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**THE OPEN ECONOMY OF PANAMA:  
A MONETARY APPROACH**

**BY  
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**International Center for Economic Growth (ICEG)**



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## ABSTRACT

The dollar has been the unit of exchange in Panama since 1904. This has had a dramatic effect on economic and development policy. A basic model with a simple system of three relationships is used to evaluate the monetary implications of a country where the currency must be imported from abroad. The model examines the impact of changes in the country's balance of payments on the money supply, economic output, and import capacity. The study finds that the use of the dollar as the sole unit of exchange creates economic stability at the expense of reduced autonomy and flexibility in policy making. The Panamanian experience is of particular relevance to other heavily indebted nations searching for a formula to control hyperinflation.

## CHAPTER 1

### INTRODUCTION

Monetary policy in Panama is dominated by the facts that (1) the US dollar is the legal tender and (2) the domestic issue of currency is restricted to an insignificant amount of coinage. The coins are distinct from quarters, dimes, etc., but are identical in shape. The currency is referred to as the "balboa" for nationalistic reasons, even though the unit of exchange is the US dollar.

The purpose of the paper is to illustrate that the use of the dollar as the local currency has had a dramatic impact on economic policy and development. Although the effects of the use of the US dollar as currency in Panama has had both positive and negative consequences for the economy, the results of this study indicate that the use of the US dollar as legal tender in Panama has served the country well.

The dollarization of the economy has created a monetary environment akin to the classic gold standard. In this case, the money supply must be imported from abroad and the extension of domestic credit must be secured by foreign exchange. Therefore, the determination of the monetary base and income is reliant on inflows of foreign exchange from the balance of payments. This has created an environment of long term price stability, unprecedented in many small highly indebted nations. Expansionary fiscal policy is limited to the availability of foreign exchange and the private sector's role in the determination of monetary conditions becomes critical. Private sector banks, principally foreign institutions, have been instrumental in supplying net credit to the Panamanian economy.

In the fixed exchange rate case of Panama, the effectiveness of monetary policy as directed by the monetary authorities is limited. This has imposed rigid constraints on the government's ability to alter its mix of economic policy instruments to influence employment creation. Examination of price and productivity factors in both Panama

and the US suggests that the rigid conversion of currency at par has hindered economic adjustment. With limited downward potential for a reduction in wages, an overvaluation of the balboa relative to a theoretical market based exchange rate has heightened unemployment.

## CHAPTER 2

### HISTORY

#### **2.1. The Monetary Agreement**

In 1904, one year after independence from Colombia, the Republic of Panama instituted a monetary convention that remains virtually unchanged. The agreement stipulated that the US dollar would be the primary unit of exchange, although Colombian pesos were permitted to circulate. The only substantive change in the monetary accord since 1904 has been the progressive decline in the importance of the Colombian peso. Today, the US dollar is the sole unit of exchange.<sup>1</sup>

The dollar was chosen as the currency medium to both comply with the wishes of W.H. Taft, then US Secretary of War and acting director of the Isthmian Canal Commission, but more importantly to establish a secured currency. Taft's recommendation was for currency unity between the sovereign Republic of Panama and the Isthmian Canal. The Isthmian Canal, or the Canal Zone, was a US territory consisting of 5 miles on each side of the interoceanic waterway. This territory was leased for complete use of the US authorities in exchange for \$2 million per annum.

The Panamanian authorities chose to use the US dollar as the unit of exchange primarily to ensure currency stability during the early years of the Country's existence without resorting to a gold standard. The cost of issuing a Panamanian currency backed by gold would have been prohibitively expensive for the new nation.<sup>2</sup>

#### **2.2. Structure of the Banking System**

The structure of the banking system is a function of the Monetary Agreement of 1904 and is an important determinant in monetary operations of the Republic. The banking system is composed of Banco Nacional de Panama (BNP), the National Banking Commission, and both foreign and domestic commercial banks.

BNP performs many of the same functions it did at its inception in 1904. The Bank is both a commercial bank and a quasi-central bank. However, BNP is technically a commercial bank that is owned and operated by the government. The institution provides banking services to the private sector similar to any domestic commercial bank, such as checking, savings, and lending. The Bank also performs banking functions on behalf of the public sector. These include, acting as: (1) agent in Republic syndications, (2) depository of reserve requirements of the banking system, (3) a commercial and industrial development financial institution, (4) an agricultural development financial institution, and (5) a clearing agent on behalf of the government.<sup>3</sup> However, BNP does not engage in some traditional central banking functions such as currency issuance, exchange rate intervention, and open market operations.

The commercial banking sector and the National Banking Commission play a key role in the determination of monetary policy. The commercial banking sector provides a substantial portion of the domestic credit available for local development. These activities are regulated by the National Banking Commission. The National Banking Commission was established in 1970 to simultaneously promote Panama as an international banking center and ensure solvency and efficiency in its operations.

In 1970, the Commission established three distinct licensing agreements under which commercial banks must operate. The Commission has retained the authority to grant and revoke licenses in all three categories. Banks can operate in Panama under one of the following arrangements: (1) a general license bank that can engage in domestic and foreign activities, (2) an offshore bank that can engage exclusively in foreign business, and (3) a representative office of foreign banks.

The Commission can act as a monetary agent by altering reserve and capital requirements to respond to domestic liquidity needs. The Commission can manipulate changes on reserves of sight and time deposits from between 5 and 25 percent.<sup>4</sup>

Although changes in reserve and capital requirements can substantially influence monetary policy, they are made infrequently and inconsequentially. This has provided stability for domestic and foreign banks and has promoted the development of Panama's banking system.

Subsequent to the enactment of the 1970 Banking Law, Panama began to develop rapidly into an international banking center. Deposits of foreign banks increased from \$0.4 billion in 1970 to a peak of \$27.0 billion in 1982. Many factors contributed to the rapid development of Panama as a major international financial center. First, the use of the US dollar in transactions and operations eliminated exchange rate risk for US banks and limited it for other foreign institutions. Second, no restrictions existed on capital account flows.<sup>5</sup> Third, communications networks were well established, providing easy access to home offices and international clients. Finally, Panama's geographic location between North and South America and its established position as a major conduit of international trade (the Canal) enhanced the development as an international financial center.<sup>6</sup> The importance of the growth of the foreign private banking sector in Panama as an implicit agent of monetary policy is underscored by the continued expansion of credit provided to both the domestic public and private sectors. This subject will be explored in greater depth.

