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May 18, 1993

To: Members of the Executive Board

From: The Secretary

Subject: Kingdom of the Netherlands - Aruba - Selected Background Issues

This paper provides background information to the staff report on the 1993 Article IV consultation discussions with Aruba, which was circulated as SM/93/97 on May 6, 1993.

Mr. Öberg (ext. 36629) or Mr. Huybrechts (ext. 34544) is available to answer technical or factual questions relating to this paper prior to the Board discussion.

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INTERNATIONAL MONETARY FUND

KINGDOM OF THE NETHERLANDS - ARUBA

Selected Background Issues

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Approved by the European I Department

May 14, 1993

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Aruba - Basic Data 1/

Population (end-1991) 68,897  
GDP per capita (1991) US\$13,800

Social indicators (1986)

Literacy rate 95 percent  
Life expectancy 72 years  
Infant mortality (aged under one) 1.1 percent

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990 2/</u>	<u>1991 2/</u>	<u>1992 3/</u>
Real economy							
(change in percent)							
Nominal GDP <u>3/</u>	1.0	20.1	20.4	13.4	18.2	9.7	7.9
Real GDP <u>3/</u>	-0.1	15.9	16.7	9.1	11.7	3.8	3.8
Tourist nights	-5.4	26.1	27.7	27.8	27.2	11.5	3.6
Unemployment rate							
(percent of labor force)	22.1	16.0	5.0	1.5	1.3	0.6	0.6
Inflation							
(change in percent)							
CPI (Aruba)	1.1	3.6	3.1	4.0	5.8	5.6	3.9
CPI (Curaçao)	1.3	3.8	2.6	3.9	3.8	3.9	1.4
CPI (U.S.)	1.9	3.7	4.0	4.8	5.4	4.3	3.0
Real exchange rate index							
(1985=100) <u>4/</u>	99.2	99.1	98.3	97.5	97.9	99.1	100.0
Public finance							
(in percent of GDP) <u>3/5/</u>							
Revenue	26.7	24.0	22.6	22.1	21.6	23.6	22.5
Expenditure	34.8	39.5	31.7	28.5	26.5	26.0	26.0
Fiscal balance	-8.1	-15.5	-9.1	-6.4	-4.9	-2.4	-3.5
Financed by:							
Development aid	2.5	2.6	2.6	2.2	1.7	1.5	1.5
Other	5.6	12.9	6.5	4.2	3.4	0.9	2.1
Balance of payments							
(in millions of Af.)							
Exports <u>6/</u>	52.9	80.8	151.2	191.8	278.3	1,573.0	1,913.9
Imports <u>6/</u>	377.1	449.5	635.0	719.7	1,039.7	2,511.1	2,583.5
Trade balance	-324.2	-368.7	-483.8	-527.9	-761.4	-938.1	-669.6
Net services and							
transfers	289.2	326.6	387.4	441.1	464.3	556.6	742.3
Of which:							
Tourism (net)	260.9	353.1	442.8	497.5	553.5	610.5	697.2
Current account balance	-35.0	-42.1	-96.4	-86.8	-297.1	-381.5	72.7
(In percent of GDP)	(-4.4)	(-4.4)	(-8.3)	(-6.6)	(-19.1)	(-22.4)	(4.0)
Overall balance	91.9	23.0	0.7	40.0	40.8	66.8	57.2

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u> <u>2/</u>	<u>1991</u> <u>2/</u>	<u>1992</u> <u>3/</u>
Monetary aggregates (percent change over 12 months)							
Net foreign assets	255.3	18.0	-0.9	26.8	21.5	29.0	19.4
Domestic credit	-12.8	50.0	37.4	15.6	12.3	9.1	9.0
To private sector	-1.4	20.2	35.8	15.5	12.8	13.3	7.8
Money and quasi-money	12.3	41.9	21.8	19.0	16.7	16.9	12.3
Money	21.6	57.3	20.6	28.0	8.5	18.9	5.4
Quasi-money	8.4	34.7	22.4	14.1	21.7	15.9	15.9
Interest rates							
12-month time deposits	7.3	7.4	7.8	7.9	8.0	7.8	6.8
Lending rate	11.0	10.3	10.2	10.5	10.6	10.6	10.6
External public debt (percent of GDP)	38.6	39.6	30.1	28.6	27.2	24.5	22.4
Exchange rates: U.S. dollar	The Aruban florin is pegged to the U.S. dollar at Af. 1.79 = US\$1						
SDR (end of period)	2.19	2.54	2.41	2.35	2.55	2.56	2.46

1/ Aruba became a separate entity within the Kingdom of the Netherlands in 1986. Data prior to status aparte are not presented here because they are not comparable with those after separation from the Netherlands Antilles.

2/ In part preliminary estimates.

3/ Staff estimates.

4/ Relative to the U.S. dollar. CPI based.

5/ Cash basis.

6/ The oil refinery reopened in 1990.

## I. Recent Developments

### 1. Overview of recent developments and policies

Aruba is a small open economy with few natural resources that can be exploited to its comparative economic advantage. Nevertheless, it is one of the most prosperous islands in the Caribbean, with per capita income estimated at about US\$14,000. A number of features make it attractive for tourism, such as sandy beaches, ideal weather conditions, language skills and, last but not least, political stability which has engendered a calm and friendly atmosphere. Aruba also has a favorable geographical location to serve as an entrepot or conversion center for goods traded between the northern and southern Americas. Because prosperity relies on this rather narrow economic base, however, the island remains vulnerable to external shocks.

Until 1985, petroleum refining (and related transshipment facilities) and tourism each contributed about a quarter of GDP, but the island's economic vulnerability was severely exposed in that year when declining oil prices and a cutback in Venezuelan oil supply, combined with a decline in tourism from Venezuela, adversely affected both sectors. The Exxon-owned refinery was forced to close, unemployment reached more than 20 percent of the workforce in 1986, and the government embarked on an ambitious reform program that was designed by Fund staff and supported by financial assistance from the Netherlands. Coincidentally, on January 1, 1986, Aruba attained nonmetropolitan independent status ("status aparte") within the Kingdom of the Netherlands with complete fiscal and monetary independence. It also introduced its own currency, the Aruban florin, and set up a central bank.

Since 1986 the government has attempted to revitalize the economy, with particular emphasis on developing the hotel sector. Fiscal incentives, in the form of low profit taxes and tax holidays, were offered to encourage foreign investment in tourism, and substantial government guarantees were granted for foreign borrowing to finance hotel construction. Outstanding guarantees amounted to about Af. 485 million at the end of 1992 or about a quarter of GDP. As a result, hotel room capacity had almost tripled by 1992 and net tourism receipts (net of related imports) contributed almost 30 percent of a significantly expanded GDP. Between 1986 and 1992, cumulative real GDP growth is estimated at about 78 percent, corresponding to 10 percent per year on average. In addition to tourism, the oil sector has been re-established on the island and there has been a significant increase in trade through the free zone. Oil transshipment and storage facilities have been reopened in 1989 by Wickland Oil of California. An agreement was signed with Coastal Corporation of Houston to re-open the refinery in 1990, and it is expected to reach full operation in 1993.

Real GDP growth slowed to about 4 percent in 1991-92 from an average of about 10 percent in the preceding two years and 15 percent in 1987-88

(Chart 1). <sup>1/</sup> The investment boom, which had dominated economic activity since 1988, leveled off in 1991 when investment expenditure amounted to 33 percent of GDP. However, steady growth was achieved in 1991 through a moderate increase in tourism and other export revenues, and a more significant increase in private sector consumption. In 1992, investment as a proportion of GDP declined substantially, but growth was maintained by a strong improvement in tourism revenues, accompanied by substantial growth in other export sectors, and by the coming on-stream of the oil refinery.

The rapid economic expansion in 1987-92 led to the virtual elimination of unemployment and has led to the emergence of labor market pressures. Immigration initially alleviated some of these strains. In recent years, however, immigration policy has increasingly been characterized by a tightening of conditions and increased selectivity. The private sector is currently engaged in active competition for workers, and many vacancies are left unfilled. There is evidence of accelerating wage pressures, and this has generated increasing concern among hoteliers about possible adverse effects on competitiveness.

The expansionary financial policies of the late 1980s have gradually been replaced by a more restrained fiscal and monetary policy stance. The budget deficit is estimated to have declined from over 15 percent of GDP in 1987 to about 2 1/2 percent in 1991 (see Chapter II). In 1992, the deficit widened again to 3 1/2 percent of GDP on a cash basis, but the structural deficit remained virtually unchanged as there had been intensified tax collection in 1991. Recently, fiscal policy has been formulated with a view to providing for infrastructural improvements while avoiding a crowding-out of the private sector, in particular as regards labor.

Monetary policy had accommodated the expansion of the economy until late 1988 when a decline in foreign exchange holdings prompted the Central Bank to introduce credit controls in an attempt to moderate imports and foster an increase in external reserves. The credit controls have been effective and have been progressively tightened as the rate of economic expansion has decelerated. In addition, in 1992, the Central Bank announced its intention to restrict foreign capital imports in order to limit foreign indebtedness and alleviate further labor market pressure from additional investments (see Chapter III).

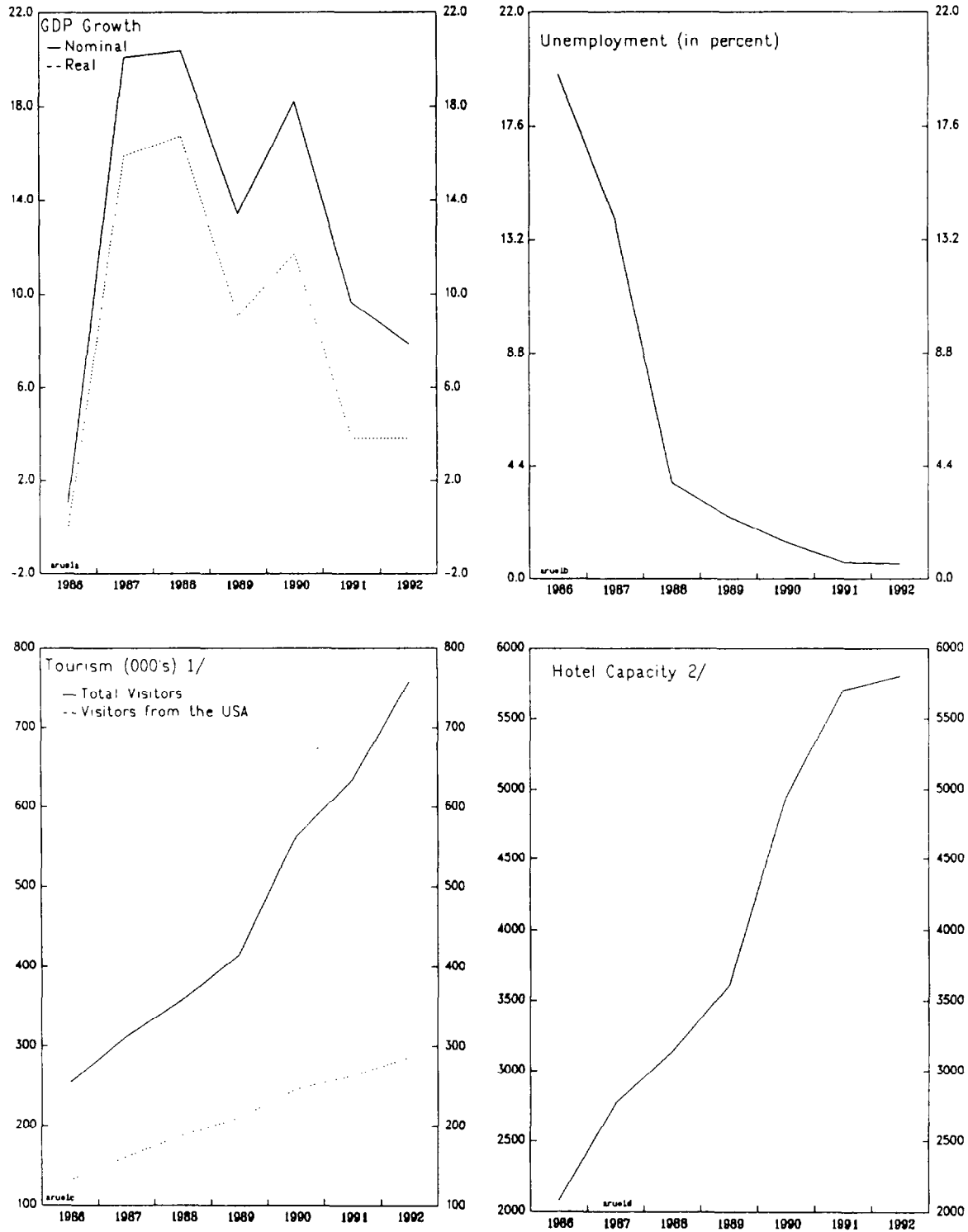
The maturing of the economy in 1992, with most new hotels in operation and the reopened oil refinery nearing full capacity, has changed the focus of economic policy. The economy has undergone substantial development since the mid-1980s, but is now set to achieve more moderate growth levels based on past investments. In these circumstances, economic policies need to concentrate on achieving a sustainable rate of growth over the medium term, with particular attention being paid to preserve competitiveness and to achieve a sustainable balance of payments position (see Appendix III).

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<sup>1/</sup> Staff estimates; the method used is described in Appendix I.



# CHART 1 ARUBA Indicators of Activity



Sources: Central Bank of Aruba, Quarterly Bulletin; and staff estimates.

1/ Number of overnight stays.

2/ Number of available hotel rooms.



## 2. Growth and structure of the economy

The structure of the economy has changed substantially over the past decade. Tourism revenues are estimated to have accounted for some 23 percent of GDP in 1986, net of associated imports, and this proportion has risen to over 28 percent in 1992. Net earnings from the free-zone have risen over the same period from zero to over 5 percent of GDP, and the oil refinery is estimated to have contributed over 2 percent of GDP in 1992. The share of other exports and services, net of related imports, tended to decline somewhat in the late 1980s, but has recently risen again. Domestic private consumption, which had stayed near 55 percent of GDP in 1986-89, has increased substantially over the past three years and reached almost 65 percent of GDP in 1992. Meanwhile, public sector absorption progressively declined in the second half of the 1980s, but has tended to stabilize its share of GDP over the past three years (see Statistical Appendix Table 2).

Private sector investment increased dramatically from about 15 percent of GDP in the mid-1980s to nearly 34 percent in the early 1990s. Investment related imports rose in tandem to nearly a quarter of GDP in 1990-91. In 1992, however, the investment boom came to a virtual end, and investment expenditure declined sharply to about 7.5 percent of GDP. The associated decline in imports relieved the pressure on the trade and services account, with nonexport related imports falling by 15 percentage points to less than 40 percent of GDP. This decline occurred despite a further moderate increase in the proportion of consumption-related imports and services.

While investment expenditure provided the main impetus to the economy in 1986-91, the contribution of private sector investment to overall GDP growth has been quite erratic (see Statistical Appendix Table 3). This accounts, in large part, for the fluctuations in growth observed over this period. At the same time, as the economy expanded, the contribution to overall growth from increased net tourism earnings has been consistently declining, from almost 8 percentage points in 1987 to less than 1 percentage point in 1991.

The substantial decline in investment expenditure in 1992 is estimated to have directly reduced GDP by about 26 percent. This was mitigated, however, by a decline in imports (deemed to have been related to investment) of some 18 percent of GDP. The net decline in growth attributed to investment was offset by a positive contribution from exports of goods and services (net of related imports), partly attributable to tourism receipts. The contribution from other net export earnings, particularly when compared with recent years, represents a significant diversification of export earnings away from tourism. This is a further indication of the maturing of the economy, attributable to refining and to increased earnings at the free zone.

Private consumption activity is estimated to have contributed significantly to economic growth over the period 1987-92. The contribution

averaged almost 8 percentage points in 1987-90, but declined somewhat in the past two years. Overall, the 4 percent growth rate achieved in 1992, in the absence of substantial investment, is indicative of a still growing economy which places substantial demands on limited factor inputs, particularly labor.

### 3. Labor market developments

Employment has grown rapidly since 1987, at an average annual rate of almost 13 percent a year, with the bulk of the expansion concentrated in the tourism and construction sectors. As a result, the unemployment rate, estimated at about 20 percent in 1986, fell to under 1 percent by 1992 (see Statistical Appendix Table 5).

Along with the increased demand for labor resulting from the investment boom and the general upturn of economic activity, supply factors have also played a part in accounting for the employment trends since 1987. Thus, the labor force grew at an average annual rate of 9 percent between 1987 and 1992. The inflow of migrant labor appears to have been the driving force behind labor force growth up to 1990, but its contribution fell sharply during 1990-92. At the same time, the labor force participation rate (labor force as a percentage of population; no figures on the age composition of the labor force are available) increased steadily during the entire period (Chart 2), also contributing to the labor supply growth. The participation rate rose from just under 37 percent in 1987 to 46 percent in 1991, mainly reflecting a substantial increase in the participation rate of women.

While the increase in labor force participation has probably been in part cyclical in nature, it would also appear to be related to a number of structural changes in the economy. In particular, the separation of income taxation between spouses, announced in 1990 and implemented in 1991, and the selective granting of work permits to spouses of migrant workers have probably been significant factors in this regard. At the same time, further increases in labor force participation may be constrained by the inadequacy of the relevant social infrastructure such as childcare facilities.

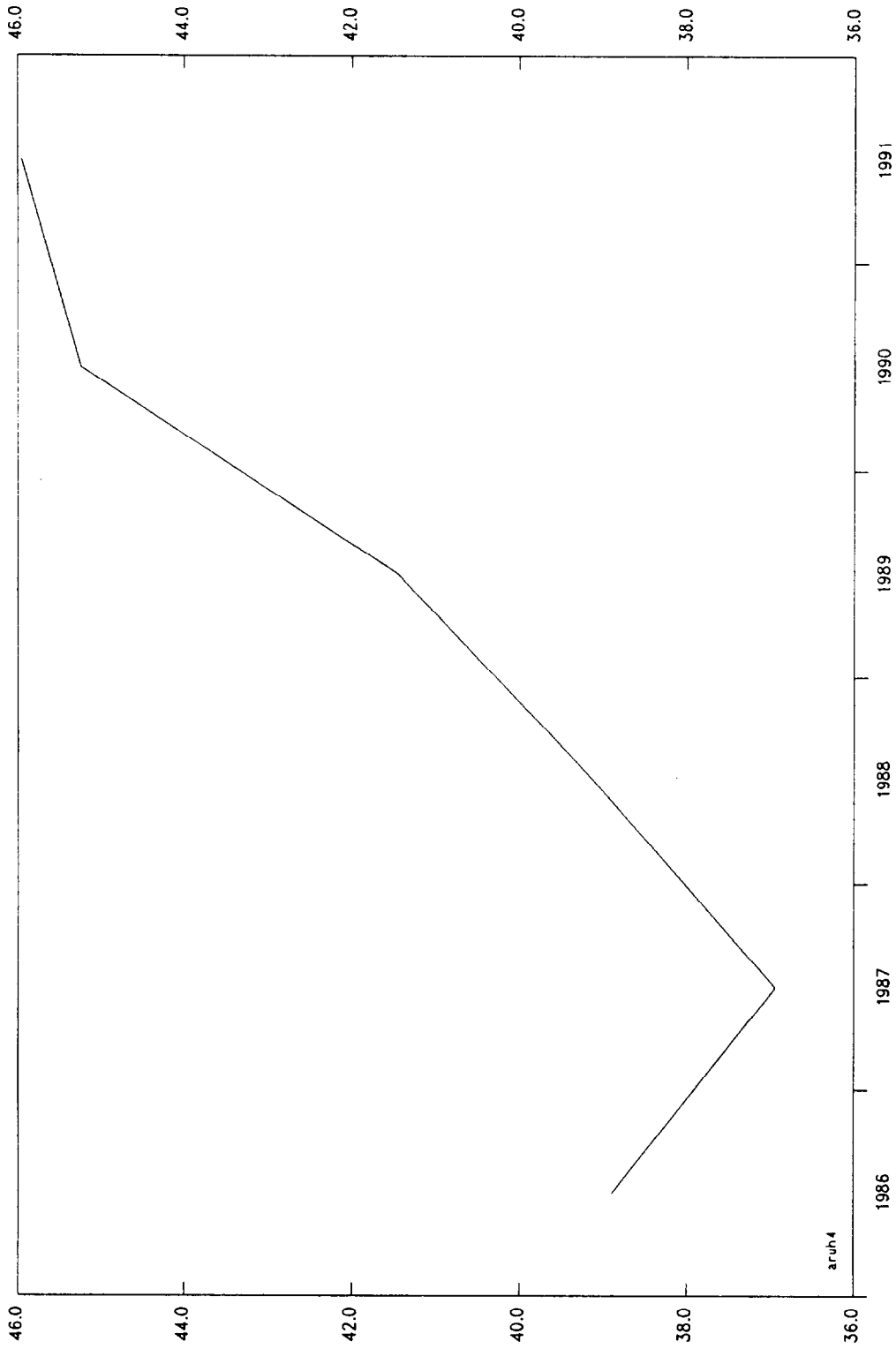
Despite the rapid expansion of labor supply, the latter has failed to keep pace with demand in recent years, and hence has come to constitute an effective constraint to the continued expansion in employment. As mentioned above, unemployment has been practically eliminated, and while relevant figures are not available, there are indications that the number of unfilled vacancies has been increasing. The overstraining of the labor market could become a serious constraint, particularly given the tourism-related projects planned for the coming years and the ambitious public investment program envisaged in the five-year development plan. The situation would be aggravated further, in the absence of offsetting measures to expand labor supply, by the planned reduction in the retirement age from 62 to 60 years.

