda e_{-1}} - \beta y (1 - \frac{P_{-1}}{\lambda e_{-1}})]$$

$$\frac{P}{P_{-1}} = \lambda \dot{\theta}_{-1} [\dot{e} + \frac{P_{-1}}{\lambda e_{-1}} - \beta y (1 - \frac{P_{-1}}{\lambda e_{-1}})]$$