CHAPTER 3  
BALANCE OF PAYMENTS, MONEY SUPPLY, AND INCOME  
DETERMINATION

**3.1. The Theoretical Overview of the Balance of Payments Approach to Monetary Policy**

The use of the dollar as the legal tender in Panama prevents the authorities from engaging in monetary creation. This creates an environment where the Republic is critically dependent on resource exchanges with its trading partners and other external participants in the economy. These external flows literally provide the currency with which domestic and external purchases can be made and credit extended. Therefore, access to current and capital flows from abroad determines the potential for credit expansion, import purchases, and economic growth. The domestic dependence on the US dollar as the unit of exchange also leads to the avoidance of a "foreign exchange" gap prevalent among many developing countries.<sup>7</sup> This provides for an automatic adjustment of current, capital, and reserve flows in the balance of payments. In other words, the prospect for a shortfall of foreign exchange is eliminated, due to the fact that imported dollars become the local currency.

The domestic money supply is then determined by the foreign exchange reserves held by both private participants in the Panamanian economy and the monetary authorities. Reserves held by the monetary authorities are less critical in Panama than in a country that actively supports its local currency through foreign exchange market intervention.<sup>8</sup> Additionally, the majority of capital flows and previously accumulated reserves are controlled by the private sector. This supports the notion that monetary policy is determined through the private sector's supply and demand for capital, rather than the public sector monetary authorities. This will be studied more extensively later in the paper.

The use of the US dollar as the medium of exchange restricts the authorities' powers over monetary policy. The private sector through its commercial banks becomes the major provider of credit. The authorities can influence the money supply only indirectly through restrictions on the banking sector and changes in macroeconomic policy. These changes would ultimately affect non-public sector entities in their decisions to invest or hold deposits in Panama.

Foreign exchange reserves held by the monetary authorities change in tandem with events determined to a large extent outside of Panama. These events are marked predominantly by changes in voluntary capital flows and simultaneous adjustments in current flows. Between 1970 and 1982, Panama ran continual current account deficits, averaging \$146 million per annum during the period. These deficits plus reserve accumulations on the part of the monetary authorities were largely financed through capital flows from foreign commercial banks. During the same period, the capital account averaged an annual surplus of \$72 million. Between 1983 and 1987, a decline in net capital flows is indicated by a shift in the capital account from a surplus to an average annual deficit of \$174 million. The average current account swung from a deficit to a surplus of \$310 million to compensate for the deterioration in the capital account. The characteristics of current and capital flows are evaluated in greater detail in appendix 1.

Foreign exchange reserves held by non-public entities are observed as deposits in the domestic banking system. These deposits affect the Panamanian money supply outside of the authorities' jurisdiction. Therefore, commercial banks, intermediaries of capital flows, play a critical role in the determination of the money supply and monetary policy in Panama. This should establish a close relationship between banks and the monetary authorities.

In Panama, a small open economy, the supply and demand of money shifts in tandem with changes in the external accounts and ultimately determines the potential or

equilibrium growth. In a closed economy or an open economy with flexible exchange rates, short term monetary fluctuations can deviate substantially from the long run supply and demand for money that is determined by the long run equilibrium GDP. In a closed economy, monetary creation can be undertaken by the authorities regardless of the demand for credit, e.g. the former Soviet Union. Whereas, in an open economy with flexible exchange rates, monetary creation can be offset by changes in the value of the exchange rates, e.g. Brazil. In these groups of countries, substantial and continued short term deviations from the long run prospects can sufficiently alter the structure of economic incentives. This can ultimately affect long run growth prospects. However, the use of the dollar as the currency in Panama and the relatively free flow of current and capital transactions creates the long run monetary characteristics in the short term. This prevents monetary disturbances that can lead to deviations from the long term growth potential.<sup>9</sup>

In Panama, the short term monetary transmission mechanism begins with the balance of payments. The money supply adjusts to shifts in the balance of payments. Higher capital or current inflows will increase the supply of money in the economy. Subsequently, the demand for money will compensate for an excess or a dearth of liquidity. The change in the demand for money will then directly impact the capacity for growth. For example, subsequent to the conclusion of the Carter/Torrijos Panama Canal Treaty in 1978, export earnings increased by over \$200 million, heightening the available liquidity. This in turn stimulated demand for both imports and domestic goods and services. Imports grew by 9.1 percent in 1978 versus 0.9 percent growth in 1977. In this case, increased liquidity led to an expansionary effect in the national income accounts and an equilibrating effect in the balance of payments. In 1978, real GDP expanded by 9.8 percent, up from a mere 1.1 percent the previous year. The increase in imports led to higher domestic activity, which mitigated the expansionary monetary effect of excessively large trade surpluses.

Temporary differences between the supply and demand for money will lead to adjustments in cash and nonmonetary assets held by participants in the Panamanian economy. When the supply of money increases rapidly from a change in the balance of payments, supply will temporarily exceed demand. Individuals, corporations, and the government will immediately reduce their cash holdings and purchase nonmonetary assets. This temporary change in monetary equilibrium can be initiated from a number of different external and domestic shocks: exports, imports, capital flows, domestic prices, and fiscal expansion. The mechanism of adjustment would be similar for all of the aforementioned disturbances. The only difference would be the origin of the shock. The re-equilibrating process could occur domestically or externally.<sup>10</sup>

An excess of money could be diverted to the purchase of foreign goods or securities. The purchase of foreign goods or imports would reduce the trade balance and the supply of money, as previously illustrated in the example of the Panama Canal. Similarly, the purchase of foreign assets would be recorded as a capital outflow, reducing the liquidity from abroad.

Alternatively, the economic agents could purchase domestic goods or securities. The purchase of locally produced goods would lead to higher domestic price levels and output. These factors would create a greater demand for imports, as domestic price increases make foreign goods relatively cheaper and output with a heightening of relative purchasing power. Higher domestic prices would also translate into a higher nominal demand for cash balances, assuming that real cash balances remain constant. This would mitigate the effect of an expansion in the money supply.

Similarly, an increase in purchases of domestic securities would result in rising bond prices and lower rates of return. As domestic yields fall, demand for foreign securities would increase.<sup>11</sup> This demand would easily be met owing to Panama's open capital account. With the substitution of foreign securities for domestic ones, the supply of money would fall. This drop would be attributed to greater capital outflows

in the balance of payments and a reduction in the availability of money. Panamanian and US interest rates would also tend to converge.

### **3.2. The Empirical Model for the Panamanian Case**

A basic model with a simple system of three relationships is used to evaluate the monetary approach to the balance of payments in the case of Panama. The simple model of three non-simultaneous solution equations examines both the effects of the balance of payments on the domestic economy and the self-regulating mechanism where a change in demand impacts the balance of payments. The first relationship establishes the fact the changes in the country's balance of payments performance affects the money supply. Secondly, an increase in the supply of money is evaluated within the context of its positive influence on economic output. Finally, the relationship between an increase in economic output and demand for imports is established. The third relationship completes the system of equations, owing to the return to the balance of payments through the demand for imports. In other words, an increase in imports from heightened income would lead to a deterioration in the balance of payments, the money supply, and future income growth.