Average labor productivity (real GDP per person employed; figures of hours worked are not available) exhibits a pronounced downward trend

CHART 2  
ARUBA

Participation Rate

(In percent of total population)



Source: Department of Labor.



throughout the period 1987-92 (Chart 3). It should be noted that, given the overstrained conditions in the labor market, the trends depicted in the chart may actually understate the true decline in productivity, expressed in terms of worker-hours. The rapid increase in labor force participation, bringing less qualified employees into the production process, might be one important factor behind this trend. Nonetheless, the magnitude of the productivity decline, particularly in a period of substantial increases in investment spending, is a cause for concern. Under these conditions, obstacles to labor market flexibility, would appear particularly inappropriate.

#### 4. Price developments

The conditions of excess demand in the labor market are contributing to an overheating of the Aruban economy. Thus, average contract wages in the crucial tourism and construction sectors increased during 1992 at a rate above the rate of inflation, i.e., at 6.3 percent and 6.6 percent, respectively, and in the context of the current contract negotiations labor unions are demanding even higher wage increases. Moreover, given the active competition for labor in these sectors, there are indications that actual wage increases have been well in excess of the negotiated increases in contract wages. Under the conditions of negative productivity growth described in the previous section, this trend would imply a substantial increase in unit labor costs. Even based on contract wage increases, the estimated increase in unit labor cost during 1992 is of the order of 10 percent.

Given the openness of the Aruban economy, together with the policy of pegging the Aruban florin to the U.S. dollar, these cost developments are only partially reflected in the CPI. Nevertheless, inflation has recently been accelerating, particularly in the second half of 1992, rising to 4.5 percent by year-end against 3.7 percent a year earlier, with the prices of nontraded goods accounting for most of the increase (see Statistical Appendix Table 7). It should be emphasized, moreover, that the CPI probably understates actual inflation. First, because the weights used in calculating the CPI are based on the consumption pattern of 1980, even though the average consumption basket has substantially changed since then. Second, no data are available concerning a number of important sectors, notably rental housing, in which prices are purportedly rising much faster than officially assumed. These shortcomings of the CPI notwithstanding, CPI-based real exchange rate indices still indicate a significant deterioration in Aruba's competitive position during the last few years, both relative to the United States and relative to the Netherlands Antilles (Charts 4 and 5). Thus, with respect to the United States, the gains in competitiveness up to 1989 which had been achieved mainly due to the wage freeze have been completely eroded during the remainder of the period. With respect to the Netherlands Antilles, the cumulative real appreciation since 1985 has been of the order of 6.5 percent, with the bulk of it again coming after 1989.

In the face of these adverse trends in its competitive position, Aruba has still managed to maintain and even improve its export market share especially in the tourist sector during the past few years. This was mainly accomplished by Aruba's success in capturing a larger segment of the wealthy tourist market, as reflected in the significantly increased spending per tourist. In this way, the tourism sector has been able to partly pass on the increased unit labor costs to higher prices. In addition, though to a lesser extent, the tourism sector probably allowed profitability to decline. It is clear, however, that Aruba cannot permanently rely on these types of adjustments to absorb a sustained deterioration in competitiveness. Hence, the problems resulting from the overheating of the labor market should be promptly addressed.

#### 5. Tourism and the balance of payments

The export of tourist services is now the principle medium-term engine for future growth in Aruba, just as investment in tourism was the major determinant of economic growth in the period 1987-91. Substantial investment in the hotel sector resulted in a tripling in the number of hotel rooms available between 1986 and 1992. 1/ There is now a large and modern hotel sector, which is well placed to take advantage of a return to growth in the major industrial countries. 2/ The new hotels are, in general, of a standard that is near the top end of the Caribbean market. Many hotels are combined with casinos and are associated with (or owned by) large international hotel chains. Because of these factors, Aruba has been able to carve a niche in the Caribbean market with relatively little direct promotion, and demand has broadly kept pace with supply. The number of stayover tourist arrivals also tripled in 1986-92.

Gross tourism revenues increased by 180 percent in 1986-1992 (Chart 6), and their share in GDP rose from 35 percent to 43 percent. The principle contributory factor to increased revenues was growth in the number of stayover tourists. The latter increased by an average of 25 percent per annum in 1987-90, but since then the rate of growth slowed to 16 percent in 1991 and 8 percent in 1992 (see Statistical Appendix Table 4). The average stay per tourist also increased significantly in 1986-1990, as the proportion of visitors from Europe increased, but the average stay shortened in 1991-92 when there was a significant increase in (short stay) visitors from Latin America. Throughout the period there was a steady decline in the proportion of tourists visiting from North America.

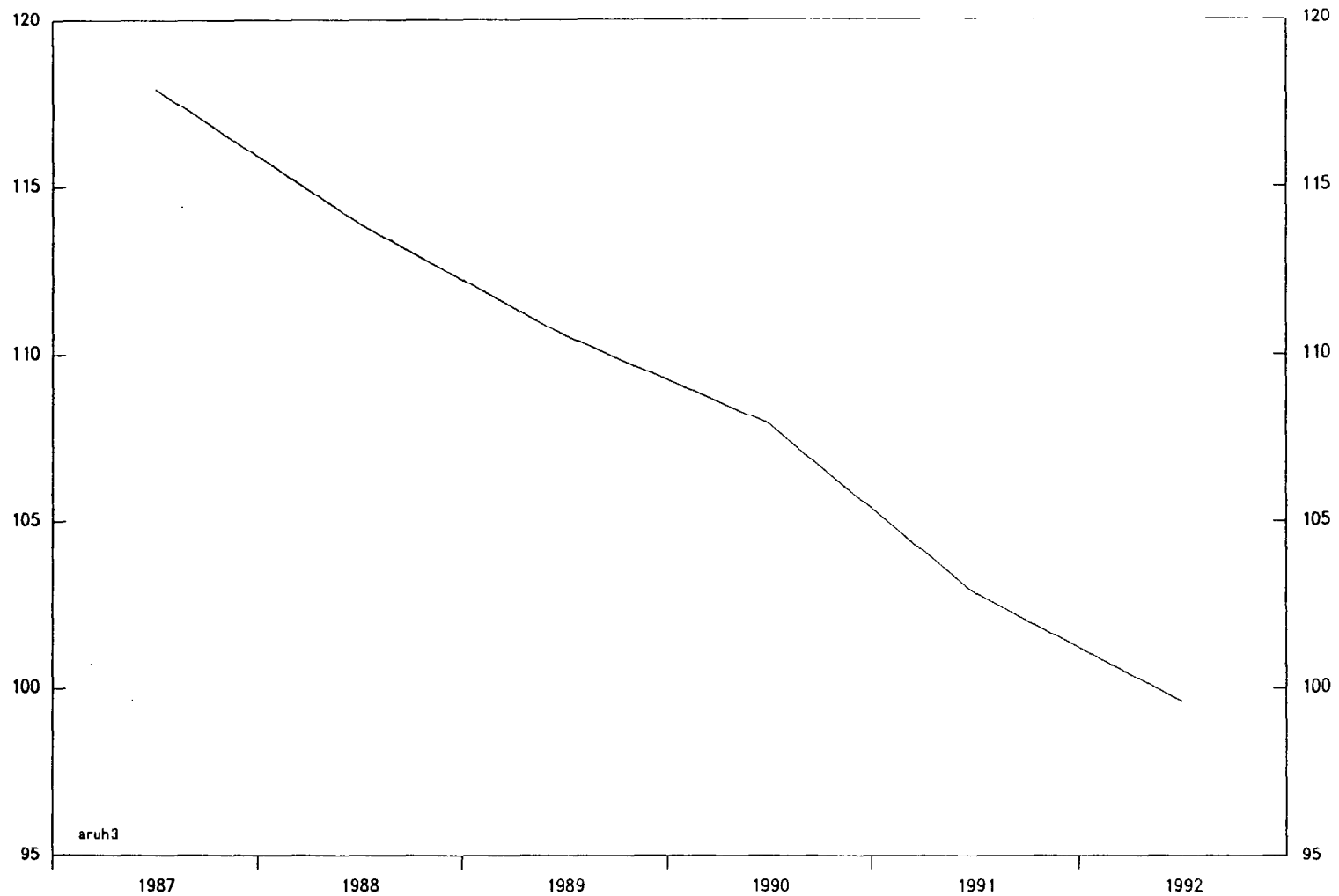
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1/ There were about 5,800 rooms in operation in Aruba at the end of 1992 and it is possible that a further 2,000 rooms might come into operation from identified projects over the next ten years.

2/ Tourism has already recovered in the OECD area in 1992 according to the OECD. Arrivals at frontiers and nights in accommodation increased by 4.5 percent and 5.5 percent, respectively, after registering slightly negative growth in 1991. Receipts in real terms increased by 3.7 percent in 1992, following an increase of 0.8 percent in 1991, for the OECD as a whole.



CHART 3  
ARUBA  
Average Labor Productivity  
(Index, 1986=100)

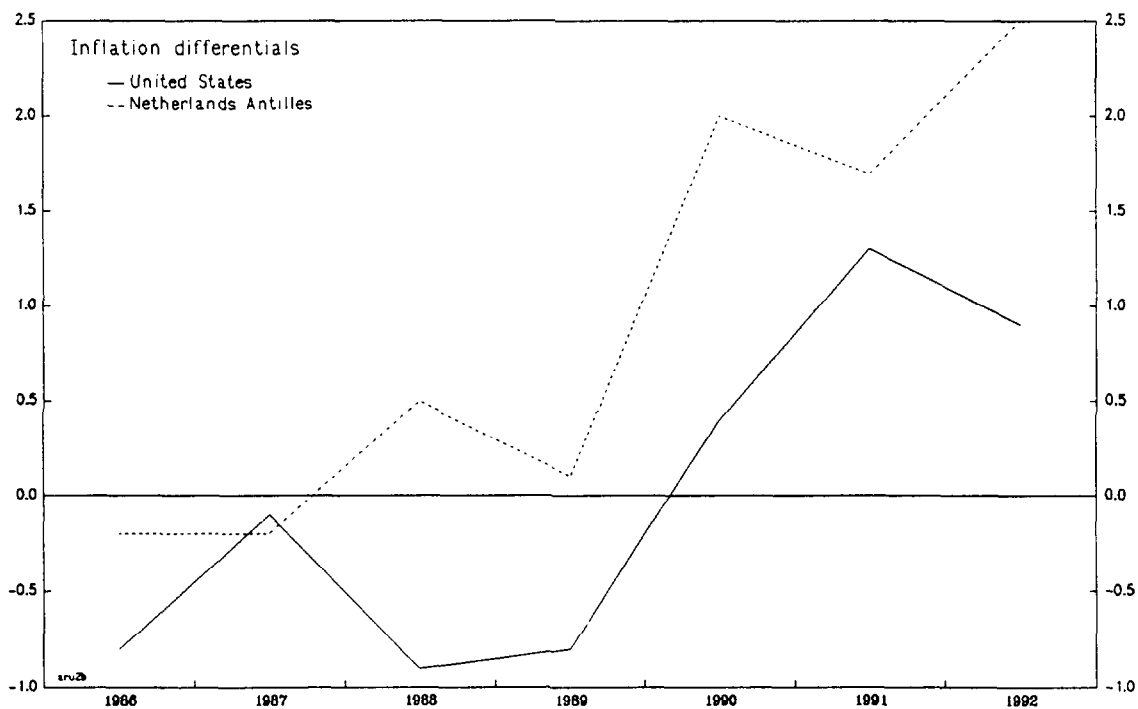


Sources: Department of Labor; and staff calculations.



- 6b -

CHART 4  
ARUBA  
Inflation  
(Percent per year)

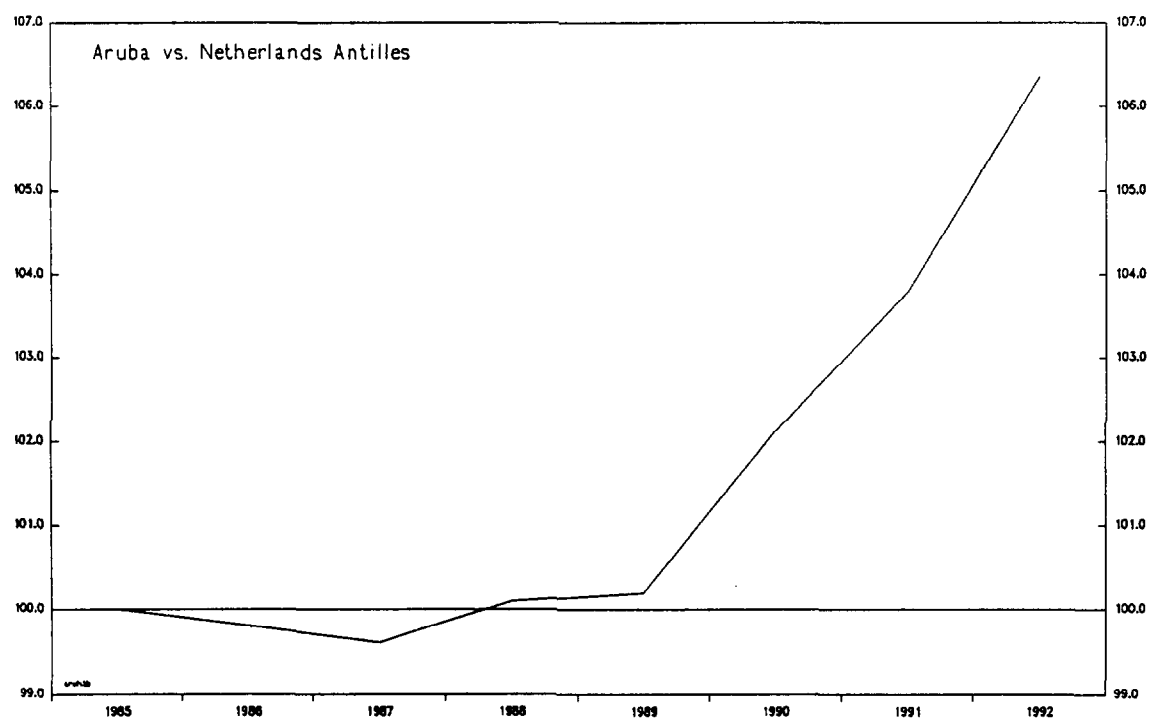
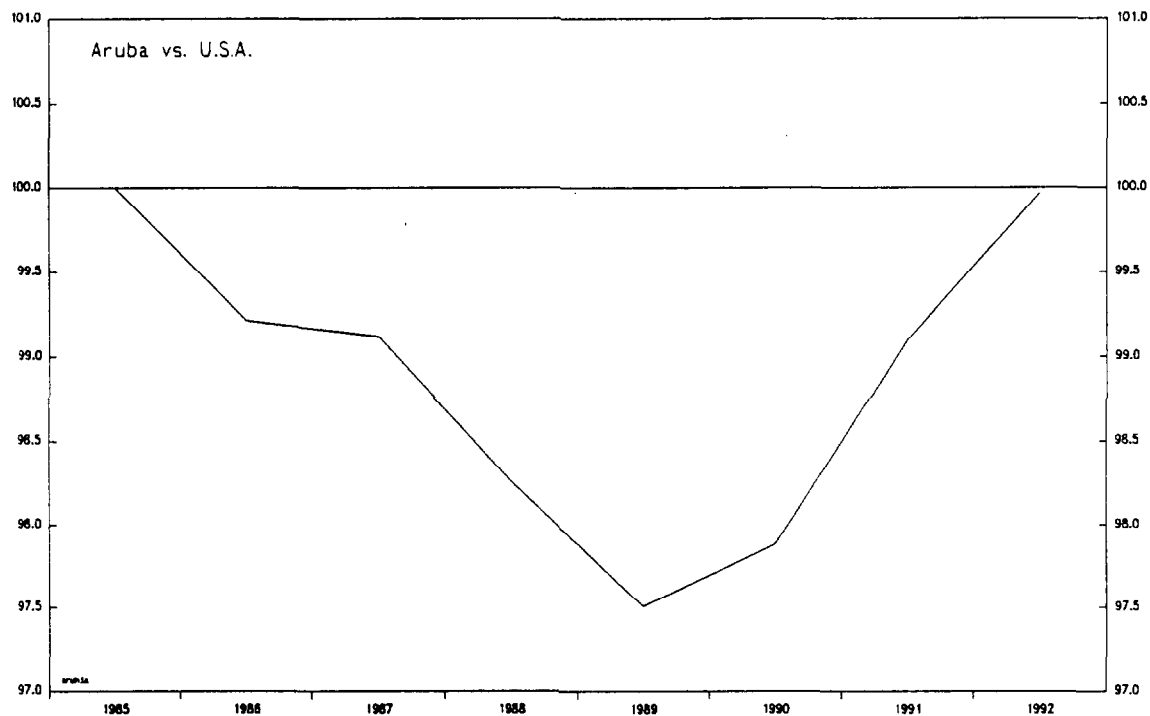


Sources: IMF, International Financial Statistics and Central Bureau of Statistics.



- 6c -

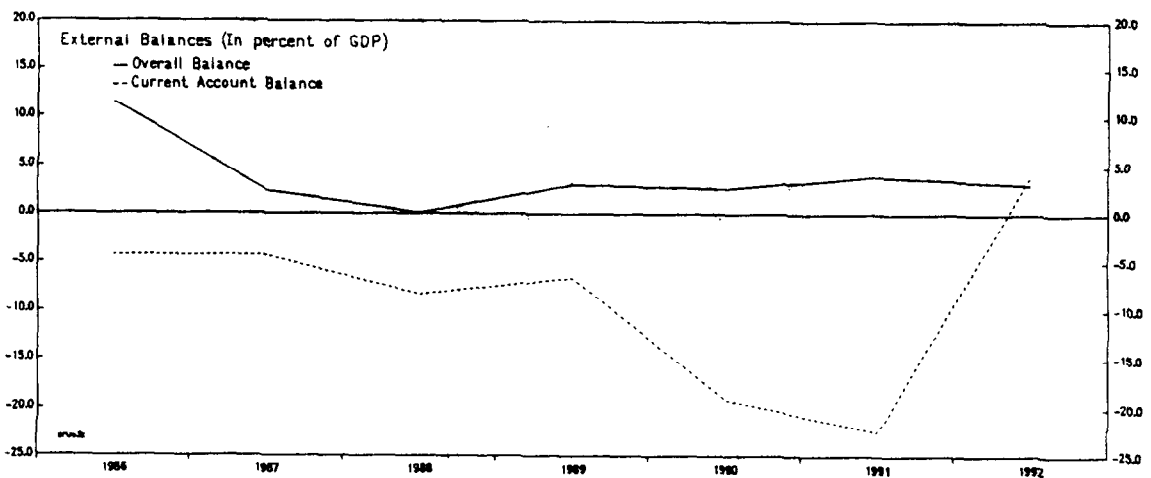
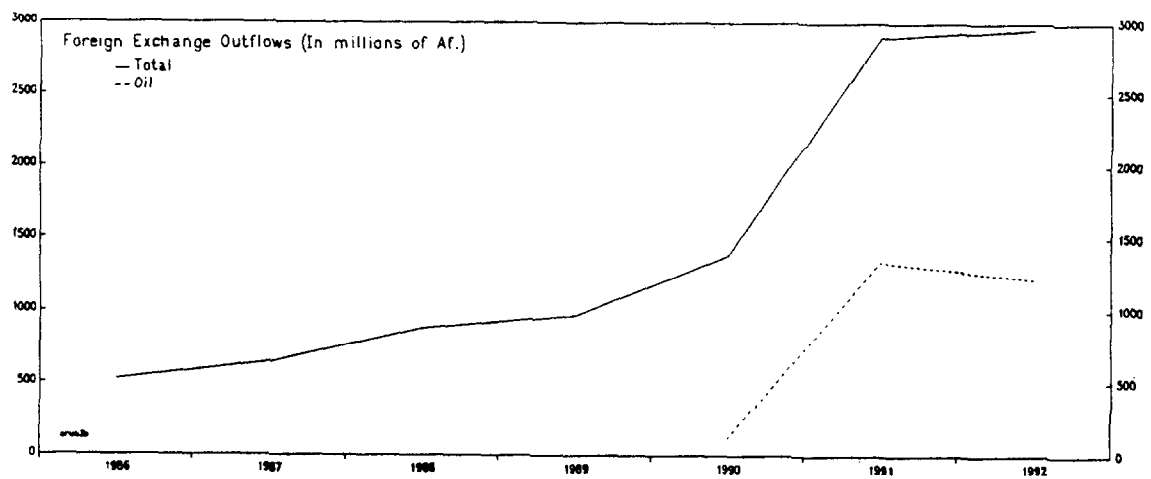
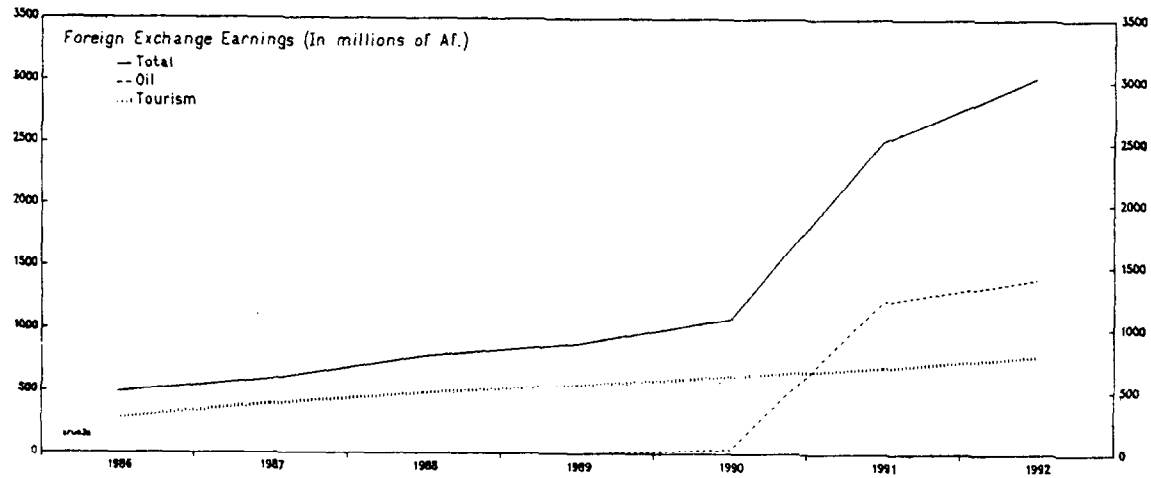
CHART 5  
ARUBA  
Real Exchange Rates  
(Indices, 1985=100)



Source: Staff calculations.