#### **3.2.1. Money Supply and the Balance of Payments**

The first approach in establishing the transmission mechanism between the balance of payments and economic output is to evaluate the effects of external inflows on the available money supply. The following ordinary least squares regression uses money (M2) as the dependent variable and balance of payments credit items as the primary independent variable. The balance of payments credit items are defined as exports of goods and services plus net capital flows. The use of the lagged dependent variable

improves the explanatory power of the equation. The estimated relationship is (see Note at end of chapter):

	$\ln L = c_1 + a_1 \ln (X+K) + a_2 \ln L(-1)$		
Coefficient:	0.5	0.1	0.8
T tests:	2.7	1.9	13.8

$$\text{Durbin-Watson} = 1.63$$

$$\text{R square, adjusted} = .99$$

Where L, X, and K represent money, exports of goods and services, and net capital flows.

The explanatory coefficients are all statistically significant. This combined with the positive coefficient for  $a_1$  suggests that a relationship between changes in balance of payments credit flows positively impacts change in the domestic availability of money.

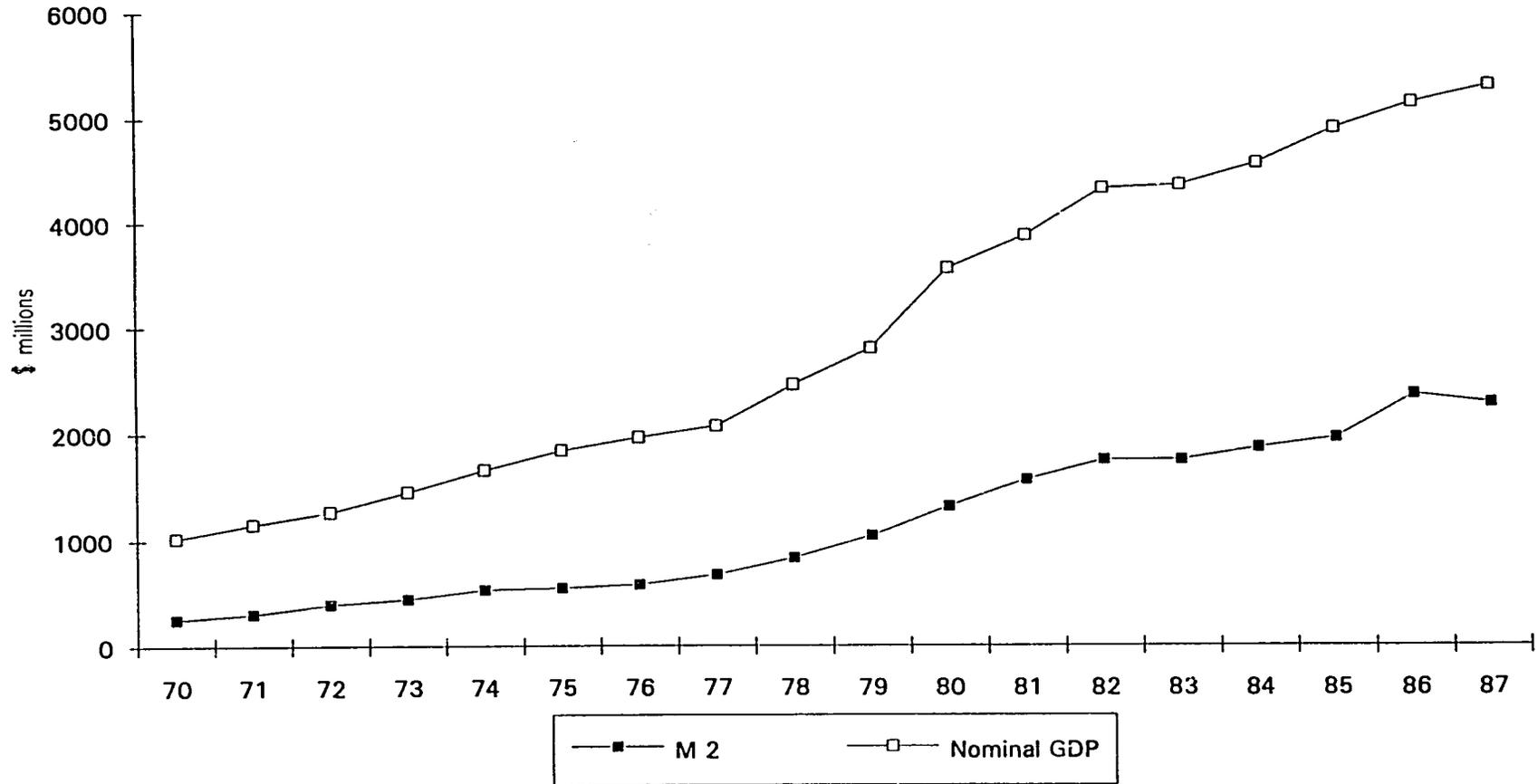
### 3.2.2. Money Supply and Income

This section will examine the direct relation of money to national income both qualitatively and empirically. Graph 1 illustrates the close relation between nominal GDP and broad money, as represented by M2. However, it is also useful to evaluate the money supply in relation to national income or money as a percentage of nominal GDP. This relation is illustrated in graph 2. This graph shows a clear increase in the amount of money in circulation relative to the size of the economy between 1970 and 1987.

The advance of money relative to nominal GDP is consistent with the theory that as financial intermediation deepens the ratio of money to income should increase.

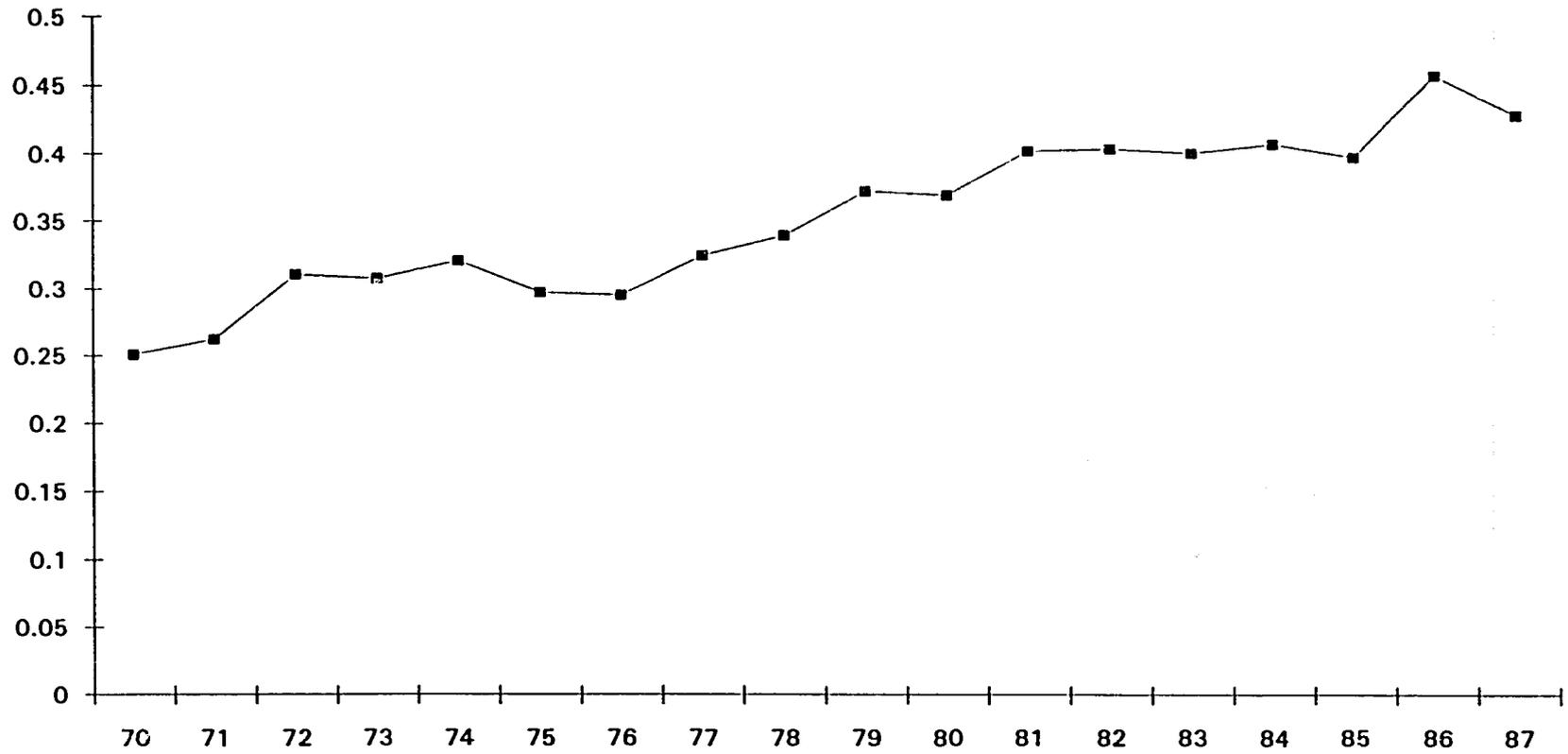
Graph 1

Money and GDP



Graph 2

Money and GDP  
M2 as a percentage of GDP



The financial deepening in Panama is commensurate with a greater level of sophistication of the Panamanian banking center and a greater participation of foreign banks in financial intermediation. The ratio of M2 to nominal GDP peaked in 1986 at over 45 percent, this can be compared with financially underdeveloped countries such as Peru and Bolivia, where the ratios were between 5 and 12 percent. In Panama, it is interesting to note the occurrence of plateaus in the ratio in the early 1970s and early 1980s. The majority of the increase in M2 relative to GDP occurred in the late 1970s, which corresponds directly to the rapid increase in the participation of private foreign banks in the economy.<sup>12</sup>

The deepening of the financial system can be further elucidated by examining the components of money, namely a disaggregation of M1 and M2. Graph 3 shows a more significant expansion of M2 vis-a-vis M1. Thus, alternative financial instruments to cash became increasingly available through 1970 to 1987. In 1970, demand deposits represented 39 percent of the total money stock, by 1987 that number had fallen to only 19 percent (see table 1). This also suggests that in determining a statistical relationship between money and national income, the broad measure of money would best represent changes in liquidity. This is also statistically true and regressions are available upon request.

The following inverse money demand equation was employed to test the impact of an increase in the real money supply on growth:

$$\ln(Y/P) = c_2 + a_3 \ln(L/P)$$

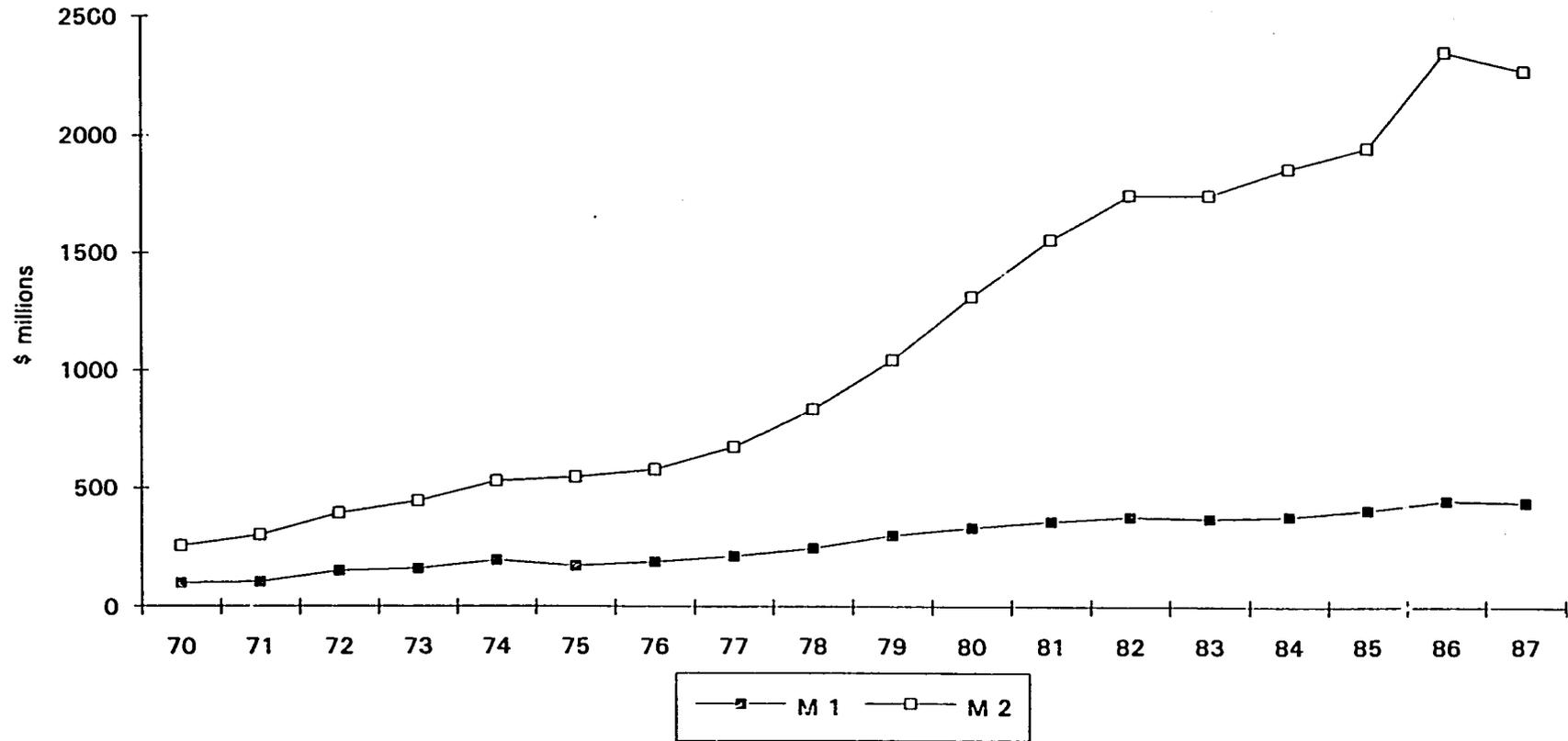
Coefficient:	3.8	0.6
T tests:	34.5	31.5

$$\text{Durbin-Watson} = 1.86$$

$$\text{R square, adjusted} = .98$$

Graph 3

Deepening of the Financial System  
M1 and M2



**TABLE 1**  
INTERNATIONAL LIQUIDITY:  
RECONFIGURATION OF  
MONEY SUPPLY DATA

	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>Demand Deposits (M1)</b>	100.5	105.4	153.6	161.1	196.3	173.1	190	213.2	246
Monetary Authorities	15.4	17.1	34.3	29.9	23.5	23.9	26.2	28.2	32
Deposit Money Banks	85.1	88.3	119.3	131.2	172.8	149.2	163.8	185	214
Time and Savings Deposits	155.8	196.8	239.3	283.4	333.9	374.7	388	459.3	586.7
Monetary Authorities	15.1	17.3	22.5	22.3	23.4	25.4	30.5	37.8	45.8
Deposit Money Banks	140.7	175.5	216.8	261.1	310.5	349.3	357.5	421.5	540.9
<b>M1 + Quasi-Money (M2)</b>	256.3	302.2	392.9	444.5	530.2	547.8	578	672.5	832.7
Monetary Authorities	30.5	34.4	56.8	52.2	46.9	49.3	56.7	66	77.8
Deposit Money Banks	225.8	267.8	336.1	392.3	483.3	498.5	521.3	606.5	754.9
<b>% CONTRIBUTION TO MONEY SUPPLY</b>									
<b>Demand Deposits (M1)</b>	39%	35%	39%	36%	37%	32%	33%	32%	30%
Monetary Authorities	6%	6%	9%	7%	4%	4%	5%	4%	4%
Deposit Money Banks	33%	29%	30%	30%	33%	27%	28%	28%	26%
Time & Savings Deposits	61%	65%	61%	64%	63%	68%	67%	68%	70%
Monetary Authorities	6%	6%	6%	5%	4%	5%	5%	6%	6%
Deposit Money Banks	55%	59%	55%	59%	59%	64%	62%	63%	65%
<b>M1 + Quasi-Money (M2)</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
Monetary Authorities	12%	11%	14%	12%	9%	9%	10%	10%	9%
Deposit Money Banks	88%	89%	86%	88%	91%	91%	90%	90%	91%
<b>INTERNATIONAL LIQUIDITY: RECONFIGURATION OF SUPPLY DATA</b>									
<b>Demand Deposits (M1)</b>	301.3	335.3	359.7	379.6	372.6	381	409.5	449.5	442.1
Monetary Authorities	38.7	42	40.7	48.0	45.7	46.7	50	55.7	46.2
Deposit Money Banks	262.6	293.3	319	330.5	326.9	334.3	359.5	393.8	395.9
<b>Time &amp; Savings Deposits</b>	742.2	980.4	1201.1	1369.8	1375.6	1481.9	1543	1910.4	1835.6
Monetary Authorities	49.3	63.2	83.7	99.7	128.8	157.3	154.4	201.9	179.3
Deposit Money Banks	692.9	917.2	1117.4	1270.1	1246.8	1324.6	1388.6	1708.5	1656.3
<b>M1 + Quasi-Money (M2)</b>	1043.5	1315.7	1560.8	1749.1	1748.2	1862.9	1952.5	2359.9	2277.7
Monetary Authorities	88	105.2	124.4	143.5	174.5	204	204.4	257.6	225.5
Deposit Money Banks	955.5	1210.5	1436.4	1600.6	1573.7	1658.9	1748.1	2102.3	2052.2
<b>% CONTRIBUTION TO MONEY SUPPLY</b>									
<b>Demand Deposits (M1)</b>	29%	25%	23%	22%	21%	20%	21%	19%	19%
Monetary Authorities	4%	3%	3%	3%	3%	3%	3%	2%	2%
Deposit Money Banks	25%	22%	20%	19%	19%	18%	18%	17%	17%
<b>Time &amp; Savings Deposits</b>	71%	75%	77%	78%	79%	80%	79%	81%	81%
Monetary Authorities	5%	5%	5%	6%	7%	8%	8%	9%	8%
Deposit Money Banks	66%	70%	72%	73%	71%	71%	71%	72%	73%
<b>M1 + Quasi-Money (M2)</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
Monetary Authorities	8%	8%	8%	8%	10%	11%	10%	11%	10%
Deposit Money Banks	92%	92%	92%	92%	90%	89%	90%	89%	90%

Source: International Financial Statistics (Various) / International Monetary Fund

Where L, P, and Y are nominal money (M2), the price level, and nominal GDP. The statistical analysis (presented more fully in Appendix 2) suggests, first, that the relationship between income and money is significant. Second, that money supply and demand are positively related to economic growth, hence the positive money elasticity coefficient. Third, the positive 0.6 money elasticity of income (less than unity) reinforces the notion that as the financial system of Panama has developed, real money has expanded more rapidly than real GDP.

Interest rates were also employed in money demand and inverse money demand equations, the hypothesis being that the cost of money would estimate the demand for money as an asset. However, the coefficient on the interest rate was statistically insignificant and detracted from the explanatory powers of the equation. These results are not surprising considering the degree of openness in Panama's capital account and the relative convergence to US interest rates.<sup>13</sup>

### 3.2.3. Money Supply and Import Demand

The final link in the confirmation of the described transmission mechanism between the balance of payments and money is to evaluate both the propensity to import and the import elasticity.

The propensity to import was derived from the following ordinary least squares estimate (see Note at the end of the chapter):

$$M = c_3 + a_4 Y + a_5 M(-1)$$

Coefficient:	248	0.2	0.1
T tests:	3.4	2.6	0.4

$$\text{Durbin-Watson} = 1.48$$

$$\text{R square, adjusted} = .79$$

Whereas the import elasticity was estimated from the following least squares equation (see Note at the end of the chapter):

$$\ln M = c_4 + a_5 \ln Y + a_5 M(-1)$$

Coefficient:	2.3	0.5	0.1
T tests:	3.6	3.0	0.2

$$\text{Durbin-Watson} = 1.52$$

$$\text{R square, adjusted} = .82$$

Where M and Y are imports and GDP, deflated by the price level. It is important to note that the equations had a lower overall explanatory power without the lagged dependent variable. The results are:

	<u>70 - 87</u>	<u>70 - 82</u>	<u>83 - 87 (*)</u>
Import			
Propensity	0.2	0.3	0.03
Import			
Elasticity	0.6	0.7	0.11

The (\*) signifies that the results between 1983 and 1987 are not statistically significant. The regression statistics are available in appendix 3.