# CHART 6 ARUBA External Developments



Source: Central Bank of Aruba, Quarterly Bulletin.





Average spending per tourist declined steadily through much of the period, reflecting an economic slowdown in major markets, but there was a significant recovery in 1992 which contributed over half of the increase in tourist revenues. Tourist receipts from cruise-ship passengers are also estimated to have grown rapidly in 1992, when the number of arrivals increased by 60 percent, largely as the result of a number of additional ships designating Aruba as their home port, which is largely explained by the availability of relatively inexpensive bunkering services in Aruba since the reopening of the oil refinery. This raised the contribution of spending by cruiseship passengers to almost 3 percent of total tourist receipts, which is also the level they had represented in 1986 before having been eroded significantly in the meantime.

Aruba's share of stayover tourist arrivals in the Caribbean increased from 2.4 percent in 1987 to 4.3 percent in 1991. This trend continued in 1992 when Aruba's share in stayover arrivals for a subsample of Caribbean countries, for which data is currently available, increased from 7.0 percent to 7.4 percent. <sup>1/</sup> The success of Aruba's tourism sector stands out particularly when viewed against relative developments in the Caribbean as a whole. The average rate of increase in the number of stayover visitors in the Caribbean was about 5 percent in 1987-92, compared with some 20 percent in Aruba.

Tourism revenues accounted for about 60 percent of foreign exchange earnings in 1987-90 but this proportion dropped significantly, to about 25 percent in 1991-92, with the coming on-stream of the refinery. Foreign exchange earnings more than doubled as a result of this new activity, and oil exports now account for about half of all foreign exchange earnings. Tourism revenues grew by an average of 25 percent in real terms in 1986-88, but this rate of growth declined to 8 percent in 1989 and 1990. There was a further dip in the growth rate in 1991, to about 5 percent, but a recovery to 9 percent in 1992 largely as a result of increased average spending per tourist.

The current account of the balance of payments exhibited increasing deficits in 1986-91 largely as the result of the magnitude of investment. The deficit rose from 4 percent of GDP in 1986-87 to about 20 percent in 1990-91 (see Statistical Appendix Table 15). Investment related imports are estimated to have increased from about 9 percent of GDP in 1986-87 to 24 percent in 1990-91, while export-related imports are estimated to have increased to over 100 percent of GDP in 1991, largely as a result of oil imports for the refinery. In 1992, however, the current account exhibited a surplus of 4 percent of GDP, as investment-related imports declined sharply. The surplus was achieved despite an increase in imports for consumption. Net earnings from the free zone and from other exports and services both

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<sup>1/</sup> These data are from the Caribbean Tourism Organization's annual Caribbean Tourism Statistical Report and quarterly Statistical News, various issues.

accounted for improvements in the current account of 4 percentage points of GDP in 1992 while tourism added a further 2 percent.

The current account deficits encountered in 1986-91 were consistently offset by capital inflows which increasingly derived from the private sector. The surplus on the private capital account exceeded 20 percent of GDP in both 1990 and 1991, and overall balance of payments surpluses averaged 2 1/2 percent of GDP in 1987-91. There was a deficit on the private capital account of 2 1/2 percent of GDP in 1992, as a result of decreased investment, but the balance of payments was still in surplus by 3 percent of GDP because of the sharp improvement in the current account.

Since January 1, 1991, practically all goods may be imported without restriction (the only restriction is on the importation of eggs, but it is administered liberally depending on local supply conditions). Payments for invisibles require a license when they exceed certain limits but these limits were extended in 1992 and licenses are granted freely. The ceiling on long-term capital outflows was also raised in 1992 (to Af. 200,00 per annum from Af. 50,000) and, while a license is required, these have also been granted liberally. Proceeds from the liquidation of direct foreign investments may be repatriated without restriction and exports do not require a license.

## II. Public Finance

### 1. Background

Fiscal policy played a crucial role in the remarkable economic recovery that occurred in Aruba in the second half of the 1980s. Following the closure of the oil refinery in 1985 and the resulting revenue loss, the authorities responded with a variety of tax measures and a program of fiscal incentives to encourage private investment. The expansionary fiscal policy stance was particularly marked in 1987, when government capital expenditure more than doubled relative to GDP and the fiscal deficit widened to over 15 percent of GDP. In subsequent years, as the economy rebounded sharply, the fiscal policy stance became less expansionary. Capital expenditure was sharply reduced. However, current expenditure continued to increase in real terms, while the overall tax burden was gradually lowered. As a result, the reduction in the fiscal deficit fell short of the original objective of the authorities to restore balance in the fiscal accounts, and by 1990 the fiscal deficit was still close to 5 percent of GDP (Charts 7 and 8). <sup>1/</sup>

### 2. Recent developments

The public finances strengthened in 1991, due mainly to intensified collection and administrative efforts on the revenue side. Total revenue increased by about 2 percentage points of GDP, whereas total expenditure declined slightly in relative terms and, as a result, the deficit narrowed to about 2.5 percent of GDP (see Statistical Appendix Table 8). The rise in the share of direct tax revenue could be attributed largely to profit tax receipts, which more than doubled (see Statistical Appendix Table 7); in part, this development reflected delays in the issue of assessments which occurred in 1990. Indirect tax revenue also grew rapidly, both in absolute terms and relative to GDP. This was particularly the case for excises on gasoline after the authorities, at the outbreak of the Gulf crisis, abandoned their previous policy of keeping retail prices of gasoline constant by varying the excise tax in response to changes in import prices. A new system of specific excises on gasoline is now in effect which is intended to safeguard excise revenues, and which has the added advantage that fluctuations in international oil prices are passed on to consumers. Both current and capital expenditure of government are estimated to have grown in 1991 by about 7.5 percent; after adjustment for inflation, this suggests volume growth of about 2 percent. <sup>2/</sup>

In 1992, profit tax revenue declined to a more "normal" level, while other direct tax receipts as well as indirect taxes rose more or less in line with nominal income growth in the economy. Also, the ratio of public expenditure to GDP remained broadly unchanged which implies real expenditure

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<sup>1/</sup> For a more detailed description, see SM/88/26 and SM/90/234.

<sup>2/</sup> The National Development Plan for 1991-95 contains an explicit goal of 2 percent real growth per annum for current expenditure.

growth of about 4 percent. Capital spending of Dutch aid under the Multiannual Plan, however, declined marginally further as a result of delays in the preparation and implementation of projects. For several years now, this type of spending has remained well below the level of aid allocated in the Dutch budget. This development is regrettable, not only because every year the unspent funds are lost by year-end, but also because higher public sector investment could have offset to some extent the sharp decline which occurred in private investment. While accurate data are lacking, there are nevertheless indications that payments arrears increased over the past year. In particular, the government has financed part of the deficit by running up arrears with the SVB (social insurance bank).

The budget for 1993 shows a current account surplus of approximately Af. 20 million, and a sharp increase in the overall deficit due to a projected large increase in capital expenditure (see Statistical Appendix Tables 9 and 10). For the latter, it is assumed that the full amount of Dutch aid under the Multiannual Plan can be spent and, also, that domestically financed public expenditure can be more than doubled from one year to the next. In view of recent experience and given the real resource constraints on the island, these assumptions appear unrealistic and it is likely that capital expenditure will be lower than anticipated in the budget. On the other hand, the main components of current expenditure appear to be under-estimated, but the impact of this on the fiscal outcome may be somewhat offset by the fact that the revenue estimates seem very conservative. Also, the budget does not make allowance for any possible expenditures in connection with the hotel guarantee problem, 1/ and additional claims are likely to arise from the government's recent decision to prevent bankruptcy of Air Aruba. 2/

### 3. Selected policy issues

The government has presented a new development plan for the period 1993-97. It also intends to pursue major reforms in the social security area, and is investigating various revenue-raising measures including the introduction of a sales tax.

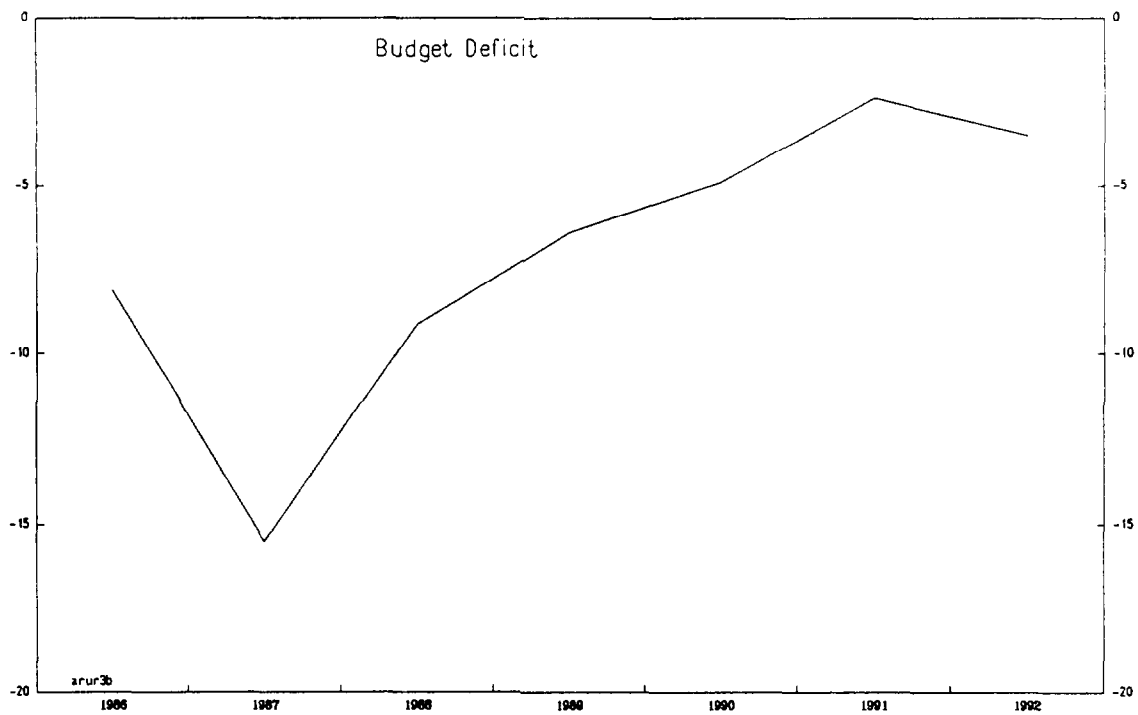
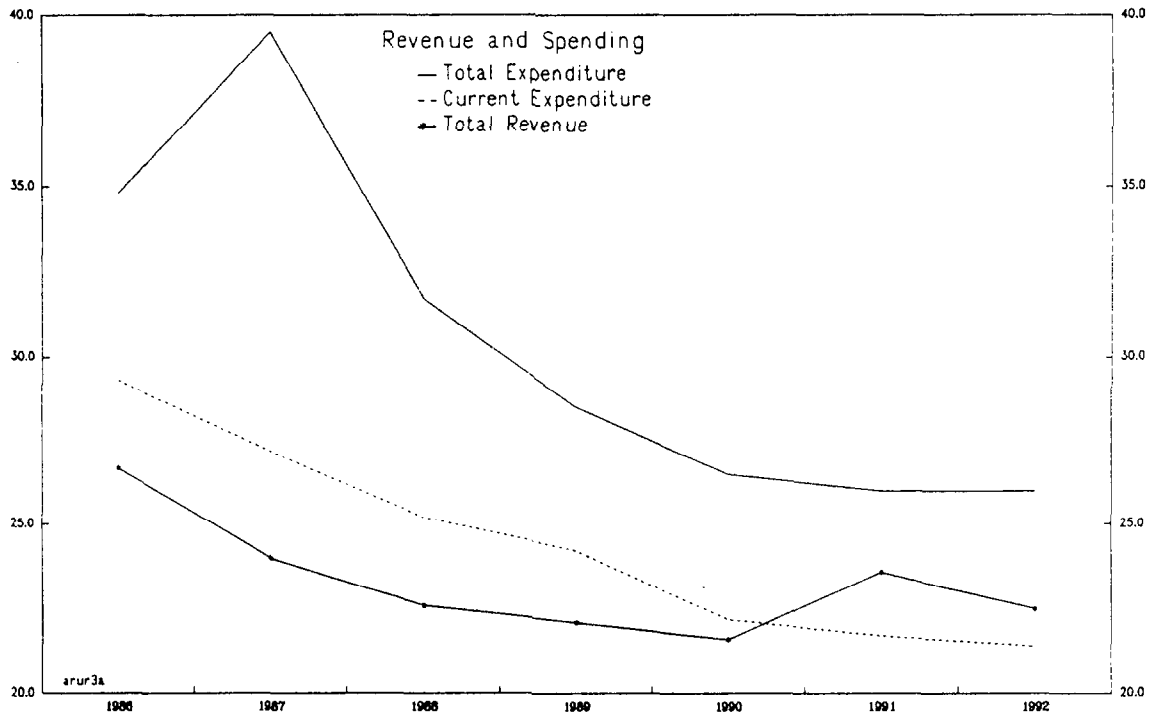
The development plan contains a revised large-scale investment plan for the next five years. It envisages annual investments of approximately Af. 170 million, mainly on economic infrastructure, with a heavy emphasis

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1/ An early solution to this problem is imperative. Last October a government commission reported that costs are rising rapidly at a rate of US\$16 million per year, and estimated that the authorities should plan for annual payments of about US\$20 million (i.e., Af. 36 million) for the next 15 years.

2/ Specifically, the airline has requested an immediate "investment" of Af. 2 million, and a government guarantee is being sought for the Af. 5 million loan which the airline had received in the past from the civil servants' pension fund.

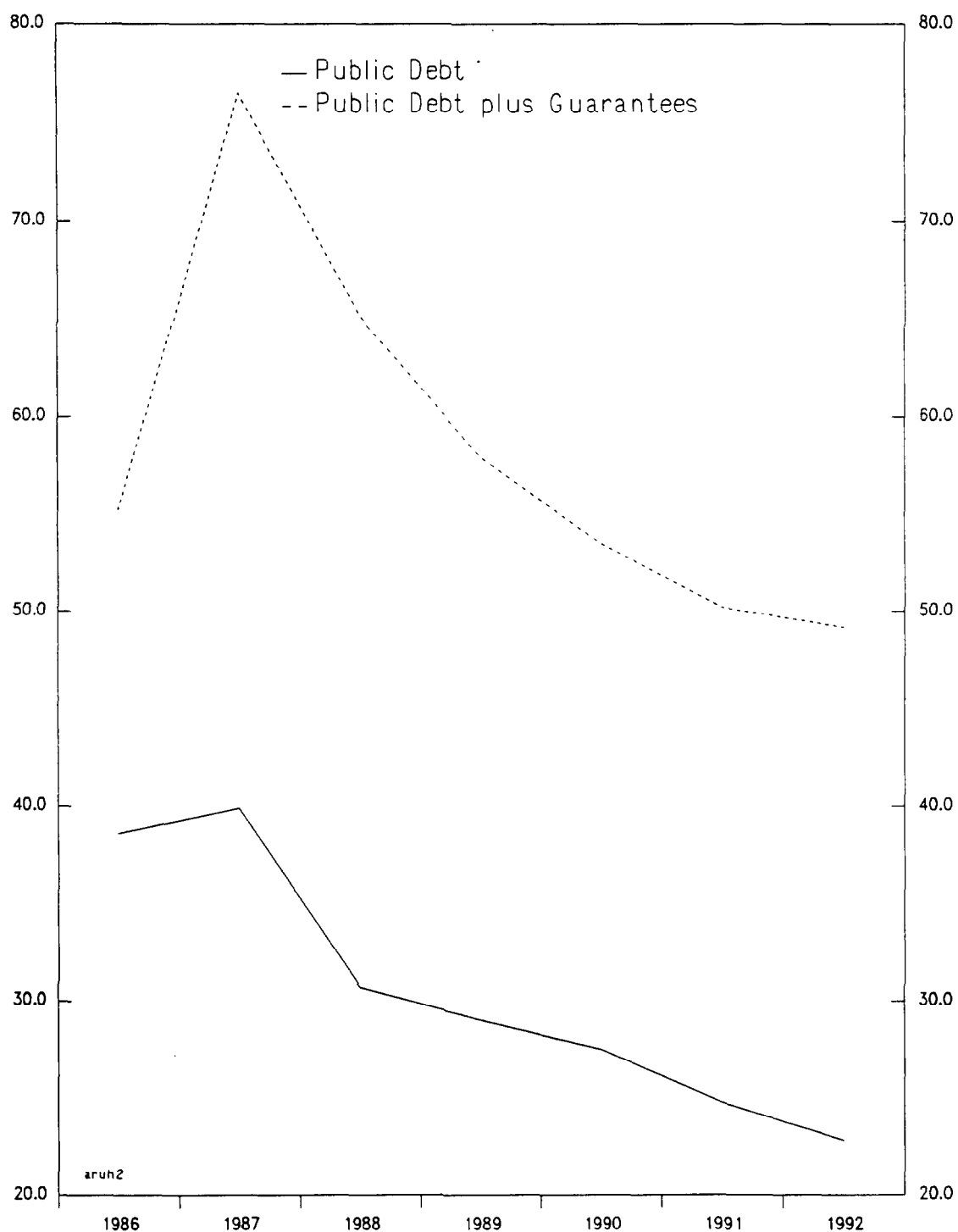
CHART 7  
ARUBA  
Trends in Public Finance  
(In percent of GDP)



Sources: Central Bank of Aruba; Department of Finance; and staff estimates.



CHART 8  
ARUBA  
Public Sector External Debt  
(In Percent of GDP)



Sources: Department of Finance; and Central Bank of Aruba.





and frontloading in the areas of water and electricity, 1/ telecommunications, housing, and the airport. Government financing will account for about Af. 68 million per annum, of which Af. 46 million is to come from the Netherlands under the Multiannual Plan and Af. 22 million will be generated through current surpluses on the budget. The bulk of the remainder is to be financed through commercial loans and through retained earnings of public enterprises. In this context it is important that the authorities proceed with their declared policy goal of converting most public enterprises into N.V.s, i.e., with a separate legal status and with the requisite managerial autonomy and pricing policies that would allow for the generation of retained earnings. The main obstacle to a full realization of the development plan's goals, however, resides in the physical resource constraints that are especially apparent in the extremely tight labor market. Concomitant steps are required to stimulate supply and to promote competition and flexibility in the labor market, together with tight financial policies, in order to free the physical resources needed for implementation of the development plan.

The social security system in Aruba is an extensive one, as evidenced by the size of social security contributions which at present exceed 20 percent of the wage bill. 2/ The authorities are in the process of reforming a major component of social security, namely health care insurance. Present arrangements are rather complex, as distinction can be made among at least five major components. First, the social insurance bank (SVB) provides health care insurance (including income replacement benefits when sick) for private sector workers below a certain income level. 3/ Second, there is a separate scheme for civil servants, run by the government. Third, some health care benefits are included in the welfare assistance (PPK system) provided through the Ministry of Welfare. Fourth, there is a special system (FZOG) for retired civil servants (partially subsidized by government). Fifth, there are private insurance funds who provide coverage for additional benefits and coverage for the family members of employees and workers. It is intended to bring these disparate arrangements together under one uniform system (AZV, i.e., general health care insurance) with coverage for the whole population. Implementation is to proceed in stages (beginning with government employees and then other groups) and should be completed largely by the middle of 1995. While many specifics still need to be determined, it is intended that ultimately both employees and employers would contribute (whereas presently only private

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1/ Mainly through a public enterprise (the WEB) which was recently turned into a separate legal entity (limited company) with greater managerial autonomy. Government has also taken over the outstanding debt of the WEB, so that subsidies will effectively continue via government interest payments.

2/ The system was described at some length in SM/90/234.

3/ An immediate pressing problem is the large backlog in premia collections (7 percent of the wage bill, solely paid by employers) which has led to a deficit in the sickness fund of the SVB.

employers contribute to the SVB). Also, the new AZV system would be a pay-as-you-go system and would cover only medical care (not income replacement benefits).

Health care costs have been rising rapidly in recent years and their financing is becoming increasingly problematic. Intentions have been expressed, both (i) to freeze the government's contribution to the new AZV system in nominal terms from 1995 onwards, which implies that any further cost increases would have to be met through premia adjustments, and (ii) to freeze private sector contributions for health care under the new system for the next five years, which suggests that any adverse risks would have to be borne by the budget. A reform of the health care system needs to consider both the supply and the demand side. First, efforts should be made to control costs better at the sources of delivery, which may require direct negotiations with health care providers about the prices of their services. Second, it would be advisable to require a contribution from the users of health care, in order to establish some link between demand and costs, and to strengthen incentives to avoid waste. 1/

Proposals for a major tax reform were submitted by a Fund technical assistance team in early 1989. 2/ These proposals included simplification of personal and corporate income taxes (in part because of administrative difficulties), the introduction of a broad-based sales tax, and the introduction of a single rate tax on real property (together with regular adjustment of property values to market prices) to replace the three different existing property taxes. The authorities are presently considering to introduce a sales tax and have been investigating various options. One option under consideration is a system which combines a broad import levy with a sales tax on goods and services at the retail level, and which includes a procedure to refund the import levy if proper documentation can be provided. Under this method the tax base would be very large as almost all goods are imported, and domestic goods and services would be "caught" by the retail tax. The refund procedure, however, may prove to be administratively cumbersome. About half of the anticipated revenue is expected to be borne by tourists. 3/ It would be advisable to use part of the additional revenue to seek a compensating reduction and simplification of direct taxation, specifically by exempting lower income people from the

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1/ One proposal under consideration is to seek agreement on some basic level of health care needs and to require a partial contribution from health care consumers for any additional services.

2/ Aruba: Tax Reforms, International Monetary Fund, Fiscal Affairs Department, January 31, 1989.

3/ The above-mentioned IMF report estimated (applying a conservative method) that a 5 percent sales tax on tourist consumption and private domestic consumption would have yielded Af. 25 million in 1988. Based on total tourist revenues and total private domestic consumption in 1993, a 5 percent sales tax would yield a little more than Af. 100 million if no exemptions were made.

present income tax and by reducing the marginal tax rates. New revenues, of course, can easily lead to additional expenditures. This should be resisted and priority should be given to remove existing payments arrears, to cover actuarial deficits in the social insurance funds of the SVB and the government pension fund (APFA), and to improve the overall balance of the budget.

### III. Monetary Policy Developments

During 1991-1992, the maintenance of the fixed exchange rate of the Aruban florin vis-à-vis the U.S. dollar <sup>1/</sup> remained the primary monetary policy objective, supported by the intermediate target of maintaining a strong net foreign asset position. In particular, given the potential volatility of foreign exchange earnings due to Aruba's dependence on the tourism sector, the monetary authorities have adopted the medium-term target of raising net foreign assets to a level of five to six months of imports. The import coverage ratio has varied around three months of merchandise imports during the last few years when imports to the free zone are included in the denominator and exceeded four months when free zone imports are excluded (see Chart 9).

The net foreign asset objective is in turn pursued since late 1988 mainly by targeting domestic credit expansion, while the ongoing process of capital flow liberalization has significantly reduced the importance of capital controls. While the Central Bank has repeatedly emphasized that in principle it prefers recourse to indirect and market-oriented instruments in the pursuit of its monetary policy objectives, it feels that under present conditions such instruments would be largely ineffective with regard to the attainment of the domestic credit expansion target. In particular, the underdeveloped state of the financial markets limits the scope of open market operations while the high level of the banking system liquidity precludes the use of the recently introduced monetary cash reserve requirement as an effective monetary policy instrument. <sup>2/</sup>

Under these conditions, the Central Bank has resorted to setting an quantitative annual ceiling on credit expansion by the domestic banking system, aiming to keep it somewhat below projected nominal GDP growth. Accordingly, as the rate of growth of nominal GDP eased during 1990-1992 relative to the rapid growth of the second half of the 1980s, the ceiling on domestic credit expansion was progressively tightened, from 15 percent in 1989 and 1990 to 12 percent in 1991 and to 7 percent in 1992. In each year, an additional credit expansion facility of at maximum 3 percent over and above these ceilings was granted to banks that were in a position to finance the additional credit expansion by attracting liabilities, including negotiable bonds, with remaining maturity exceeding two years. During the entire period in which the credit controls have been in effect, credit expansion remained within the imposed ceiling, and in fact fell short of the ceiling for the banking system as a whole during 1991 and 1992. This, however, should not be interpreted to imply that the credit controls are nonbinding; rather, it reflects the situation of only a small number of

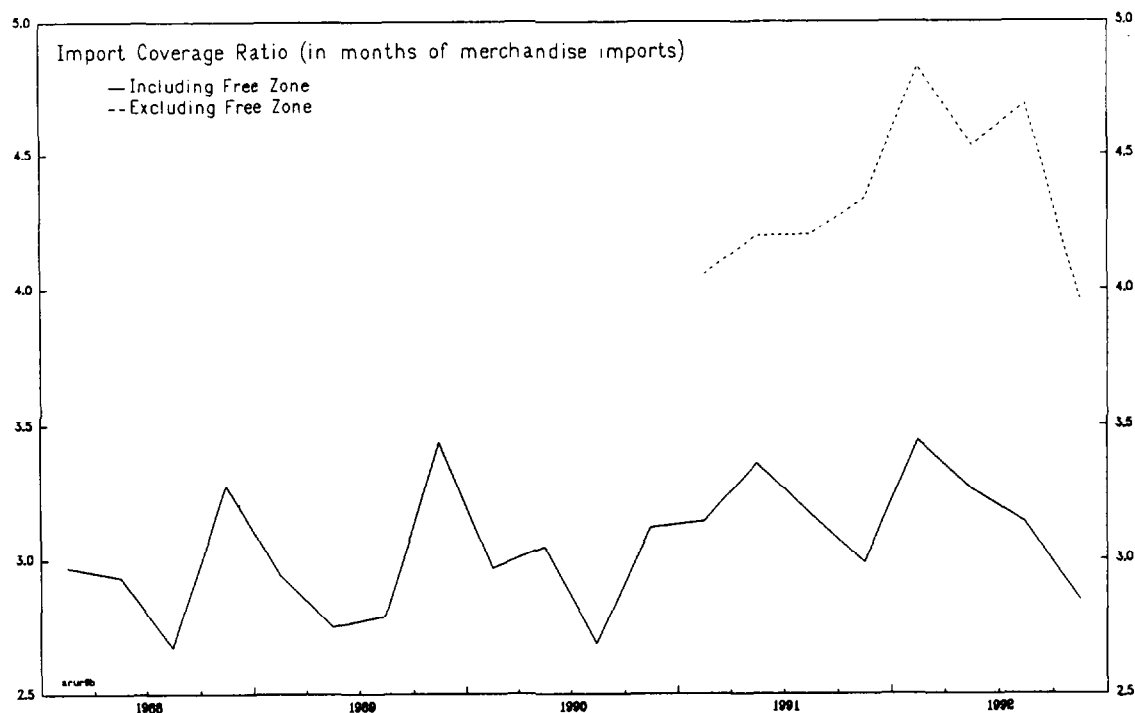
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<sup>1/</sup> The exchange rate has been pegged at Af. 1.79 to US\$1 since the attainment of "status aparte" in 1986.

<sup>2/</sup> While the reserve requirement, at 5 percent of total deposits, is regarded as largely ineffective, it is nevertheless kept in place, as the monetary authorities feel that its abolition might signal a weakening of their anti-inflationary resolve.

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CHART 9  
ARUBA  
Foreign Reserve Position



Source: Central Bank of Aruba, Quarterly Bulletin.



banks, which either were in excess of their ceiling in previous years, or whose overexposure in the hotel sector has led their overseas parent companies to impose limits on their credit expansion.

The monetary authorities recognize that the quantitative nature of the credit controls could result in a number of allocative distortions, particularly since the lending rate does not appear to be very sensitive to the excess demand for credit, and have taken measures to limit their extent. With regard to the allocation of the overall credit ceiling to individual banks, the monetary authorities attempt to prevent a freezing of market shares by taking into account the desired credit expansion of each bank, and by allowing banks to carry over only half of the unused portion of their credit expansion ceiling into the following year. In addition, the monetary authorities proceeded in 1991 to include new lending to the public sector under the credit ceiling, thus preventing a potentially substantial increase in the degree of monetary financing of the public sector deficit. On the other hand, mortgage lending remains outside the credit ceiling, and has as a result increased rapidly since 1990, constituting 31 percent of total domestic credit expansion to the private sector at the end of 1992, against 3 percent in 1989. Under these conditions, continued exclusion of mortgage lending from the credit ceiling could create, in addition to increased distortions in the composition of private investment, an overexposure of the banking system to the residential housing sector.

The main impact of the system of credit controls for the banking system has been a steady increase in bank liquidity, as the ex post rate of growth in nominal GDP very often was higher than originally projected, while the increase in bank deposits was more or less in line, and sometimes above the increase in, nominal GDP (Chart 10). The underdeveloped state of the money and capital markets does not allow banks significant domestic investment opportunities other than loans, while the so-called B-9 regulation sets severe limits on the possibility of their building up a foreign asset position. <sup>1/</sup> As a result, commercial banks have had little choice but to place their excess liquidity at their current account with the Central Bank, at a very low rate of return.

The monetary authorities have expressed some concern about the buildup of banking system liquidity. Apart from its adverse impact on the profitability of the banking system, it could be viewed as creating a problem of "monetary overhang," which could be channeled into rapid credit expansion at some point in the future, either officially if credit controls are relaxed or unofficially in the context of a parallel credit market. While the monetary authorities are not contemplating any modifications in

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<sup>1/</sup> A bank's basic long foreign currency position cannot exceed a specified percentage (determined from time to time by the Central Bank) of its average total Af. liabilities at the end of the previous three months, net of claims on the same depositors, and of other special items.

the basic structure of the B-9 regulation at present, 1/ they are favorably inclined to measures aiming at the development of the capital market as a remedy for the liquidity buildup, and have in fact encouraged the government and some public enterprises over the past years to float a larger part of their debt on the domestic market. 2/ For their part, commercial banks responded to excess liquidity by cutting the interest rate on savings and time deposits by 1 percentage point, relative to 1991, led by banks with access to the international financial market which were able to take advantage of the low U.S. interest rates, while leaving their prime lending rate unchanged (Chart 11). In fact, a number of important commercial banks have indicated that they are contemplating further deposit rate cuts if the excess liquidity situation persists, while there would be no room to cut lending rates, which may actually have to be raised to address the problem of declining profitability. 3/

Given the exchange rate objective and the intermediate target regarding the level of net foreign assets, the monetary authorities have so far appropriately abstained from adopting targets regarding the evolution of monetary aggregates, leaving the latter to be determined endogenously, subject to the constraints imposed by the maintenance of the fixed exchange rate. Nevertheless, under the conditions of economic overheating, as fiscal policy is seen as not having tightened sufficiently and serious doubts remain concerning the prospects of relaxing the labor supply constraint, they have currently decided to use monetary policy as a demand management instrument.

The restrictive domestic credit expansion policies pursued since 1989 had as their counterpart a rapid expansion in foreign exchange reserves, which thus became the major factor driving the evolution of monetary aggregates (Chart 10). In targeting money supply, the Central Bank proposes to attempt to control both the domestic and foreign sources of money creation. Specifically regarding monetary policy for 1993, the Central Bank has announced a further tightening of domestic credit expansion to 3 percent, accommodating only the real component of projected GDP growth, in the expectation that firms and households will be able to partially satisfy their remaining financing needs by drawing on their accumulated liquid assets. Even so, it is reasonable to expect that the domestic credit tightening would lead to increased inflows in foreign capital, as domestic residents borrow abroad to restore portfolio equilibrium. 4/ In order to offset the resulting monetary expansion, the Central Bank has announced that

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1/ The B-9 percentage was raised, however, from 4 to 6 percent, effective January 1, 1992.

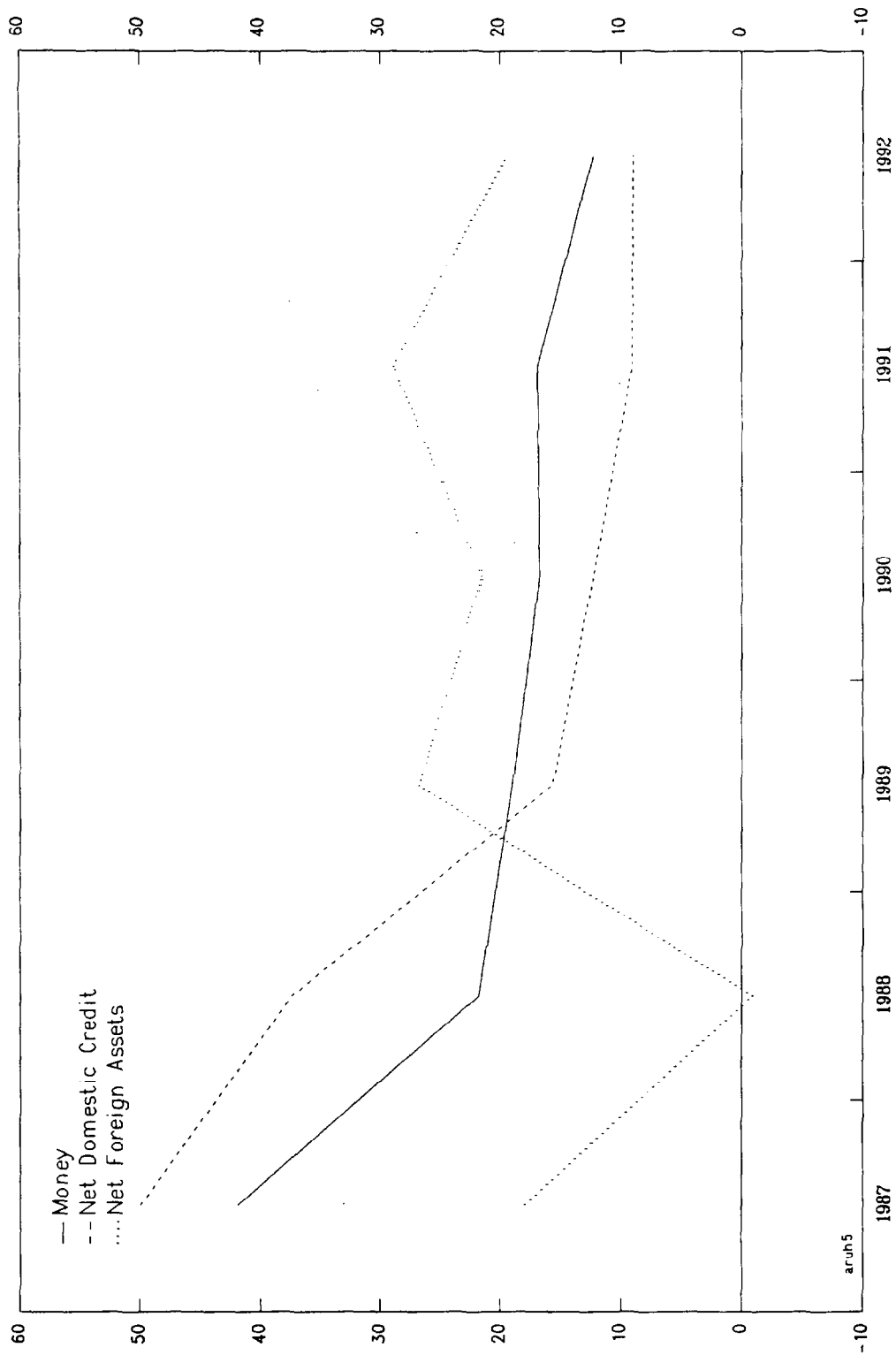
2/ WEB plans to place Af. 70 million worth on bonds on the market during 1993, while the Ministry of Finance is contemplating a new government bond issue.

3/ There are already some indications of increased variation in actual lending rates above the published prime rates.

4/ This is all the more likely given the substantial decline in dollar interest rates since early 1992.



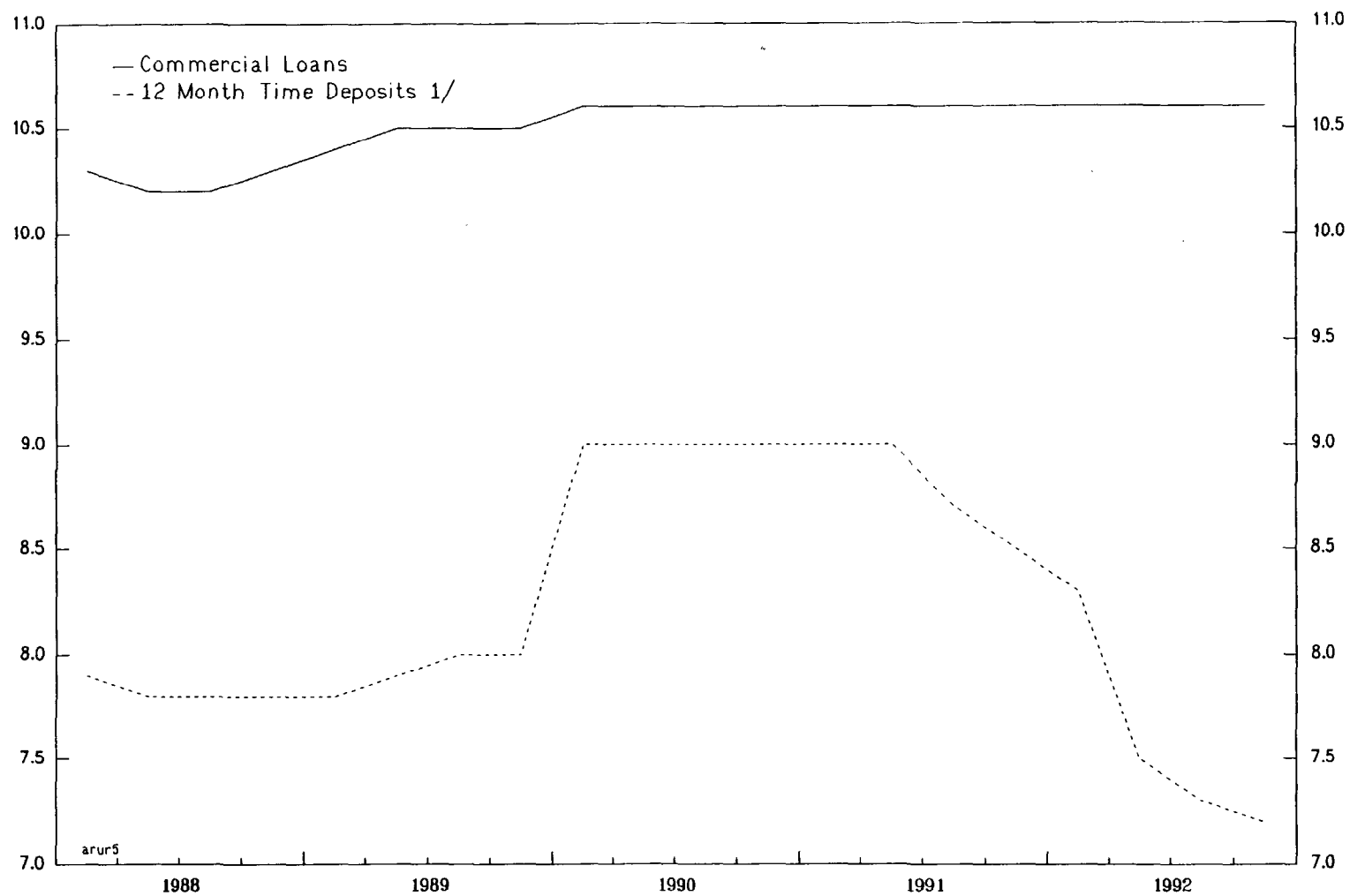
CHART 10  
ARUBA  
Money, Credit, and Net Foreign Assets  
(Annual Percent Change)



Source: Central Bank of Aruba, Quarterly Bulletin.



CHART 11  
ARUBA  
Interest Rates on Domestic Loans and Deposits  
(In percent)



Source: Central Bank of Aruba, Quarterly Bulletin.  
1/ On deposits of Af. 100,000 and above.



it will make use of its authority to limit external borrowing by adopting a restrictive policy with regard to the granting of licenses for capital imports, a policy that it has actually been pursuing already since mid-1992. <sup>1/</sup>

While the economic overheating was the predominant factor influencing central bank policy, a number of other considerations were also taken into account, including the problem of excess banking system liquidity and concern over the level of external indebtedness.

The shift to money supply targeting could imply compromising the net foreign asset objective, even in the short run. The Central Bank recognizes this, and has indicated that the current level of foreign exchange reserves can be regarded as satisfactory, even though the desired five- to six-month import coverage ratio has not yet been attained. <sup>2/</sup> Put differently, the monetary authorities appear to stand ready to accept a further decline in the import coverage ratio in order to support the exchange rate, if the need arises. This policy choice may be defensible in the short run as a substitute for fiscal tightening in response to the economic overheating, despite the welfare loss associated with additional restrictions on capital flows and the resulting portfolio disequilibrium. Over the longer term, however, it may not be sustainable, as the monetary authorities lack a sufficient number of policy instruments to simultaneously pursue the exchange rate and money supply objectives. If maintenance of the fixed exchange rate requires a steady decrease in net foreign assets over time, the two objectives would eventually come into conflict. Thus, from this longer-term perspective, it would seem preferable to rely predominantly on supply side or fiscal policies rather than on monetary policy in the pursuit of macroeconomic stabilization. Finally, with regard to the other objectives cited in support of restrictions to external borrowing, it would appear that the problem of excess banking system liquidity could be better addressed on a more permanent basis via development of the domestic capital market and the further liberalization of capital outflows, along with a more active use of the interest rate instrument. At the same time, many of the problems associated with excessive external indebtedness of the private sector could be remedied by the removal of a number of distortions, mainly associated with fiscal incentives or government guarantees, which appear to create major moral hazard situations encouraging excessive risk-taking behavior.

The above remarks should not be interpreted to indicate that the policy of targeting the composition of the money supply, by controlling domestic credit expansion (albeit by more market-oriented instruments than is currently the case), is inappropriate. On the contrary, it can be argued

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<sup>1/</sup> This might have been a reason for the declining trend in the import coverage ratio during the second half of the year.