The estimated equations for the import elasticities and propensities are all significant. This suggests that a relationship between imports and growth exists. Second, the import elasticities are all less than unity. This reflects the fact that a

substantial portion of Panama's growth is determined domestically by sources that require minimal imported goods, for example, international banking, and the Canal. Third, the coefficients estimated during the discreet time periods indicate that importing relative to national income fell after the debt crisis. This most likely reflects a compression of the Republic's import capacity to service foreign debt obligations.

### 3.3 Factual Evidence

As previously stated, the transmission mechanism of money supply and demand is through the balance of payments. If that is the case, then the adjustment of money demand to autonomous changes in money supply is through imports. This would suggest that total exports and net capital flows equal the Republic's long term import capacity:<sup>14</sup>

$$\text{Exports} + \text{Net Capital} = \text{Import Capacity}$$

In table 2, the arithmetic estimates of the previous equation are examined by subtracting imports from the summation of exports and net capital flows. The difference represents the nominal dollar amount by which imports varied from the import capacity (exports and available capital) in a particular year. Thus, a negative number would suggest that the economy imported in excess of its capacity. To highlight the relative effect, the differences were evaluated as a percentage of the average of both the credits and debits (both sides of the previous equation). These percentages were in turn averaged over three time periods to discern any structural shifts, in addition to confirming the hypothesis regarding the dynamics of adjustment. The three periods are: the entire sample (1970 to 1987), predebt crisis (1970 to 1982), and post debt crisis (1983 to 1987).

The results of the import capacity data confirm that foreign exchange inflows from exports and capital transactions determine the ability to import. They also

**TABLE 2**

BALANCE OF PAYMENTS (\$ MN)	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>Summary Flows (*)</b>									
Exports & Capital Flows	461.5	524.2	612.6	712.3	1271.9	1368.2	1423.3	1536.1	2037.9
Imports	463.1	527.7	598.7	710.8	1280.5	1386.5	1402.9	1541.1	1949.4
Difference	-1.6	-3.5	13.9	1.4	-8.7	-18.3	20.3	-5.0	88.5
Deviation from Average	-0.3%	-0.7%	2.3%	0.2%	-0.7%	-1.3%	1.4%	-0.3%	4.4%
<b>BALANCE OF PAYMENTS (\$ MN)</b>									
<b>SUMMARY FLOWS (*)</b>									
Exports & Capital Flows	2867.5	6269.1	7797.5	7742.5	5717.0	4901.9	4320.7	3926.0	3594.4
Imports	2907.0	6272.4	7903.8	7803.3	5772.8	5097.6	4546.6	3962.0	3713.8
Difference	-39.5	-3.4	-106.4	-60.8	-55.8	-195.8	-225.9	-36.0	-119.4
Deviation from Average	-1.4%	-0.1%	-1.4%	-0.8%	-1.0%	-3.9%	-5.1%	-0.9%	-3.3%
1970 - 1987	-0.7%								
1970 - 1982	0.1%								
1983 - 1987	-2.8%								

(\*) Negative signifies importing greater than capacity

strengthen the assertion that there is a discreet shift between the periods 1970 to 1982 and 1983 to 1987. The percentage deviation over the entire time horizon or long term was only -0.7 percent. This suggests that there was only a slight propensity to over-import through the evaluated period. The first period, 1970 to 1982, again suggests basic conformity to our hypothesis that the credit items in the balance of payments determine the capacity to import. The percentage deviation was only a positive 0.1 percent. The deviation in the second period, 1983 to 1987, is a negative 2.8 percent. This suggests that there was a much higher demand for imports relative to the Country's export base and access to capital. This is consistent with an observed increase in domestic credit (which will be evaluated later), as a mechanism to compensate for worsened export and capital inflow realities.<sup>1</sup>

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<sup>1</sup> Use of the lagged endogenous variable reflects the belief that a distributed relationship exists between (1) credit items in the balance of payments and the money supply and (2) imports and income determination, over a period greater than one year. For a discussion of the distributed lag transformation, please see Pindyck and Rubinfeld "Econometric Models and Economic Forecasting" pages 232-237. The relevance of this notion is supported by the fact that the balance of payments equation suggests short and long run responses of 0.1 and 0.6, respectively.