<sup>2/</sup> The level of net foreign assets would appear more satisfactory if free zone imports are not included in the definition of merchandise imports (Chart 9). It is not clear, however, whether non-inclusion of free zone imports is appropriate, since even though they are intended for re-export, part of them is transferred to the domestic economy.

that it could be useful as an intermediate target in support of the exchange rate objective, even in the context of completely liberalized capital flows. Given the limited range of assets that can serve as close substitutes to money, one could expect a reasonably stable demand for money function. At the same time, the relatively small share of speculative capital movements in the balance of payments would appear to argue for a strong negative correlation between net domestic credit and net foreign assets. <sup>1/</sup> Thus, domestic credit targeting could be useful in bringing about a level of foreign exchange reserves consistent with the exchange rate objective, particularly given that the scope of reliance on the interest rate instrument is currently relatively limited. It should be pointed out, however, that while a fuller development of the money and capital market would undoubtedly add to the flexibility of monetary policy, it should, in principle, still be possible to engage in a more active interest rate policy, particularly with regard to the Central Bank's intervention rates. In any case, even if the interest rate instrument were to become available, domestic credit targeting could still retain an important role in accomplishing adjustments required for the maintenance of the fixed exchange rate.

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<sup>1/</sup> These issues are discussed in more detail in Appendix III.

A Note on GDP Estimates for Aruba 1/

There are currently two macroeconomic models used to estimate gross domestic product (GDP) for Aruba. The first, which was developed by Fund staff and is used by the Central Bank of Aruba (CBA), is a simple absorption model which places a heavy reliance on estimated parameters. The second, the ARUMAC model used at the Ministry for Economic Affairs, places a heavy reliance on a large number of exogenous variables which, for the most part, cannot be measured with a great deal of accuracy. This note outlines the features of a third model, which is based on the CBA approach, but is more extensive in that it distinguishes the components of private sector absorption (i.e., consumption and investment). Given the wide fluctuations in investment spending over the past several years it has become more important to make this distinction.

1. The Models

The existing CBA model and the newly extended model, together with their data sources, may be sketched as follows:

(a) The existing CBA model: 2/

$$Y = A + G + (X-M) \quad (1.1)$$

$$A = a(Y-T) \quad (1.2)$$

$$M = m_a(A + G) + m_x X \quad (1.3)$$

$$T = tY \quad (1.4)$$

This reduces to:

$$Y = \{1/[1-a(1-m_a)(1-t)]\} \{(1-m_a)G + (1-m_x)X\} \quad (1.5)$$

The variables G and X are exogenous and taken from the CBA's current account and government finance data. The model then estimates Y and A by imposing parameter values for: a, t, m<sub>a</sub>, and m<sub>x</sub>. There are two other endogenous variables (T and M) which serve as control variables because the estimated values can be checked against their known values (from the sources mentioned above). However, because there are fewer control variables (two) than imposed parameter values, the model is not uniquely specified--there is

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1/ Prepared by Gary O'Callaghan.

2/ The symbols are:

Y	Nominal GDP (estimated)
A	Private sector absorption (estimated)
G	Government expenditure
X	Exports of goods and services
M	Imports of goods and services
T	Government revenues
a, t, m <sub>a</sub> , and m <sub>x</sub>	are parameters.

a range of possible values for Y and A (given different parameter values) which will satisfy the system. 1/

(b) The new, and more extensive model, may be sketched as follows: 2/

$$Y = C + I + G + (X-M) \quad (2.1)$$

$$C = c(Y-T) \quad (2.2)$$

$$M = m_c C + m_i I + m_g G + m_x X \quad (2.3)$$

$$T = tY \quad (2.4)$$

This reduces to:

$$Y = \{1/[1-c(1-m_c)(1-t)]\} \{(1-m_i)I + (1-m_g)G + (1-m_x)X\} \quad (2.5)$$

The variables G, X and I are exogenous. Data for X are from CBA published data (as with the CBA model), but data for G are staff estimates and are larger than the CBA data, and the data for I are estimates compiled by the Ministry for Economic Affairs (MEF). 3/ The model estimates Y and C by imposing parameter values for c, t, m<sub>i</sub>, m<sub>g</sub>, m<sub>x</sub> and m<sub>c</sub>. 4/ There are two control variables, M and T (from CBA data and staff estimates respectively), which the model also estimates. However, even if m<sub>i</sub>, m<sub>g</sub> and

1/ Clearly, one could estimate GDP directly by imposing values for either m<sub>a</sub> and m<sub>x</sub> or t and using the relevant control variable as an exogenous variable (in a single equation). This, however, would put too much reliance on the parameter value chosen.

2/ The symbols are:

Y	Nominal GDP (estimated)
C	Private consumption (estimated)
I	Private investment
G	Government expenditure
X	Exports of goods and services
M	Imports of goods and services
T	Government revenues

c, t, m<sub>c</sub>, m<sub>i</sub>, m<sub>g</sub>, and m<sub>x</sub> are parameters.

3/ The MEF estimates have been adjusted for 1990-1992 to take account of investment at the Coastal oil refinery which appears to have been omitted.

4/ The values for c, t and m<sub>c</sub> are outlined in Table 2 (and discussed in the text). The parameter m<sub>g</sub> is calculated according to data on government imports (relative to expenditure) and m<sub>i</sub> is assumed to be close to 0.7. The parameter m<sub>x</sub> is derived from an amalgam of estimated export-related imports for: tourism (34 percent of receipts); the oil sector (from oil import data, subject to an estimated stocking adjustment in 1990-91.); the free-zone (70 percent of imports are assumed to be for re-export); other merchandise exports (60 percent of exports); and services receipts (50 percent of receipts).



$m_x$  are assumed to have fixed values (as outlined above), there is still one more imposed parameter value than there are control variables.

## 2. Controls on the parameter values

The main problem, with both models, is that there are not as many control variables as there are adopted parameter values. The extended model was used by varying the values of three parameters ( $c$ ,  $t$  and  $m_c$ ) but there are only two control variables. This, in effect, allows the model to calculate a wide range of values for GDP as is illustrated in Chart 12 and as explained below.

Each of the curves A and B in Chart 12 represents a tradeoff between values for  $c$  and  $m_c$  such that the estimated level of GDP is the same at all points on the curve. The level of GDP is higher for curve A than for B but each has the same fixed tax parameter  $t$ . If GDP were estimated at a level corresponding to curve B, with parameters corresponding to point 1, there are two checks on the validity of the estimate: first, whether the adopted value for  $m_c$  assigns the correct value for  $M$  (given its other components); and second, whether the calculated value for  $T$  is correct given the adopted value for  $t$ . Suppose that both controls are satisfied, this is a satisfactory estimate but it is not unique, as is demonstrated in what follows.

The level of GDP corresponding to curve A must imply a value for  $m_c$  which is lower (because income is higher along curve A). Suppose that this is at point 2 where the criterion applying to  $M$  is again satisfied. The second criterion, applying to  $T$ , cannot be satisfied at point 2 because GDP is higher, implying a lower value for  $t$  than for curve B, while both curves were constructed with the same  $t$ . Therefore, point 2 cannot be a valid estimate. However, there exists a series of curves (such as  $A^*$ ) where different values of  $c$  and  $m_c$  generate a GDP estimate at the same level as at A, but at a lower value for  $t$ . If the relevant curve is  $A^*$ , where  $T$  is correctly calculated, point 3 also satisfies both criteria but at a higher level of GDP than at point 1.

## 3. Imposing restrictions on the parameter values

In the absence of a third control variable, one way to uniquely define a GDP estimate is to assume some relationship between two of the existing control variables. Ideally, a relationship should exist between  $t$  and  $m_c$ , because of taxes levied on imports, but the nonavailability of data precludes defining this. The same problem applies to the relationship between  $c$  and  $t$ . Therefore, the best option would appear to be to define a relationship between  $c$  and  $m_c$ . The use of this relationship is somewhat arbitrary but, in the limit, it would appear to provide an upper boundary to the GDP estimate because, if  $c$  rises abruptly, the increased consumption is unlikely to be met from domestic production. Therefore, as  $c$  rises,  $m_c$  should also rise, and this is captured by fixing the ratio of  $c/m_c$ . Such a ratio would define a unique GDP estimate, as can be seen from Chart 13.

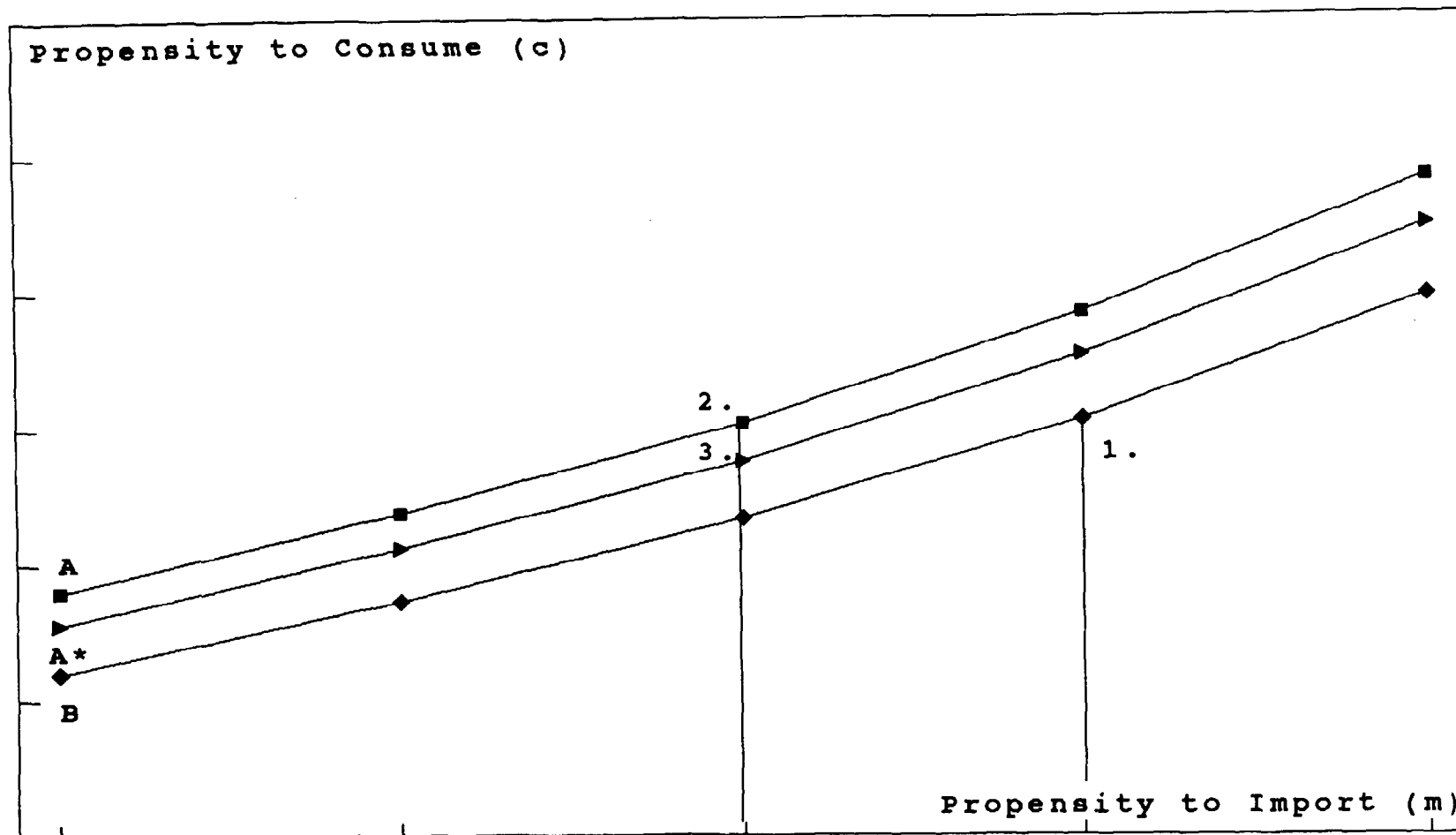
Chart 13 presents two (negatively sloped) curves which connect a series of points (such as points 1 and 3 in Chart 12) which would satisfy the relevant control criteria (on M and T) for 1991 and 1992. Reasonable GDP estimates and parameter values were obtained for all years after 1987 by imposing the restriction that  $c/m_c = 1.6$ , and this restriction is represented by the positively sloped curve. Therefore, the points of intersection of this curve with the relevant negatively sloped curve yield the unique GDP estimates for 1991 and 1992 which were adopted.

In order to indicate the sensitivity of GDP estimates to changes in the parameters, and the usefulness of the imposed restriction, a series of calculations of other possible GDP levels was performed for each year. These are illustrated as points along the curves in chart 2 where the number refers to the percent deviation of the calculated level of GDP from the value actually chosen (on the basis of the restriction). Thus, for 1992, a satisfactory GDP estimate could have been obtained with a marginal propensity to consume (c) of 0.828 and a marginal propensity to import for consumption ( $m_c$ ) of 0.503. This would have generated a level of GDP which was 1.7 percent higher than the one actually chosen (on the basis of  $c = 0.824$  and  $m_c = 0.517$ ).

#### 4. Model estimates

The results of the expanded model are presented in Table 1 and these results (IMF) are compared with those of the CBA model (CBA) in Table 2. Table 2 also outlines the parameters adopted and measures the relationship between c and  $m_c$ . The only significant differences between the two models occur in 1989 and 1992 when the IMF estimates are lower. In 1989, the rate of growth in exports did not correspond to that achieved in prior years, and the check on  $c/m_c$  would seem to preclude estimating a higher level of consumption. In 1992, the significant decrease in investment appears to have had a significant effect (and somewhat outweighed the increase in export earnings) and, again, application of the control on the ratio of c to  $m_c$  would appear to preclude a higher estimate.

**Chart 12. ARUBA: Illustrative Parameter Selection**





**Chart 13. ARUBA: Parameter Selection, 1991-92**

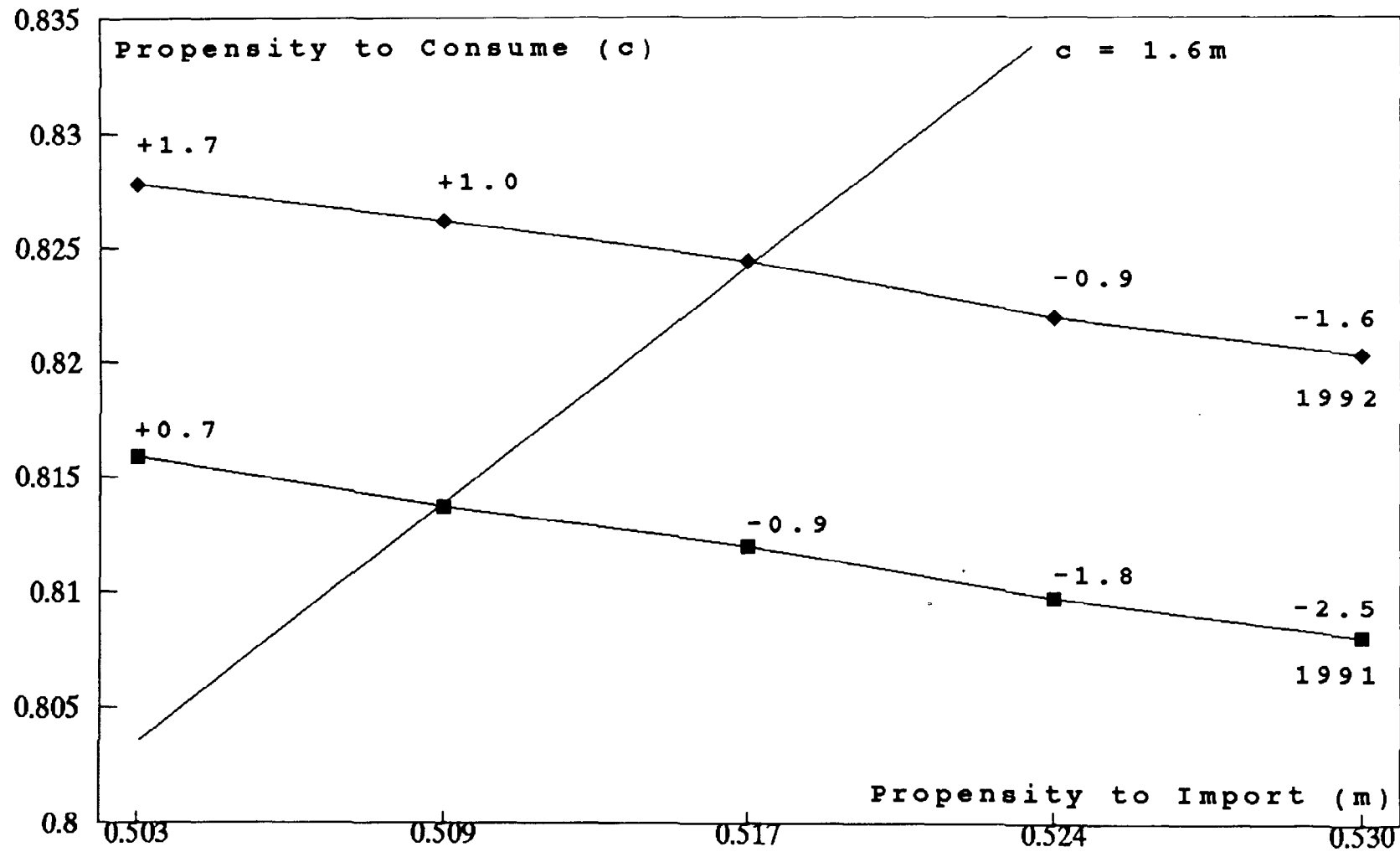




Table 1. Aruba: Estimated GDP and Components

(In millions of Aruban florins)

	1986	1987	1988	1989	1990	1991	1992
Gross Domestic Product	801	962	1158	1314	1553	1703	1837
Nominal growth rate (percent)	1.0	20.1	20.4	13.4	18.2	9.7	7.9
Real growth rate (percent)	-0.1	15.9	16.7	9.1	11.7	3.8	3.8
Private sector absorption	580	661	903	1043	1440	1631	1310
Consumption	457	537	644	711	915	1059	1174
Investment	123	124	258	332	525	572	136
Public sector absorption	248	319	320	346	380	412	447
Consumption 1/	227	254	281	305	331	357	381
Investment	21	65	39	41	47	52	65
Exports (net of related imports and payments)	261	328	417	471	546	617	799
Tourism	187	258	319	362	413	459	520
Refining	--	--	--	--	5	1	43
Freezone	--	11	15	44	51	63	100
Other exports and services	74	59	82	64	77	94	136
Other imports and payments	287	345	481	546	814	958	720
Government imports 2/	7	9	11	12	12	13	16
Investment related imports	76	86	181	232	373	406	97
"General" imports and services	203	250	289	302	429	539	607
Other merchandise imports	166	169	175	166	242	337	403
Other current payments	37	81	114	136	186	202	204

1/ Including government transfers to households.

2/ Partial imports as directly reported in the BOP statistics.

Table 2. Aruba: Estimates of GDP and relevant parameters.

	1986	1987	1988	1989	1990	1991	1992
1. Comparison with CBA estimates:							
Gross domestic product (Af. millions)							
CBA	801	958	1154	1347	1576	1733	1918
IMF	801	962	1158	1314	1553	1703	1837
Nominal growth (percent)							
CBA	1.0	19.6	20.5	16.7	17.0	10.0	10.7
IMF	1.0	20.1	20.4	13.4	18.2	9.7	7.9
Real growth (percent)							
CBA	-0.1	15.4	16.8	12.2	10.6	4.1	6.5
IMF	-0.1	15.9	16.7	9.1	11.7	3.8	3.8
2. Parameters and exogenous variables:							
Propensity to consume (c)	0.777	0.735	0.719	0.694	0.751	0.814	0.824
Propensity to save	0.223	0.265	0.281	0.306	0.249	0.186	0.176
Propensity to import							
Government 1/	0.029	0.027	0.034	0.033	0.032	0.031	0.036
Investment	0.620	0.700	0.700	0.700	0.710	0.710	0.710
Consumption (m)	0.445	0.465	0.449	0.425	0.469	0.509	0.517
Tourism	0.340	0.340	0.340	0.340	0.340	0.340	0.340
Freezone	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Other exports	0.600	0.600	0.600	0.600	0.600	0.600	0.600
Tax rate (t)	0.267	0.240	0.226	0.221	0.216	0.236	0.225
Memorandum items:							
Additional control variable (c/m)	1.75	1.58	1.60	1.64	1.60	1.60	1.60
Multiplier	1.46	1.43	1.44	1.45	1.46	1.44	1.45

1/ Partial imports as directly reported in the BOP statistics.



Aruba: Medium-Term Scenarios, 1993-98 1/

Following the large-scale development of the tourism sector in Aruba since the mid-1980s economic policy-making is now confronted with a choice on whether to: (i) encourage further development of the hotel sector at the possible risk of incurring labor shortages and a loss of competitiveness from aggravated tightness of the labor market; or (ii) embark on a more moderate pace of development. In either case, the question of whether further immigration will be required to alleviate labor market constraints will have to be confronted. This appendix attempts to assess the policy trade-offs involved, and to cast some light on the magnitude of the relevant decision parameters, by developing medium-term scenarios for 1993-1998.

In assessing the medium-term outlook the authorities are confronted with a number of constraints in addition to those posed by the labor market. First, it is assumed that the fixed exchange rate with the U.S. dollar will be maintained, and this requires that a satisfactory balance of payments position be maintained. Second, the previous development of the tourism industry has out-stripped infrastructural development, and the National Development Plan for the period 1993-97 reflects the government's assessment with regard to investment needs. The intention is to invest about Af. 850 million over a five year period and this represents an annual expenditure of some 8 percent of GDP. Nearly a quarter of this amount will be spent on the production (and distribution) of water and electricity, mainly through the WEB, but other major investments are planned in the areas of telecommunications, housing, education, sewerage, and the airport. In its present form, the plan envisages considerable frontloading, with more than half of the investment occurring in the first two years, and a considerable slackening off over 1996-97. It is likely, however, that real resource constraints will force a more even pace of investment over the five year period, and this is the path adopted in the scenarios developed below. The third constraint relates to the government's outstanding guarantees for hotels which amounted to about 25 percent of GDP at the end of 1992. An aggravation of competitiveness in the hotel sector, if it forced some of the relevant hotels to close, would trigger these guarantees and impose a severe fiscal burden on the economy. One should also note that the problem of the government (hotel) guarantees was not taken into account when the development plan was drawn up. Depending on the outcome of the guarantee negotiations, the public investment program may well have to be revised downward--for financing reasons--and the guarantee situation might also be aggravated by future developments in the hotel sector.

The model used in compiling the scenarios contains the same demand equation as is presented in Appendix I. The parameters--for the propensity to consume (c), the propensity to import for consumption ( $m_c$ ) and the tax rate (t)--are assumed to be the same for each year 1993-1998 as those used for 1992 in estimating GDP in Appendix I. Exports, with the exception of tourism receipts, are extrapolated on the basis of external market growth

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1/ Prepared by Gary O'Callaghan.

and non-hotel investment is predicated on the basis of steady growth as modified by specifically identified projects (for example, investment plans at the refinery). Public finances are projected on the basis of the fixed tax rate ( $t$ ) and an unchanged number of employees; government current expenditure in nominal terms is assumed to increase with nominal wages and government capital expenditure has been projected according to the National Development Plan's provisions for the whole of the period. Consumption is determined as a function of income and taxes as in Appendix I and imports are then determined as a function of final demand.

As an addition to the model employed in Appendix I, however, a set of supply side equations has been incorporated in an attempt to assess potential labor market restrictions. The supply side equations concentrate on a calculation of hotel occupancy rates as a function of both price developments relative to competitor markets and enforced vacancies as a result of labor shortages; different assumptions regarding immigration are employed in the two scenarios below. The occupancy or vacancy rates are then related to the number of hotel rooms available which is also projected differently in each scenario. The supply side, as it describes hotel occupancy rates, has been formulated as follows:

$$O_t^s - O_t^d - V_t \quad (1)$$

$$O_t^d - eP_{t-1} + M_t \quad (2)$$

$$P_t - a(R_t - b) + V_t \quad (3)$$

$$R_t - b + (U_t - U_{t-1}) \quad (4)$$

$$V_t - c(d - U_t) \quad (5)$$

$$U_t - N_t^s - N_t^d \quad (6)$$

$$N_t^s - f \text{ (immigration)} \quad (7)$$

$$N_t^d - f \text{ (development of hotel sector)} \quad (8)$$

Where:

- $O_t^s$  is the hotel occupancy rate in period  $t$  (percent);
- $O_t^d$  is the demand for hotel occupancy (percent);
- $V_t$  is an additional vacancy rate due to labor shortages (percent);
- $U_t$  is the rate of unemployment or of unfilled vacancies in the labor market (percent);
- $P_t$  is the excess rate of hotel price increase in Aruba relative to competitor markets (percent);
- $M_t$  is the growth in external market demand (percent);
- $R_t$  is the rate of increase of real wages in the hotel sector (percent);

$N_t^s$  and  $N_t^d$  are labor supply and demand respectively; and  $a, b, c, d$ , and  $e$  are parameters, where  $e$  is the elasticity of demand for hotel occupancy with respect to relative price developments.

The equations involve:

(i) A labor market (equations 6-8) where labor demand ( $N^d$ ) is derived from the various sectors including the requirements of construction (most importantly, of any new hotels) and the requirements of the tourism sector (as a function of the number of hotel rooms available). Labor supply ( $N^s$ ) is determined as the product of a fixed rate of growth of the indigenous labor force (3.5 percent per year) and the level of immigration (which varies between the scenarios). The difference between supply and demand is the rate of unemployment or of unfilled vacancies ( $U$ );

(ii) The rate of unemployment will translate into vacant hotel rooms ( $V$ ) if  $U$  is negative (equation 5). The parameter values for  $c$  and  $d$  are 1 and 0.5, respectively, which implies that labor shortages develop whenever the rate of unemployment falls below 0.5 and that these impinge on the hotel sector in the same proportion as for other sectors;

(iii) The rate of increase in the real wage ( $R$ ) is then formulated as a constant increase of  $b$  (which is 2 percent per year) plus the change in the rate of vacancies compared to the last period (an increase in the shortage of labor will thus increase real wages);

(iv) The rate of real wage increase puts upward pressure on relative hotel prices ( $P$ , in equation 3), to the extent that it exceeds  $b$  (which is assumed to be equal to 2 implying that a real wage increase of 2 percent per year is consistent with unchanged relative prices), and relative prices are also increased in line with the rate of enforced vacancies ( $V$ ) in the hotel sector;

(v) The rate of hotel occupancy ( $O^s$ ) is then determined (in equations 1 and 2) by the level of occupancy demand  $O^d$  unless it is smaller due to enforced vacancies ( $V$ ).  $O^d$  is a function of market growth  $M$  (which is assumed to be equal to 2.8 percent per year), and relative price developments in the last period when multiplied by the elasticity of demand ( $e = -1.5$ ).

## Results

The scenarios were formulated on the basis that the economy is a price-taker for all goods except tourism services. The level of price increase in the tourism sector, however, is affected by both the relative wage increase in this sector (which is a function of the employment vacancy rate) and by the excess demand for hotel rooms (if any) given the shortage of labor. The scenarios are affected by the number of new hotel rooms constructed, with consequent demands on labor, and by the supply of labor which in turn is

dependent on immigration. The differences in assumptions are that scenario 1 allows for an increase in the foreign labor force of about 2,000 persons and implies a reduced and delayed expansion in the hotel sector; and scenario 2 assumes no increase in the foreign labor force, completion of the three unfinished hotels and a fulfillment of other plans to extend the hotel sector. It should also be noted that both scenarios are based on favorable external conditions; in scenario 1 tourism exports increase by 40 percent in real terms over the period 1992-98, in scenario 2 the external demand is the same but real exports increase less because of supply constraints and relative price increases. <sup>1/</sup>

The principle results for scenarios 1 and 2 are outlined in Tables 3 and 4, respectively, and are presented in Chart 14. <sup>2/</sup> Real GDP growth in scenario 1 exhibits a balanced moderate rate throughout the period while growth in scenario 2 is slightly higher at the beginning of the period, and suffers significantly in the middle of the period, before recovering lost ground. Overall accumulated real GDP growth is over 10 percent higher in scenario 1, despite the fact that there are more hotel rooms constructed under scenario 2, and inflation is higher in scenario 2. On average, scenario 2 results in a decline in real GDP growth and an increase in inflation (the GDP deflator) by about 1.5 percent per year, when compared with scenario 1. <sup>3/</sup>

Scenario 1 exhibits a more balanced economic development as is demonstrated by the balanced fiscal position which allows the current account to exhibit small surpluses corresponding to the private sector's moderate level of financial surpluses. Scenario 2, however, is more unbalanced. The external position suffers from supply side pressures, despite the increase in foreign exchange earning capacity, and the current account balance is some 2 percentage points of GDP lower in scenario 2 throughout the period. The fiscal balance is also some 2 percentage points lower in scenario 2 because of lower tax revenues and this may adversely

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<sup>1/</sup> In scenario 1 the immigrant labor force increases by about 25 percent in 1993-95 before beginning to dwindle toward the end of the period. The immigrant labor force is estimated at over 20 percent of the total labor force for the end of 1992. There are three major hotel projects undertaken in 1993-95 in scenario 2, but one of the unfinished hotels with 460 rooms is assumed not to be opened as a hotel in scenario 1. One of the projects is also delayed in scenario 1.

<sup>2/</sup> The scenarios are, of course, somewhat sensitive to the choice of parameter values and assumptions made and should, therefore, be interpreted with some caution. However, a number of checks on implied productivity changes and on general consistency suggest that the scenarios presented here provide an accurate description of prospective developments.

<sup>3/</sup> The change in the GDP deflator is calculated as a weighted average of price changes for different components in the balance of resources. They are particularly dependant on price increases for exports of tourism services.

CHART 14  
ARUBA  
Medium Term Scenarios  
(In percent)

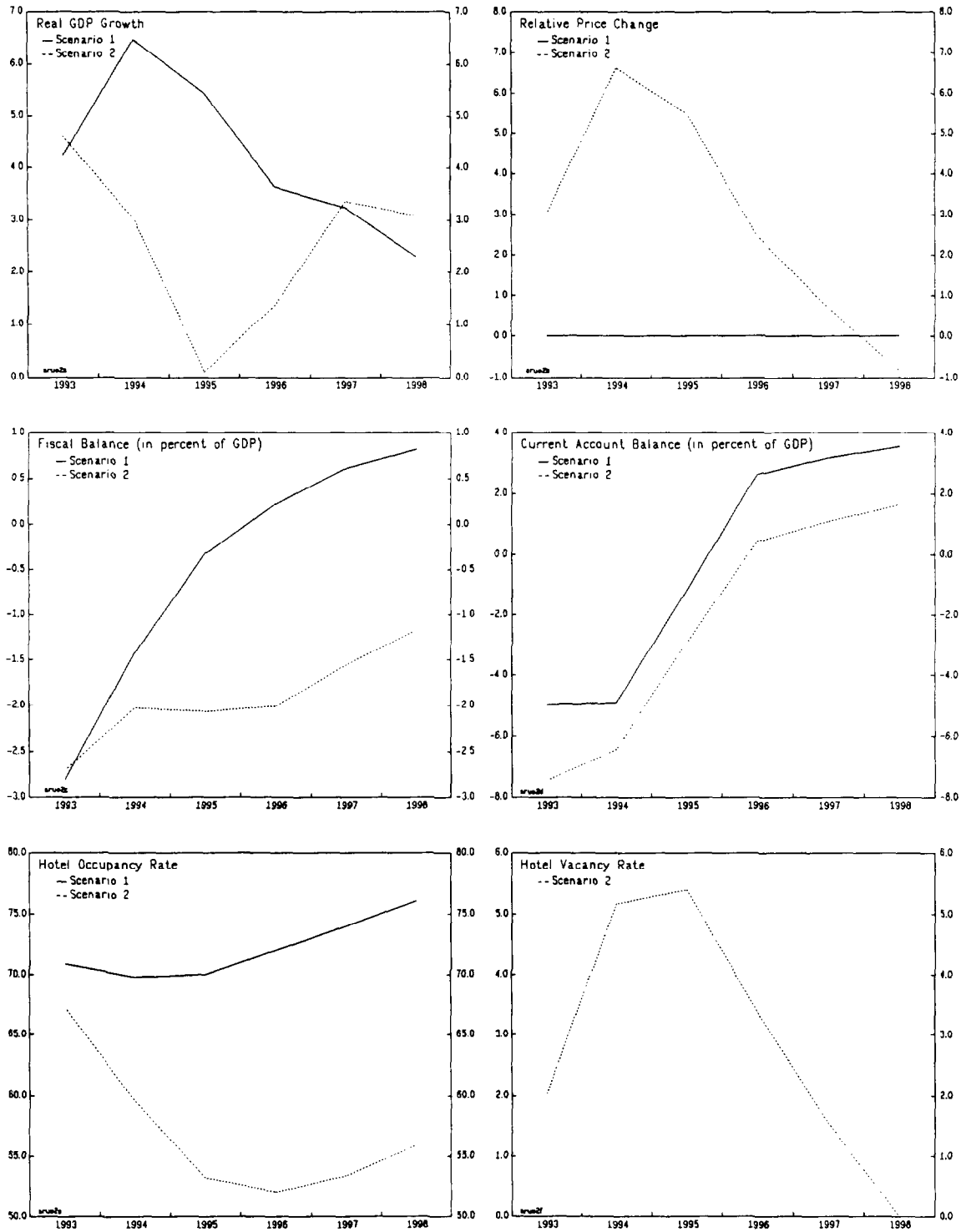




Table 3. Aruba: Scenario 1, 1993-1998

	1993	1994	1995	1996	1997	1998
Nominal GDP (Af. millions)	1981	2181	2378	2547	2719	2875
(percentage change)	7.8	10.1	9.0	7.1	6.7	5.7
Real GDP growth	4.2	6.5	5.4	3.6	3.2	2.3
GDP Deflator (percent change)	3.4	3.4	3.4	3.4	3.4	3.4
Inflation (CPI, percent change)	3.0	3.0	3.0	3.0	3.0	3.0
Real wage growth rate	2.1	2.1	1.9	2.0	2.0	1.9
External relative price increase	--	--	--	--	--	--
Unemployment rate	0.5	0.5	0.5	0.5	0.5	0.5
Vacancy rate	--	--	--	--	--	--
Labor force growth rate	4.8	5.6	3.6	1.5	1.5	1.6
Of which: Immigration	2.1	2.9	1.0	-1.0	-1.1	-1.0
Hotel rooms	6233	6898	7318	7318	7318	7318
(percent increase)	7.4	10.7	6.1	--	--	--
Hotel Occupancy rate	70.9	69.8	70.0	72.0	74.0	76.1
Hotel rooms vacant	--	--	--	--	--	--
(In millions of Aruban florins)						
Current account balance	-98	-107	-28	67	87	101
(In percent of GDP)	-5.0	-4.9	-1.2	2.6	3.2	3.5
External debt	1580	1715	1849	1984	2119	2253
(In percent of GDP)	79.8	78.6	77.8	77.9	77.9	78.4
Public sector	901	899	896	894	892	889
(In percent of GDP)	45.5	41.2	37.7	35.1	32.8	30.9
Government revenue	454	500	547	584	621	654
(In percent of GDP)	22.9	22.9	23.0	22.9	22.8	22.8
Government expenditure	509	531	554	579	604	631
(In percent of GDP)	25.7	24.4	23.3	22.7	22.2	21.9
Fiscal balance	-56	-31	-8	6	17	23
(In percent of GDP)	-2.8	-1.4	-0.3	0.2	0.6	0.8
Private Financial Balance						
(in percent of GDP)	-2.2	-3.5	-0.9	2.4	2.6	2.7

Table 4. Aruba: Scenario 2, 1993-1998

	1993	1994	1995	1996	1997	1998
Nominal GDP (Af. millions)	2013	2204	2334	2472	2650	2815
(percentage change)	9.6	9.5	5.9	5.9	7.2	6.2
Real GDP growth	4.6	3.0	0.1	1.4	3.4	3.1
GDP Deflator (percent change)	4.7	6.3	5.8	4.5	3.7	3.1
Real wage growth rate	4.0	4.9	2.2	0.1	0.3	0.4
Inflation (CPI, percent change)	3.0	3.0	3.0	3.0	3.0	3.0
External relative price increase	3.0	6.6	5.5	2.5	0.7	-0.8
Unemployment rate	0.5	0.5	0.5	0.5	0.5	0.7
Vacancy rate	1.4	4.3	4.5	2.6	0.9	---
Labor force growth rate	3.9	2.7	2.7	2.7	2.7	2.7
Of which: Immigration	1.2	---	---	---	---	---
Hotel rooms	6553	7360	7780	7780	7780	7780
(percent increase)	12.9	12.3	5.7	---	---	---
Hotel Occupancy rate	67.3	59.5	53.2	52.0	53.4	55.9
Hotel rooms vacant	134	381	420	264	120	0
(In millions of Aruban florins)						
Current account balance	-150	-142	-68	11	29	46
(In percent of GDP)	-7.5	-6.4	-2.9	0.4	1.1	1.6
External debt	1580	1715	1849	1984	2119	2253
(In percent of GDP)	78.5	77.8	79.2	80.3	79.9	80.0
Public sector	901	899	896	894	892	889
(In percent of GDP)	44.8	40.8	38.4	36.2	33.6	31.6
Government revenue	460	504	535	565	602	638
(In percent of GDP)	22.9	22.9	22.9	22.8	22.7	22.7
Government expenditure	514	549	583	614	644	671
(In percent of GDP)	25.6	24.9	25.0	24.9	24.3	23.8
Fiscal balance	-55	-45	-48	-50	-41	-33
(In percent of GDP)	-2.7	-2.0	-2.1	-2.0	-1.6	-1.2
Private Financial Balance						
(in percent of GDP)	-4.7	-4.4	-0.9	2.5	2.7	2.8



affect the government's ability to undertake its substantial planned infrastructural development program. The private sector's financial balance is not very different as between the scenarios.

The relative imbalance in scenario 2 derives from the labor market where real wage increases and a shortage of labor cause relative tourism prices in Aruba to increase by close to 20 percent over the whole period. These pressures are principally felt at the beginning of the period, as a result of the increase in demand for labor, and even though relative prices moderate in 1997-98, occupancy rates have at that stage declined to 56 percent in scenario 2 compared to 76 percent in scenario 1. The number of hotel rooms that are vacant due to labor shortages rises to 420 in 1995 in scenario 2 and this almost corresponds to the capacity of the extra hotel. However, the extra hotel has increased competition for labor on the others, such that occupancy drops well below the number of rooms involved for this hotel only.

The scenarios indicate that excess demand for labor, stemming from a combination of ambitious investment plans and restrictive immigration policies, could have serious effects on the tourist sector in terms of increasing relative prices and reducing occupancy rates. This is a cause of concern, not only for the hotel sector, but also for the Aruban economy as a whole due to the economy's dependance on tourism and the link between the hotels and the public finances through the guarantees granted for hotel projects.

Aruba: Domestic Credit Targeting Under Perfect Capital Mobility 1/

Domestic credit targeting has constituted an important element of Aruba's monetary policy, particularly since 1989 when quantitative controls on domestic credit expansion were first introduced. Domestic credit controls are currently being used in conjunction with controls on capital imports to target broad money supply, in an effort to prevent excessive overheating of the economy.

In this appendix, we shall address the question of whether domestic credit targeting could retain some usefulness as a monetary policy instrument in the context of completely liberalized capital movements, when monetary aggregates become fully endogenous. Specifically, we shall inquire to what extent domestic credit expansion can be used as an intermediate target in support of the fixed exchange rate objective, as a substitute for, or preferably alongside with, the interest rate instrument.

The endogeneity of the money stock for the case of a small, open economy under fixed exchange rates can be demonstrated in a straightforward manner by adopting a formulation which emphasizes the monetary nature of the balance of payments. In particular demand for real money balances ( $M^d$ ) is assumed to be a stable function of real GDP: 2/

$$M^d = P \cdot f(y) ; f_y > 0, \quad (1)$$

where  $P$  is the price level and  $y$  is real GDP. Money supply is assumed to be given by the sum of foreign exchange reserves ( $R$ ) and net domestic assets ( $D$ ):

$$M^s = R + D \quad (2)$$

Combining equations (1) and (2), the money market equilibrium conditions can be derived as follows:

$$\begin{aligned} R + D &= P \cdot f(y) , \text{ or} \\ R &= P \cdot f(y) - D \end{aligned} \quad (3)$$

Differentiating equation (3) with respect to time yields, after straightforward algebraic manipulation:

$$(dR/dt) = M \cdot [g_p + n_y g_y] - (dD/dt), \quad (4)$$

where  $g_p$  and  $g_y$  are the rate of inflation and the rate of growth of real GDP, respectively, and  $n_y$  is the income elasticity of money demand.

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1/ Prepared by Ioannis Halikias.

2/ Including additional explanatory variables (e.g., the interest rate), or allowing for some "money illusion" would not affect the conclusions.

In the case of a small, open economy with a fixed exchange rate, and where economic agents are price-takers, the domestic price level ( $P$ ) is related to the foreign price level ( $P^*$ ) through  $P = (1/e)P^*$ , where  $e$  is the exchange rate. Hence, given the fixed exchange rate, the rate of change of domestic prices is equal to the rate of change of foreign prices. For simplicity, it is also assumed that the real sector of the economy is in continuous full-employment equilibrium, so that the time path of  $y$  is exogenously determined by supply factors. <sup>1/</sup>

Equation (4) illustrates the endogeneity of monetary aggregates under fixed exchange rates. While the monetary authorities may be able to affect the composition of money supply, they cannot affect its overall level. The first term on the right-hand side of equation (4) is the rate of change in money demand. If the monetary authorities attempt to maintain domestic credit expansion above the rate of increase in money demand, the result would be a decrease in net foreign assets, exactly offsetting the excess of domestic credit expansion over the increase in desired money holdings. If, by contrast, they attempt to accommodate only a fraction of the increase in desired money holdings by domestic credit expansion, the gap will be filled by an increase in the foreign exchange reserve component of the money stock.

The inability of the monetary authorities to control the domestic money supply in the case of a small, open economy under fixed exchange rates need not imply that domestic credit targeting should be abandoned as a monetary policy instrument. In fact, as equation (4) indicates, while monetary policy cannot be used as a demand management tool, it could under certain circumstances be usefully employed in support of the fixed exchange rate objective.

Specifically, the monetary authorities could adopt a medium-term strategy of monitoring domestic credit expansion with an aim to prevent excessive fluctuations in the capital account balance, and consequent pressure on the currency. In particular, they should avoid allowing the rate of domestic credit expansion to consistently exceed the rate of increase in money demand, as this would entail a steady running down of foreign exchange reserves, and hence eventually come into conflict with the fixed exchange rate objective. Moreover, it could be argued that an appropriate strategy would be to keep the rate of domestic credit expansion below the rate of increase in money demand on average over the medium term, aiming at an increasing trend in foreign exchange reserves, say in line with import growth, in order to avoid the need for excessive official external borrowing in the event of an adverse external shock and/or limit the potential for speculative pressure on the currency.