## CHAPTER 4

### IMPLICATIONS FOR STABILIZATION, FISCAL, AND TRADE POLICIES

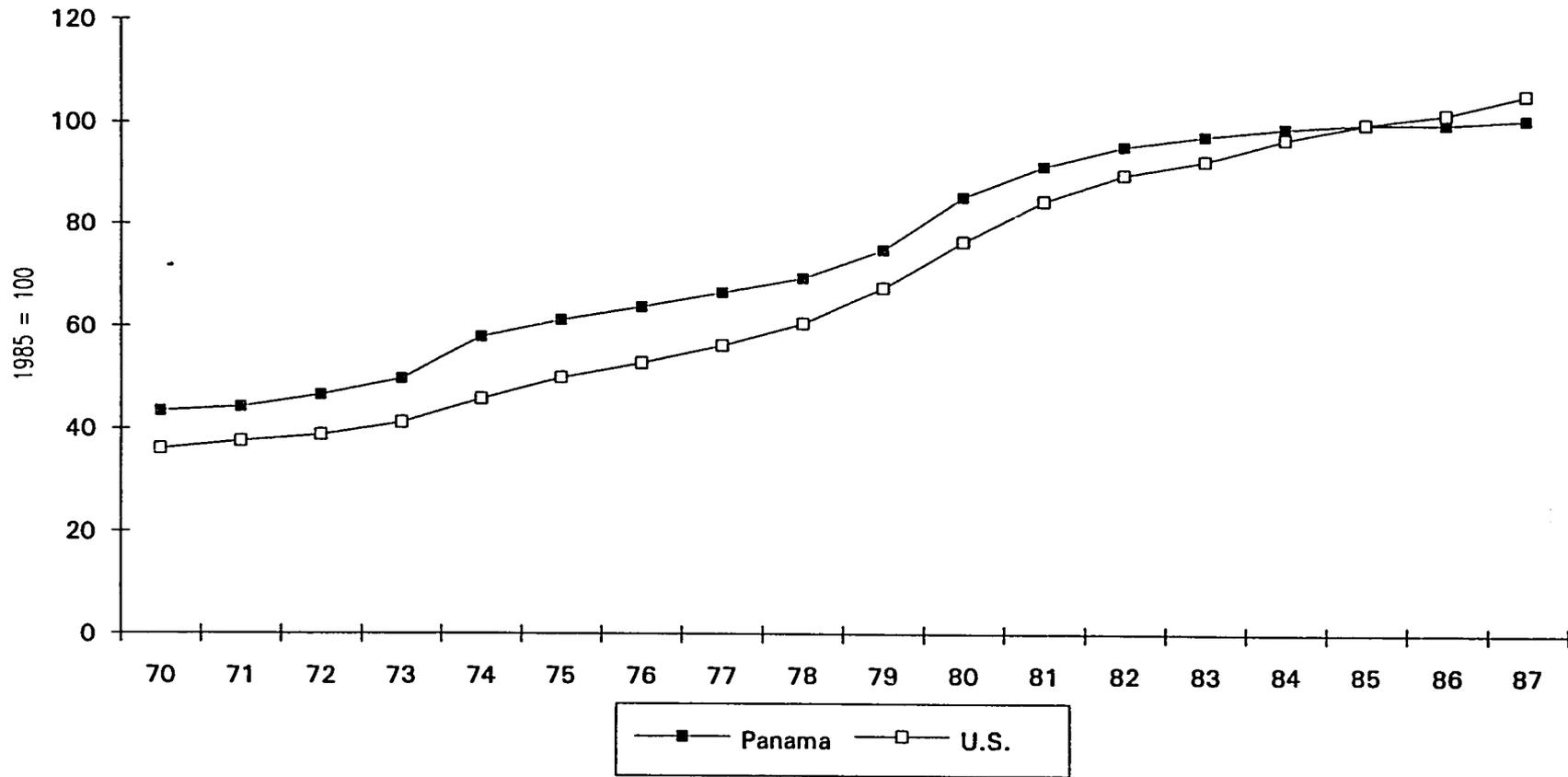
#### 4.1. Price Stabilization

The major benefits from the use of the dollar as the country's currency has been both the stability of the exchange rate and the convergence of changes in domestic prices to those in the US. The stabilization of inflation in Panama is of noteworthy significance when the comparison is made to other South American nations suffering from double digit hyperinflation. The comparison to other South American countries is especially relevant due to similar characteristics such as a large external debt burden and the commonality of the US as the principal trading partner.

Despite the moderation of Panamanian inflation, the convergence to changes in US price levels is not exact. Domestic prices are composed of both tradable and nontradable goods.<sup>15</sup> The openness of the Panamanian economy and the use of the dollar as the unit of exchange should theoretically lead to complete convergence of the price of tradables, but not necessarily the price of nontradables. The price of nontradables or domestic goods reflects both the domestic economic environment and influences from abroad. Therefore, it is likely that Panamanian inflation closely tracks price changes in the US, but can vary based on local economic conditions. A graph of US and Panama consumer price indexes (graph 4) from 1970 to 1987 demonstrates the close linkage between changes in the two price levels.

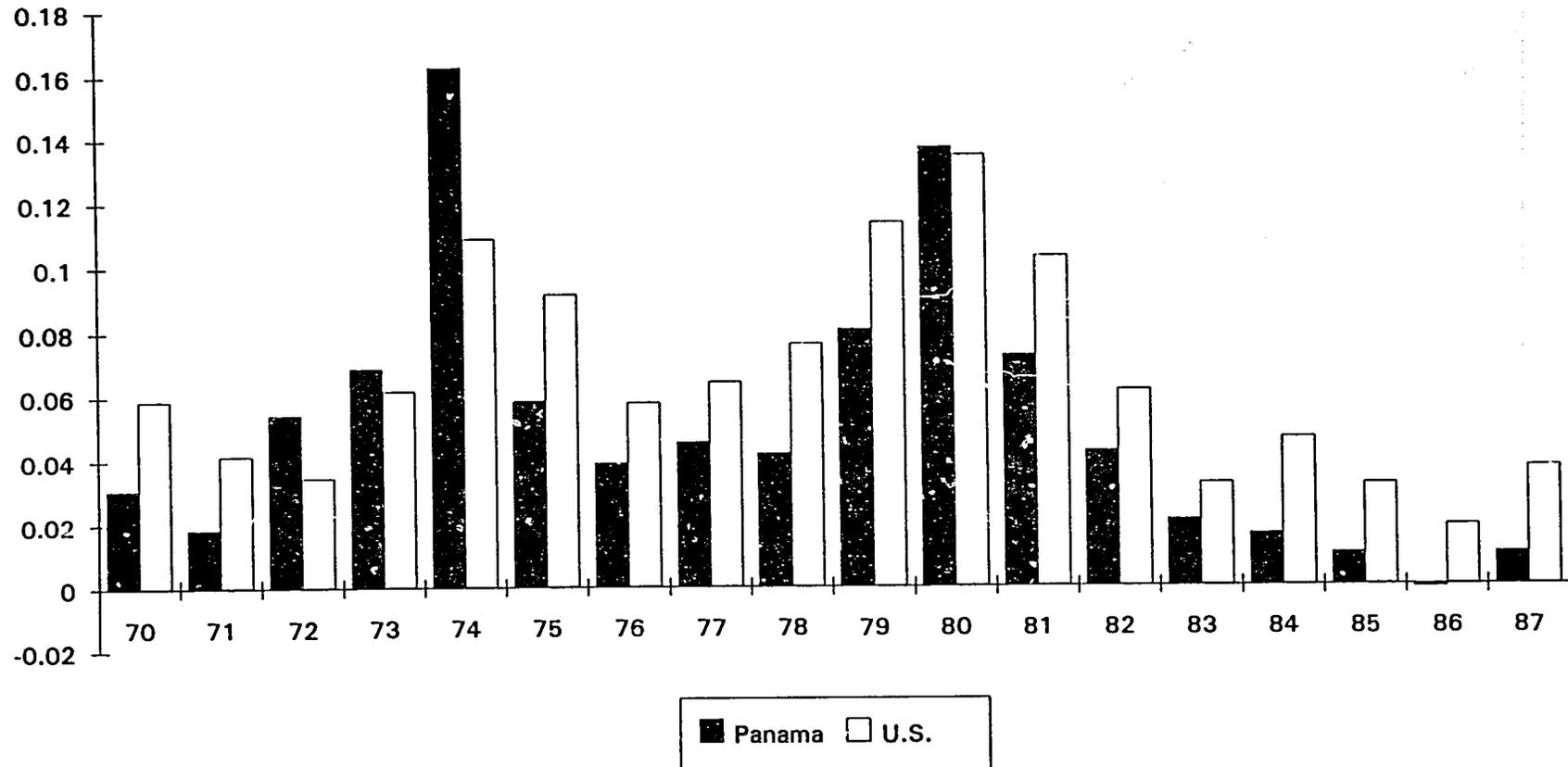
A second graph (graph 5) of percentage changes in the two indices affirms the close relationship between changes in the two indices, but also reveals a noteworthy trend. Inflation in the US has always been higher than Panamanian inflation, with the exception of four years (1972, 1973, 1974, and 1980). This can be explained by examining changes in oil prices. Between 1972 and 1974, Saudi Arabia Ras Tanura increased from \$1.9 per barrel to \$9.8 per barrel. Similarly, the Saudi benchmark oil

Panama vs United States  
Consumer Price Inflation



Graph 5

Panama vs United States  
Consumer Price Inflation



price increased from \$17.3 per barrel in 1979 to \$28.7 per barrel in 1980. The impact of an oil price spike on inflation in Panama is expected to be greater than in the US. Panama imports virtually all of its oil, making it more susceptible to sharp price changes. Thus, the structure of price changes in Panama has typically been lower than in the US, with the exception of the years corresponding to oil crises.