The importance of domestic credit targeting is obviously enhanced to the extent that recourse to the interest rate instrument is limited.

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<sup>1/</sup> The formulation of a sluggish adjustment process in the real sector would not affect the conclusions.

However, even if the interest rate were available, the monetary authorities may still find it preferable to use both instruments in pursuing the fixed exchange rate objective, so as not to let the entire burden of adjustment fall on the interest rate, especially if limiting interest rate variability is part of their objective function. In that case, domestic credit targeting would be used as a medium-term, and the interest rate as a short-term policy instrument.

We turn next to an investigation of the conditions under which domestic credit targeting, as described above, could in fact be rendered operative as an intermediate target in support of the fixed exchange rate objective. One important prerequisite for the implementation of the above strategy is the stability of the demand for money function. Otherwise, the determination of a quantitative domestic credit expansion target, in accordance with the monetary authorities' desired path for foreign exchange reserves, would be in practice impossible. It should be a priori expected that a reasonably stable demand for money function exists in the case of Aruba, given the limited range of available close substitutes for money. A second major prerequisite would be the existence of negative correlation between domestic credit expansion and net private capital inflows. While such a relationship would be expected to hold in principle, it is still worth investigating empirically, to determine whether it remains valid in the case of Aruba, or is dominated by portfolio shifts possibly linked to speculative pressure 1/ or changes in the authorities' practice of providing guarantees and other fiscal incentives for foreign investment.

Regarding the issue of money demand stability, we start by inquiring into the constancy of the velocity of money. 2/ Chart 15 depicts the evolution of the velocity of money during the period 1986-92. 3/ As the chart makes clear, velocity has not been constant during the period under consideration. It should be pointed out that the abnormally high level of velocity in 1986 could be attributed to special circumstances, as the economy was at the trough of a very deep recession, and as a result economic agents were probably engaging in major portfolio shifts, drawing on their liquid savings to finance spending. Even so, over the period 1987-92, velocity exhibits a clear downward trend, falling from 2.15 in 1987 to 1.85 in 1992.

To assess the quantitative significance of the downward trend in velocity, we compute projections for the growth of the money stock in each year, based on historical data for velocity (last year's velocity), and

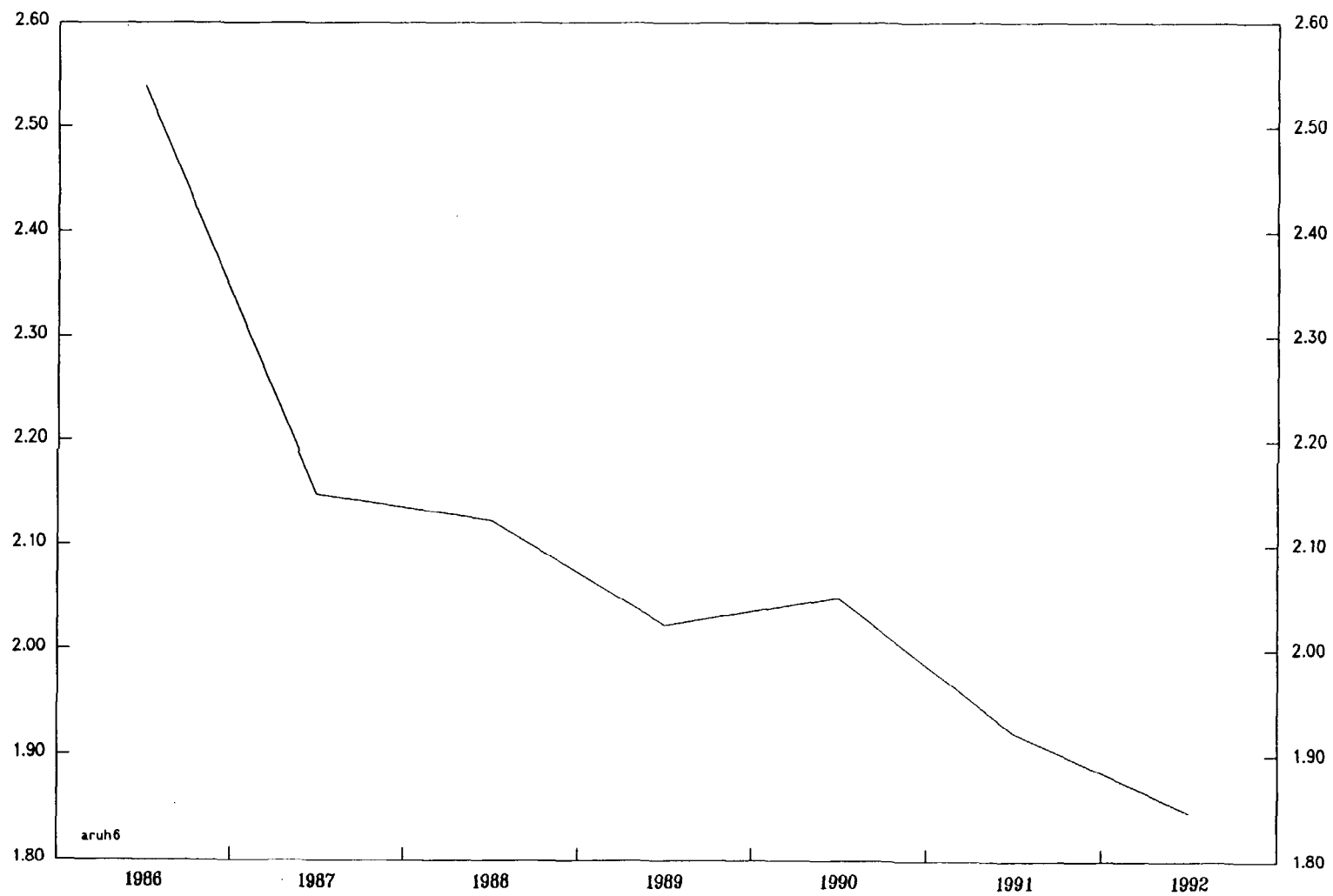
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1/ This element could be incorporated in equation (4) by explicitly including exchange rate expectations in the formulation of the aggregate demand equation.

2/ For our present purposes, the broad definition of money (M2) is used.

3/ It should be kept in mind that the level of the velocity of money, as well as the estimations that follow, could be affected to some extent by the error involved in estimating nominal GDP. For a fuller discussion of this point, see Appendix I.

CHART 15  
ARUBA  
Income Velocity of Money (M2)



Sources: Central Bank of Aruba, Quarterly Bulletin; and staff calculations.



assuming that GDP each year was projected accurately. Even treating the level of velocity in 1986 as an outlier, and hence concentrating on the period 1988-1992, this method would yield an average absolute deviation between projected and actual rate of money growth of 4.0 percentage points per year, ranging from an overestimation by 1.5 percentage points in 1990 to an underestimation by 7.3 percentage points in 1991. Hence, the hypothesis of constant velocity of money is not supported by the data, while from a practical point of view an assumption of constant velocity would result in deviations of the projected growth in the money stock from the actual outcome that would render it inappropriate for an adequate conduct of monetary policy.

Nonconstancy of the velocity of money obviously need not imply money demand instability. In fact, the trend in velocity could be accounted for by at least two factors: a greater-than-one income elasticity of the demand for money, or the relevance of additional explanatory variables, alongside nominal GDP. In addressing the first of the above issues, we estimate a constant-elasticity demand for money function of the form:

$$\log(\text{MON}_t) = a_0 + a_1 \log(\text{GDP}_t) + u_t, \quad (5)$$

where MON is the broad money supply (M2),  $a_1$  is the (constant) nominal income elasticity of money demand, and  $u_t$  is an independently and identically distributed, 0-mean error term. Given the limited number of observations, breaking up the sample in half in order to perform a formal Chow test for stability is not feasible. Accordingly, we adopt a less formal procedure, estimating equation (5) over overlapping subperiods by varying their start- or end-date. The estimation results, including parameter estimates (t-statistics in parenthesis),  $R^2$ , standard error, and Durbin-Watson and F-statistics, are presented in the table below:

Period	CONST	GDP	$R^2$	SE	DW	F
1985-1992	-3.58 (6.9)	1.40 (19.2)	0.98	0.0634	1.25	369.2
1986-1992	-2.95 (7.4)	1.31 (23.6)	0.99	0.0416	2.30	555.4
1987-1992	-2.26 (6.4)	1.22 (25.1)	0.99	0.0267	2.13	628.4
1986-1991	-2.89 (5.6)	1.30 (18.0)	0.99	0.0462	2.32	325.2
1986-1990	-2.91 (4.0)	1.30 (12.7)	0.98	0.0533	2.16	160.4
1987-1991	-1.96 (5.4)	1.17 (23.3)	0.99	0.0230	2.22	541.5
1987-1990	-1.58 (4.1)	1.12 (20.8)	0.99	0.0188	2.13	432.1

For all subperiods, the income elasticity of money demand turns out strongly significant and greater than 1, as expected. On the other hand, including 1985 in the estimation period results in a significantly higher standard error, suggesting that this particular year may indeed have been an outlier as far as the demand for money is concerned. However, even if 1985 is included, the hypothesis of a stable demand for money function cannot be rejected. In particular, all seven parameter estimates of the constant term and the income elasticity lie inside the 95 percent confidence interval corresponding to each subperiod.

We next turn to the question of whether the omission of certain relevant explanatory variables other than nominal GDP could also partly account for the observed trend in the velocity of money depicted in Chart 15. We start by separating the nominal GDP variable into a price level (PRIC) and a real (RGDP) component, and estimating an equation of the form:

$$\log(\text{MON}_t) = a_0 + a_1 \log(\text{PRIC}_t) + a_2 \log(\text{RGDP}_t) + u_t \quad (6)$$

Equation (6) is in principle more attractive than equation (5) from a theoretical standpoint, since it is not evident that the real income and price level elasticities of money demand should be equal. <sup>1/</sup> Furthermore, this specification allows direct testing for the presence of "money illusion" in the demand for money function. The estimation results of equation (6) over different subperiods are presented in the table below:

Period	CONST	PRIC	RGDP	R <sup>2</sup>	SE	DW	F
1985-1992	-5.31 (2.1)	0.78 (1.7)	1.65 (2.1)	0.99	0.0664	1.51	168.5
1986-1992	-3.70 (2.0)	1.05 (1.7)	1.42 (5.1)	0.99	0.0456	2.41	231.5
1987-1992	0.15 (0.1)	1.90 (5.4)	0.86 (4.7)	0.99	0.0204	2.77	540.9
1988-1992	2.56 (0.9)	2.36 (3.8)	0.51 (1.2)	0.99	0.0210	2.85	259.1
1986-1991	-4.52 (1.9)	0.66 (0.7)	1.54 (4.3)	0.99	0.0495	2.78	141.4
1986-1990	-7.51 (1.9)	-0.90 (0.5)	1.99 (3.4)	0.99	0.0501	2.94	91.7

<sup>1/</sup> Models of the transactions demand for money, for example, typically predict the existence of economies of scale in optimal money holdings with respect to real income.



The results for the period as a whole, as well as for the 1986-1992 subperiod, could be interpreted at first glance to be consistent both with the estimation results of equation (5) and with money demand theory which suggests that the demand for money function should be homogeneous of degree 1 in prices. Thus, it would appear that the greater-than-1 nominal income elasticity of money demand established by the estimation results of equation (5) is entirely attributable to the impact of the real income elasticity. At the same time, the hypothesis that the price elasticity of money demand is equal to 1 cannot be rejected at the 95 percent confidence level, thus indicating absence of "money illusion". Comparison of these estimation results with the ones of the remaining subperiods, however, would suggest that the money demand function as specified by equation (6) is unstable. The price elasticity estimates range from a low of -0.90 to a high of 2.36, while the real income elasticity estimates range from a low of 0.51 to a high of 1.99. In fact, the hypothesis that the parameters are equal across the different subperiods can be rejected at the 95 percent confidence level for both elasticities.

Given the conclusions regarding the stability of money demand specified in nominal terms, the instability of equation (6) is puzzling, even after due allowance is made for the small sample size available. One possible explanation might be that the methodology used for the separation of GDP into a price level and a real component is inadequate. In particular, the time path of the CPI, which was used to deflate nominal GDP in the absence of alternative data, could be quite different from the time path of the (unobserved) GDP deflator, while the poor quality of the CPI itself would compound the problem further. The estimation results in fact provide a strong indication that our real GDP growth estimates should be treated with caution. Thus, while equation (6) would be a superior specification on theoretical grounds, these serious data problems would render its usefulness very limited in practice, both in addressing the issue of money demand stability and more generally in the context of the implementation of monetary policy.

With regard to the possibility that the behavior of the velocity of money could be partly due to the non-inclusion of additional relevant explanatory variables in the demand for money equation, the implications of including an interest rate variable (INT) are considered next. <sup>1/</sup> The equation to be estimated is of the form:

$$\log(\text{MON}_t) = a_0 + a_1 \log(\text{GDP}_t) + a_2 \log(\text{INT}_t) + u_t \quad (7)$$

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<sup>1/</sup> The 12-month deposit rate was used for estimation purposes; the conclusions are not sensitive to the choice of interest rate.

The estimation results of equation (7), over different subperiods, are presented in the table below:

Period	CONST	GDP	INT	R <sup>2</sup>	SE	DW	F
1986-1992	-1.81 (3.2)	1.23 (26.8)	-0.26 (2.5)	0.99	0.0223	2.13	302.5
1987-1992	-1.51 (3.4)	1.20 (32.4)	-0.31 (2.1)	0.99	0.0198	2.46	579.3
1988-1992	-1.54 (1.7)	1.20 (15.2)	-0.30 (1.8)	0.99	0.0242	2.58	194.7
1986-1991	-2.79 (1.6)	1.31 (7.6)	-0.08 (0.1)	0.99	0.0533	2.27	122.1
1986-1990	-2.33 (0.7)	1.40 (2.7)	-0.06 (0.2)	0.98	0.0647	1.97	54.5

For the subperiods which include 1992, the interest rate term turns out statistically significant and has the expected sign. Moreover, stability of the income and interest rate elasticities cannot be rejected at the 95 percent confidence level for these subperiods. The insignificance of the coefficient of the INT term for the subperiods which do not include 1992 should not be interpreted as suggesting that equation (7) may be unstable, but rather as reflecting the fact that interest rates remained virtually unchanged during 1986-1991. Accordingly, the impact of the interest rate variable during this period is captured by the constant term, which increases in absolute value relative to the subperiods that include 1992. While equation (7) appears well specified, the quantitative contribution of the interest rate term in explaining the trend in velocity depicted in Chart 15 is limited, given the near-constancy of interest rates throughout most of the period under consideration.

In summary, then, the clear downward trend in the velocity of broad money should not be interpreted as signifying money demand instability. Rather, this trend is adequately accounted for by a stable demand for money function with a greater-than-1 nominal income elasticity, and, to a lesser extent, by the inclusion of an interest rate term in the specification. On the other hand, the hypothesis that the velocity trend can be explained by the different size of the elasticities of the price and real components of GDP cannot be adequately tested, given the unsuitability of the price data available.

Finally, the question of whether a negative statistical correlation exists between domestic credit expansion and net private capital inflows is addressed. The presumption that a rapid expansion of domestic credit relative to the growth of money demand (postulated as being correlated with GDP growth) would lead to a reduction in net private capital inflows

constitutes an important argument for recourse to domestic credit targeting in support of the fixed exchange rate objective. It would thus seem appropriate to inquire to what extent this relation may have been dominated in the case of Aruba by a number of factors, including the response of capital inflows to the government guarantees and other fiscal concessions, the recent tightening of policies regarding the issue of foreign exchange licenses, and possible speculative pressure particularly in the wake of the major real shocks of the mid-1980s. The equation to be estimated is of the form:

$$(CAP_t/MON_{t-1}) = a_0 + a_1 g_t + a_2 (D_t/MON_{t-1}) + u_t, \quad (8)$$

where CAP denotes net private capital inflows,  $g$  the growth rate of nominal GDP, and  $D$  domestic credit expansion. While an inquiry into the direction of causality would have been pertinent, the small size of the available sample does not permit the conduct of a strict Granger test. The estimation results of equation (8), over the period 1986-1992, are as follows (t-statistics in parentheses):

$$(CAP/MON) = 0.03 + 4.60 - 2.64(D/MON)$$

$$(0.1) \quad (1.9) \quad (2.6)$$

$$R^2=0.71 \quad SE=0.2054 \quad F(3,2)=1.6 \quad DW=2.23, \hat{\epsilon} = 0.80 \quad (t = 2.56)$$

The estimation results suggest that a case can be made for the use of domestic credit targeting in support of the exchange rate objective. The coefficients of GDP growth and the domestic credit term are statistically significant and have the expected sign,  $1/$  while the intercept is not significantly different from zero. Moreover, according to the  $R^2$ , these explanatory variables account for over 70 percent of the variability in the contribution of net private capital inflows to money growth. Thus, despite the presence of a number of additional factors that would be expected to have been relevant in the recent past, domestic credit expansion is an important element accounting for the behavior of private capital flows.

To summarize the main conclusions of this appendix, our empirical analysis indicates that domestic credit expansion targeting could play an important role in support of the fixed exchange rate. In particular, the demand for money function seems to be reasonably stable, while a relatively negative correlation would appear to exist between domestic credit expansion and net private capital inflows. Under these conditions, domestic credit targeting could retain an important role even in the context of fully liberalized capital movements, when money supply targeting will no longer be possible. In particular, it could be utilized as an intermediate objective

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$1/$  However, the size of the  $g$  coefficient is higher, though not significantly so, than what the estimation results of money demand would suggest. The greater-than-one coefficient of  $(D/MON)$  could be interpreted as suggesting the presence of a speculative component in the impact of domestic credit on capital flows.

in the pursuit of exchange rate policy, as a substitute or, preferably, in conjunction with the interest rate instrument.

Table 1. Aruba: Estimated GDP and Components

(In millions of Aruban florins at current prices)

	1986	1987	1988	1989	1990	1991	1992
Gross Domestic Product	801	962	1158	1314	1553	1703	1837
Private sector absorption	580	661	903	1043	1440	1631	1310
Consumption	457	537	644	711	915	1059	1174
Investment	123	124	258	332	525	572	136
Public sector absorption	248	319	320	346	380	412	447
Consumption <u>1/</u>	227	254	281	305	331	357	381
Investment	21	65	39	41	47	52	65
Exports (net of related imports and payments)	261	328	417	471	546	617	799
Tourism	187	258	319	362	413	459	520
Refining	0	0	0	0	5	1	43
Freezone	0	11	15	44	51	63	100
Other exports and services	74	59	82	64	77	94	136
Other imports and payments	287	345	481	546	814	958	720
Government imports <u>2/</u>	7	9	11	12	12	13	16
Investment related imports	76	86	181	232	373	406	97
"General" imports and services <u>3/</u>	203	250	289	302	429	539	607
Other merchandise imports	166	169	175	166	242	337	403
Other current payments	37	81	114	136	186	202	204

Sources: Staff estimates based on data supplied by the authorities.

1/ Including government transfers to households.2/ Partial imports as directly reported in the BOP statistics.3/ Imports for general consumption.

Table 2. Aruba: Components of GDP

(In percent of total)

	1986	1987	1988	1989	1990	1991	1992
Gross Domestic Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private sector absorption	72.3	68.7	77.9	79.4	92.7	95.8	71.3
Consumption	57.0	55.8	55.6	54.1	58.9	62.2	63.9
Investment	15.3	12.8	22.3	25.3	33.8	33.6	7.4
Public sector absorption	30.9	33.1	27.6	26.3	24.5	24.2	24.3
Consumption <sup>1/</sup>	28.3	26.4	24.2	23.2	21.3	21.0	20.7
Investment	2.6	6.7	3.4	3.1	3.0	3.1	3.5
Exports (net of related imports and payments)	32.5	34.1	36.0	35.8	35.2	36.3	43.5
Tourism	23.3	26.8	27.6	27.5	26.6	27.0	28.3
Refining	0.0	0.0	0.0	0.0	0.3	0.1	2.3
Freezone	0.0	1.1	1.3	3.4	3.3	3.7	5.4
Other exports and services	9.2	6.1	7.1	4.9	5.0	5.5	7.4
Other imports and payments	-35.8	-35.9	-41.5	-41.6	-52.4	-56.2	-39.2
Government imports <sup>2/</sup>	-0.9	-0.9	-0.9	-0.9	-0.8	-0.8	-0.9
Investment related imports	-9.5	-9.0	-15.6	-17.7	-24.0	-23.8	-5.3
"General" imports and services <sup>3/</sup>	-25.4	-26.0	-25.0	-23.0	-27.6	-31.7	-33.0
Other merchandise imports	-20.7	-17.6	-15.1	-12.7	-15.6	-19.8	-21.9
Other current payments	-4.7	-8.4	-9.9	-10.3	-12.0	-11.9	-11.1

Sources: Staff estimates based on data supplied by the authorities.

<sup>1/</sup> Including government transfers to households.<sup>2/</sup> Partial imports as directly reported in the BOP statistics.<sup>3/</sup> Imports for general consumption.

Table 3. Aruba: Contributions to Real GDP Growth

(In percent)

	1986	1987	1988	1989	1990	1991	1992
Gross Domestic Product	-0.1	15.9	16.7	9.1	11.7	3.8	3.8
Nominal growth rate	1.0	20.1	20.4	13.4	18.2	9.7	7.9
GDP deflator	1.1	3.6	3.1	4.0	5.8	5.6	3.9
Private sector absorption	...	7.2	22.2	8.5	23.8	6.5	-21.9
Consumption <u>1/</u>	...	7.6	9.1	3.3	11.4	5.5	4.1
Investment	...	-0.5	13.2	5.2	12.4	1.0	-25.9
Public sector absorption	...	7.4	-0.9	1.0	0.9	0.6	1.0
Consumption	...	2.2	1.9	1.1	0.5	0.4	0.5
Investment	...	5.2	-2.8	-0.0	0.3	0.2	0.6
Exports (net of related imports and payments)	...	6.9	7.9	3.0	3.4	2.3	8.9
Tourism	...	7.7	5.3	2.4	2.1	1.3	2.4
Refining	...	-	-	-	0.3	-0.2	2.4
Freezone	...	1.3	0.4	2.4	0.3	0.5	1.9
Other exports and services	...	-2.1	2.1	-1.7	0.6	0.7	2.1
Other imports and payments	...	-5.7	-12.6	-3.7	-16.8	-5.8	15.6
Government imports <u>2/</u>	...	-0.1	-0.2	-0.0	-0.0	0.0	-0.2
Investment related imports	...	-0.9	-9.2	-3.6	-9.0	-0.7	18.4
"General" imports and services <u>3/</u>	...	-4.7	-3.1	-0.1	-7.7	-5.2	-2.6
Other merchandise imports	...	0.3	-0.0	1.3	-4.7	-4.9	-3.0
Other current payments	...	-5.0	-3.1	-1.4	-3.0	-0.3	0.4

Sources: Staff estimates based on data supplied by the authorities.

1/ Including government transfers to households.2/ Partial imports as directly reported in the BOP statistics.3/ Imports for general consumption.

Table 4. Aruba: Indicators of Tourism Activity

	1986	1987	1988	1989	1990	1991	1992
Total revenue (Af. millions)	283.0	390.8	483.7	548.4	625.6	695.3	788.6
Total visitors (000)	254.3	312.3	359.1	414.6	562.8	634.5	758.3
Average stay (nights)	7.1	7.0	7.5	7.7	7.8	7.5	7.2
Expenditures per tourist per day (Aruban florins)	213.2	234.2	228.1	203.7	181.6	181.3	196.6
Hotel occupancy rate (percent)	70.9	73.0	78.7	76.8	74.4	68.9	71.7
Hotel capacity (number of rooms)	2078	2776	3140	3612	4946	5705	5804
Share in GDP (percent)	23.3	26.8	27.6	27.5	26.6	27.0	28.3
Net contribution to foreign exchange earnings (percent) <sup>1/</sup>	71.7	78.7	76.6	76.9	75.6	74.3	65.1

Sources: Central Bank of Aruba, Quarterly Bulletin; and staff estimates.

<sup>1/</sup> Gross tourism revenue, less related required imports, as a percentage of gross current foreign exchange earnings, less related required imports.



Table 5. Aruba: Labor Force Trends 1/

(In thousands)

	1987	1988	1989	1990	1991	1992
Population	59.9	60.4	61.8	64.7	68.9	...
Labor force	22.1	23.6	25.6	29.3	31.7	33.9
Employment	18.6	22.5	25.2	28.9	31.5	33.7
Private sector	14.1	18.1	21.0	24.5	27.2	28.9
Public sector	4.5	4.4	4.2	4.4	4.3	4.8
Unemployment	3.5	1.1	0.4	0.4	0.2	0.2
Unemployment rate (percent)	16.0	5.0	1.5	1.3	0.6	0.6
Participation rate (percent)	36.9	39.1	41.4	45.2	46.0	...

Sources: Central Bureau of Statistics; Department of Labor; and staff estimates.

1/ End-September data.

Table 6. Aruba: Legal Minimum Wages

(In Aruban florins per month)

	Legal minimum wages						
	1986	1987	1988	1989	1990	1991	1992
Category: <u>1/</u>							
1	925.4	925.4	925.4	925.4	925.4	925.4	925.4
2	686.9	686.9	686.9	686.9	686.9	686.9	830.2
3	595.0	595.0	-- <u>2/</u>	--	--	--	--
4	283.9	283.9	283.9	342.0	342.0	342.0	412.0

Sources: Department of Economic Affairs; and Department of Labor.

1/ Categories correspond to:

1. Industry, including construction but excluding electronics, textiles and clothing.
2. Banks, insurance companies, transportation, hotels, restaurants, recreation, casinos, and public utilities.
3. Agriculture, distribution, electronics, textiles, clothing, laundries, etc.
4. Household personnel.

2/ This category was eliminated in December 1988, and included under Category 2.

Table 7. Aruba: Changes in the Consumer Price Index

	1986	1987	1988	1989	1990	1991	1992
<u>(Annual percentage change)</u>							
Selected components of the consumer price index							
Food	6.7	5.4	9.2	7.3	8.2	3.2	4.8
Beverages and tobacco	1.9	18.2	10.4	5.7	6.4	7.3	2.6
Clothing and footwear	--	1.6	8.1	6.6	8.0	11.0	5.6
Housing costs	-1.9	1.2	0.6	1.4	6.3	4.6	6.9
Housekeeping and furnishings	0.6	0.4	3.8	3.8	6.5	2.9	7.4
Recreation and education	0.6	2.0	3.5	6.1	3.5	5.6	3.2
Miscellaneous	--	2.4	2.5	2.9	4.1	3.0	4.1
Medical care	1.1	2.0	2.6	0.5	2.3	4.0	3.6
Transport and communication	2.5	5.1	-1.7	2.8	9.5	-0.7	0.4
Total CPI							
End period	1.8	3.5	3.9	4.3	7.1	3.7	4.5
Period average	1.1	3.6	3.1	4.0	5.8	5.6	3.9
<u>(Period average)</u>							
CPI							
United States	1.9	3.7	4.0	4.8	5.4	4.3	3.0
Netherlands Antilles	1.3	3.8	2.6	3.9	3.8	3.9	1.4

Source: Central Bank of Aruba, Quarterly Bulletin.

Table 8. Aruba: Summary of Trends in the Public Finances 1/

(In percent of GDP)

	1986	1987	1988	1989	1990	1991	1992
Revenue	26.7	24.0	22.6	22.1	21.6	23.6	22.5
Direct taxes	16.9	13.6	12.1	11.0	10.1	11.1	10.3
Indirect taxes	7.3	7.9	7.7	7.7	7.3	8.0	8.0
Other revenue	2.5	2.6	2.8	3.4	4.2	4.5	4.2
Expenditure	34.8	39.5	31.7	28.5	26.5	26.0	26.0
Current	29.3	27.2	25.2	24.2	22.2	21.7	21.4
Capital	5.5	12.3	6.5	4.3	4.3	4.3	4.6
Current balance	-2.6	-3.2	-2.6	-2.1	-0.6	1.9	1.1
Capital balance	-5.5	-12.3	-6.5	-4.3	-4.3	-4.3	-4.6
Overall balance	-8.1	-15.5	-9.1	-6.4	-4.9	-2.4	-3.5
Financed by:							
Multiannual Plan <u>2/</u>	2.5	2.6	2.6	2.2	1.7	1.5	1.5
Other	5.6	12.9	6.5	4.2	3.4	0.9	2.0

Sources: Central Bank of Aruba; Department of Finance; and staff estimates.

1/ General government, cash basis; excluding social security system.

2/ Note that Dutch financial assistance under the Multiannual Plan is treated as a financing item rather than capital revenue.

Table 9. Aruba: Government Revenue 1/

(In millions of Aruban florins)

	1987	1988	1989	1990	1991	1992	Budget 1993
Direct taxes	130.9	139.6	143.8	156.6	188.5	188.9	204.1
Wage tax	51.6	58.5	72.0	89.4	92.5	100.2	103.4
Income tax <u>2/</u>	14.1	22.1	26.2	25.3	20.8	18.8	20.0
Solidarity tax	29.5	20.8	2.8	1.9	1.1	1.9	--
Profit tax	19.7	19.9	23.3	17.4	45.1	34.3	41.2
Other <u>3/</u>	16.0	18.3	19.5	22.6	29.0	33.7	39.5
Indirect taxes	75.8	89.5	100.8	113.2	136.1	146.7	140.3
Excises	41.3	47.5	49.8	52.5	67.1	71.2	72.5
(Gasoline)	(25.6)	(28.6)	(27.3)	(26.7)	(34.9)	(37.3)	(38.0)
Import duties	28.3	36.2	42.2	51.0	57.5	63.5	63.0
Other <u>4/</u>	6.2	5.8	8.8	9.7	11.5	12.0	4.8
Nontax revenue <u>5/</u>	24.5	32.7	45.1	65.0	76.7	77.0	78.0
Total revenue	231.1	261.8	289.7	334.8	401.3	412.6	422.4

Sources: Central Bank of Aruba; Department of Finance; and staff estimates.

1/ Cash basis.

2/ Includes income surtax.

3/ Land tax, motor vehicle fees, gambling licenses, hotel room tax.

4/ Includes property transfer tax, and stamp duties.

5/ Includes "Other taxes" and repayments of government loans.

Table 10. Aruba: Government Expenditure and Financing 1/

(In millions of Aruban florins)

	1987	1988	1989	1990	1991	1992	Budget 1993
Current expenditure	262.1	291.3	317.3	343.7	369.3	393.7	402.2
Goods and services	75.1	94.0	100.0	107.0	114.0	121.2	113.4
Wages and salaries	137.0	139.2	154.2	174.2	194.2	211.5	213.8
Subsidies	3.6	2.4	1.5	2.5	3.0	3.5	8.7
Transfers	38.3	45.1	49.5	47.0	46.0	44.3	50.4
Interest	8.1	10.6	12.1	13.0	12.1	13.2	15.9
Capital expenditure	118.0	75.5	57.0	66.8	72.3	84.6	137.1
Multiannual plan	38.5	26.3	25.9	29.2	27.6	27.2	46.0
Lending	39.5	25.7	6.8	8.3	9.8	11.6	9.6
Amortization of debt	13.8	10.5	9.5	10.0	11.1	18.3	18.9
Other	26.2	13.0	14.8	19.3	23.8	27.5	62.6
Total expenditure	380.1	366.8	374.3	410.5	441.6	478.3	539.3
Financing requirement	-149.0	-105.0	-84.6	-75.7	-40.3	-65.7	-116.9
Dutch assistance	42.9	30.5	28.5	26.1	29.9	27.4	46.0
Multiannual Plan aid	(24.7)	(30.5)	(28.5)	(26.1)	(25.0)	(27.4)	(46.0)
Special budgetary aid	(18.2)	(--)	(--)	(--)	(--)	(--)	(--)
Banking system	39.9	-3.6	3.8	-0.1	-23.7	7.7	--
Government debt	20.0	19.5	--	--	0.3	--	70.9
Other <u>2/</u>	46.2	58.6	52.3	49.7	33.8	30.6	--

Sources: Central Bank of Aruba, Department of Finance; and staff estimates.

1/ Cash basis.

2/ Includes loans and grants from official donors (mainly EEC), nonbank borrowing from enterprises, timing differences in reporting of receipts and payments, and unidentified items.

Table 11. Aruba: Public Sector External Debt and Guarantees

(In millions of Aruban florins)

	1986	1987	1988	1989	1990	1991	1992
Outstanding debt to the Netherlands <sup>1/</sup>	243.8	318.9	290.2	315.2	361.4	355.0	351.3
Outstanding liabilities to the Netherlands Antilles	65.2	65.2	65.2	65.2	65.2	66.5	68.2
Outstanding official debt (In percent of GDP)	309.0 (38.6)	384.1 (39.9)	355.4 (30.7)	380.4 (29.0)	426.6 (27.5)	421.5 (24.8)	419.5 (22.8)
Guarantees for foreign loans	133.4	351.7	400.4	380.1	404.5	434.1	484.6
Of which:							
Derived from status aparte	--	67.1	67.1	67.1	67.1	67.1	67.1
Total outstanding debt and contingent liabilities (in percent of GDP)	442.4 (55.2)	735.8 (76.5)	755.8 (65.2)	760.5 (57.9)	831.1 (53.5)	855.6 (50.2)	904.1 (49.2)
Debt service on Dutch debt							
Interest	7.5	8.1	10.6	12.1	10.2	9.7	11.2
Amortization	9.6	13.8	10.5	9.5	10.0	11.1	18.3
Total	17.1	21.9	21.1	21.6	20.2	20.8	29.5
(In percent of exports)	(3.5)	(3.7)	(2.7)	(2.5)	(1.9)	(0.8)	(1.0)
(In percent of govern- ment revenue)	(8.0)	(9.5)	(8.1)	(7.5)	(6.0)	(5.2)	(7.1)
Implicit interest rate	3.1	3.0	3.5	3.5	3.5	3.5	3.5

Sources: Department of Finance; and Central Bank of Aruba.

<sup>1/</sup> Includes small debt to the EC and the U.S. Eximbank.

Table 12. Aruba: Monetary Survey

(In millions of Aruban florins; end of period)

	1986	1987	1988	1989	1990	1991	1992
Net foreign assets	127.9	150.9	149.6	189.7	230.5	297.3	355.1
Central bank	141.8	150.4	172.4	162.0	182.9	223.8	264.0
Commercial banks	-13.9	0.5	-22.8	27.7	47.6	73.5	91.1
Net domestic credit	236.2	354.2	486.6	562.7	631.9	689.5	751.5
Public sector	-50.3	9.9	19.1	22.9	22.8	-0.9	7.1
Central government	-32.8	13.7	26.8	33.2	28.3	11.1	24.3
Development aid	-17.5	-3.7	-7.7	-10.3	-5.5	-12.0	-17.2
Private sector	286.5	344.3	467.5	539.8	609.1	690.4	744.4
Money supply (M2)	315.7	447.9	545.6	649.2	757.8	886.0	994.8
Money (M1)	100.2	157.6	190.1	243.4	264.1	314.0	331.1
Quasi-money	215.5	290.3	355.5	405.8	493.7	572.0	663.7
Other items (net)	48.4	57.3	90.6	103.2	104.6	100.8	111.8

Source: Central Bank of Aruba.



Table 13. Aruba: Monetary Developments  
(Percent change over same period year earlier)

	1986	1987	1988	1989	1990	1991	1992
Net foreign assets	255.3	18.0	-0.9	26.8	21.5	29.0	19.4
Net domestic credit	-12.8	50.0	37.4	15.6	12.3	9.1	9.0
Money supply (M2)	12.3	41.9	21.8	19.0	16.7	16.9	12.3
Money (M1)	21.6	57.3	20.6	28.0	8.5	18.9	5.4
Quasi-money	8.4	34.7	22.4	14.1	21.7	15.9	15.9
Other items (net)	86.2	18.4	58.1	13.9	1.4	-3.6	10.9

Source: Central Bank of Aruba.

Table 14. Aruba: Changes in Sources of Broad Money

	1988	1989	1990	1991	1992	1988	1989	1990	1991	1992
	(In millions of Af.)					(Changes in percent) <sup>1/</sup>				
Public sector (net)	9.2	3.8	-0.1	-23.7	8.0	2.1	0.7	-0.0	-3.1	0.9
1. Government	13.1	6.4	-4.9	-17.2	13.2	2.9	1.2	-0.8	-2.3	1.5
2. Development aid	-4.0	-2.6	4.8	-6.5	-5.2	-0.9	-0.5	0.7	-0.9	-0.6
Private sector credit (net)	123.2	72.3	69.3	81.3	54.0	27.5	13.3	10.7	10.7	6.1
1. Loans to enterprises	...	55.6	43.5	51.5	25.4	...	10.2	6.7	6.8	2.9
2. Consumer credit	11.8	13.7	22.9	20.8	10.0	2.6	2.5	3.5	2.7	1.1
3. Housing mortgages	...	2.4	3.0	10.0	16.6	...	0.4	0.5	1.3	1.9
4. Other	0.7	0.6	-0.1	-1.0	2.0	0.2	0.1	-0.0	-0.1	0.2
Other items (net)	-33.3	-12.6	-1.4	3.8	-11.0	-7.4	-2.3	-0.2	0.5	-1.2
Total domestic assets (net)	99.1	63.5	67.8	60.9	51.0	22.1	11.6	10.4	8.0	5.8
Foreign assets (net)	-1.3	40.1	40.8	66.8	57.8	-0.3	7.3	6.3	8.8	6.5
Total change in money supply (M2)	97.7	103.6	108.6	128.2	108.8	21.8	19.0	16.7	16.9	12.3
Of which: Money (M1)	32.5	53.3	20.7	49.9	17.1	7.3	9.8	3.2	6.6	1.9
Quasi-money	65.2	50.3	87.9	78.3	91.7	14.6	9.2	13.5	10.3	10.3

Source: Central Bank of Aruba

<sup>1/</sup> In percent of M2 at the beginning of the period.

Table 15. Aruba: Balance of Payments Summary

(In millions of Aruban florins at current prices)

	1986	1987	1988	1989	1990	1991	1992
Merchandise	-324.2	-368.7	-483.8	-527.9	-761.4	-938.1	-669.6
Tourism	260.9	353.1	442.8	497.5	553.5	610.5	697.2
Other current transactions	28.3	-26.5	-55.4	-56.4	-89.2	-53.9	45.1
Transportation	2.0	-2.5	-1.1	8.8	1.3	63.8	110.1
Investment income	-13.1	-25.8	-30.5	-20.2	-13.9	-15.9	-14.0
Gross interest payments	-7.5	-11.2	-26.9	-44.2	-35.6	-40.9	-48.2
Other	-5.6	-14.6	-3.6	24.0	21.7	25.0	34.2
Government services	13.0	1.0	-10.4	-10.8	-20.8	-29.2	-33.0
Other services	22.3	0.0	-11.9	-42.8	-39.8	-47.4	-25.0
Private remittances	4.1	0.8	-1.5	8.6	-16.0	-25.2	7.0
Current Account Balance	-35.0	-42.1	-96.4	-86.8	-297.1	-381.5	72.7
Total inflows	487.0	596.4	779.9	879.4	1083.5	2516.1	3030.3
Total outflows	522.0	638.5	876.3	966.2	1380.6	2897.6	2957.6
Private Capital	63.4	24.3	72.2	107.5	326.1	419.8	-46.3
Inflows	85.5	82.6	108.1	186.5	429.0	570.3	325.9
Tourism investment	...	...	89.3	111.9	270.1	170.6	57.2
Oil sector	...	...	...	...	...	395.3	193.1
Other	...	...	18.8	74.6	158.9	4.4	75.6
Outflows	22.1	58.3	35.9	79.0	102.9	150.5	372.2
Oil sector	...	...	...	...	...	82.9	268.5
Other	...	...	...	...	...	67.6	103.7
Government Capital	49.3	32.6	21.4	19.6	16.1	18.8	30.8
Inflows	55.5	42.4	30.5	28.8	26.1	29.9	44.4
Grants	...	...	...	14.4	14.0	29.8	27.8
Loans	...	...	...	14.4	12.1	0.1	16.6
Outflows	6.2	9.8	9.1	9.2	10.0	11.1	18.3
Debt service	...	...	10.5	9.5	10.0	11.1	18.3
Errors and Omissions	4.2	8.2	3.5	-0.3	-4.3	9.7	0.0
Change in monetary gold	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Account Balance	126.9	65.1	97.1	126.8	337.9	448.3	-15.5
Change in Reserves	91.9	23.0	0.7	40.0	40.8	66.8	57.2

Sources: Central Bank of Aruba, Quarterly Bulletin; and staff estimates.

Table 16. Aruba: Current Account Transactions,  
Net of Payments Concept

(In millions of Aruban florins at current prices)

	1986	1987	1988	1989	1990	1991	1992
Inflows	487.0	596.4	779.9	879.4	1083.5	2516.1	3030.3
Tourism	283.0	390.8	483.7	548.4	625.6	695.3	788.6
Refining and Bunkers	0.0	0.0	0.0	0.0	38.1	1264.6	1485.9
Bunker services	0.0	0.0	0.0	0.0	0.0	41.7	82.0
Freezone	0.0	36.6	70.6	131.2	184.2	272.6	376.1
Other merchandise exports	52.9	44.2	80.6	60.6	56.0	77.5	133.9
Private remittances	32.9	25.9	25.8	34.8	43.0	49.8	57.7
Investment income	13.0	16.0	19.5	24.0	26.5	30.1	23.5
Other current receipts	105.2	82.9	99.7	80.4	110.1	126.2	164.6
Outflows	522.0	638.5	876.3	966.2	1380.6	2897.6	2957.6
Export related imports	128.0	185.2	268.2	309.7	412.5	1755.8	2067.4
Tourism	96.2	132.9	164.5	186.5	212.7	236.4	268.1
Refining	0.0	0.0	0.0	0.0	33.3	1263.4	1442.8
Freezone	0.0	25.8	55.4	86.9	132.9	209.4	276.2
Other	31.7	26.5	48.4	36.4	33.6	46.5	80.3
Export related payments	52.6	41.4	49.9	40.2	55.1	63.1	82.3
Government imports	7.2	8.6	10.8	11.5	12.3	12.8	16.3
Investment related imports	76.2	86.5	181.0	232.3	372.8	405.8	96.7
Other merchandise imports	165.8	169.2	175.0	166.2	242.2	336.7	403.1
Private remittances	28.8	25.1	27.3	26.2	59.0	75.0	50.7
Investment income	26.1	41.8	50.0	44.2	40.4	46.0	37.5
Other current payments	37.4	80.7	114.2	135.9	186.4	202.4	203.6

Sources: Central Bank of Aruba, Quarterly Bulletin; and staff estimates.