The following model extends an analysis by Patrick Honohan of the World Bank. The analysis examines the convergence of prices of countries in a currency zone to the prices of the core currency country. Honahan evaluated the French franc and South African rand zones.<sup>16</sup>

The first equation estimates the impact of the core country's price level (the US) on the country in question (Panama). The equation also employs the use of linear time trend and a dummy variable to eliminate disturbances from oil price spikes.

$$\ln P_{pa}^e = c_1 + b_1 \ln P_{us} + b_2 T + b_3 D$$

Where P, T, and D represent the price levels for Panama and the United States, the time trend, and the oil dummy. The superscript "e" indicates that the estimated values are stored and used in the second equation.

The estimated results (table 3) suggest that the equation fits the dependent variable and that the independent variables are all significant. The presence of a negative coefficient on the linear time trend reaffirms the previous assertion that Panamanian inflation is systematically lower than US inflation. The low Durbin-Watson statistic (1.14) indicates the presence of positive serial correlation or that an explanatory variable is missing. Thus, Panamanian inflation tracks US inflation quite closely; however, an unexplained "other" factor is leading to structurally lower inflation in Panama compared to the US. The existence of another explanatory variable

will be developed in the last section of this chapter.

The second equation evaluates the transmission of US inflation into Panama. Does it occur within one year or is it a process that occurs over a two year period? The equation employed looks at both the immediate adjustment to price differentials and a partial adjustment factor to the long term equilibrium price trend estimated in the previously discussed equation:

$$d \ln P_{pa} = b_4 (d \ln P_{us}) - b_5 (\ln P_{pa} - P_{pa}^e)_{-1}$$

Where  $d$  represents the first differences.

The results from this equation (table 4) indicate that the majority of the inflation transmission occurs within the first year. The positive estimated coefficient ( $b_5$ ) on the lagged adjustment variable indicates that actual inflation above the previously estimated long term equilibrium inflation trend results in an advance in inflation. This is contradictory to the expected negative inflationary effect, which would lower prices toward their equilibrium levels. This is counter-intuitive and further strengthens the suspicion of an unexplained structural determinant in Panamanian inflation.

Table 3

LS // Dependent Variable is LPACPI Date: 5-31-1993 / Time: 19:00  
 SMPL range: 1969 - 1987  
 Number of observations: 19

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.4533250	0.2506026	1.8089401	0.091
LUSCPI	0.9390667	0.0732114	12.826777	0.000
DUMMY	0.0993519	0.0130621	7.6061365	0.000
TREND	-0.0158564	0.0050711	-3.1268435	0.007

R-squared	0.998002	Mean of dependent var	4.244822
Adjusted R-squared	0.997602	S.D. of dependent var	0.322562
S.E. of regression	0.015794	Sum of squared resid	0.003742
Durbin-Watson stat	1.136945	F-statistic	2497.510
Log likelihood	54.09985		

Residual Plot		obs	RESIDUAL	ACTUAL	FITTED
:	*	1969	-0.01167	3.74005	3.75171
*	:	1970	-0.01892	3.77046	3.78938
*	:	1971	-0.02303	3.78872	3.81175
:	*	1972	0.01378	3.84160	3.82782
:	:	1973	0.03983	3.90802	3.86818
:	*	1974	0.00992	4.05872	4.04880
:	*	1975	0.00045	4.11578	4.11533
:	*	1976	0.00176	4.15418	4.15242
:	*	1977	0.00364	4.19870	4.19506
:	*	1978	-0.00843	4.23989	4.24832
*	:	1979	-0.01624	4.31749	4.33373
:	*	1980	0.00954	4.44617	4.43663
:	*	1981	0.00339	4.51634	4.51295
:	*	1982	0.00491	4.55808	4.55317
:	*	1983	0.01163	4.57883	4.56720
:	*	1984	0.00116	4.59512	4.59396
:	*	1985	-0.00251	4.60517	4.60768
:	*	1986	-0.00533	4.60417	4.60950
:	*	1987	-0.01389	4.61413	4.62802

Table 4

LS // Dependent Variable is DLPA  
 Date: 5-31-1993 / Time: 19:01  
 SMPL range: 1970 - 1987  
 Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
DLUS	0.8201679	0.0750346	10.930524	0.000
DLPAF (-1)	0.5506715	0.3717239	1.4813993	0.158
R-squared	0.718994	Mean of dependent var	0.048560	
Adjusted R-squared	0.701431	S.D. of dependent var	0.040062	
S.E. of regression	0.021890	Sum of squared resid	0.007667	
Durbin-Watson stat	1.704933	F-statistic	40.93830	
Log likelihood	44.30980			

Residual Plot			obs	RESIDUAL	ACTUAL	FITTED
:	*	:	1970	-0.00991	0.03041	0.04032
:	*	:	1971	-0.00471	0.01827	0.02297
:	:	*	1972	0.03768	0.05288	0.01520
:	:	*	1973	0.00972	0.06641	0.05669
:	:	*	1974	0.04394	0.15070	0.10676
*	:	:	1975	-0.02036	0.05706	0.07742
:	*	:	1976	-0.00808	0.03840	0.04649
:	*	:	1977	-0.00754	0.04452	0.05206
*	:	:	1978	-0.02119	0.04118	0.06237
:	*	:	1979	-0.00620	0.07760	0.08380
:	:	*	1980	0.03390	0.12869	0.09478
:	*	:	1981	-0.01559	0.07016	0.08576
:	*	:	1982	-0.00911	0.04174	0.05085
:	*	:	1983	-0.00805	0.02075	0.02880
*	:	:	1984	-0.02734	0.01629	0.04363
:	*	:	1985	-0.01641	0.01005	0.02646
:	*	:	1986	-0.01506	-0.00100	0.01406
:	*	:	1987	-0.01713	0.00996	0.02709

## **4.2. Constraints on Expansionary Fiscal Policy**

The monetary authorities have only a limited ability to influence monetary policy. The use of the dollar as the unit of exchange prohibits both monetary creation and foreign exchange intervention. However, the Panamanian monetary authorities can influence liquidity through both an expansion of domestic credit or an alteration of reserve requirements.

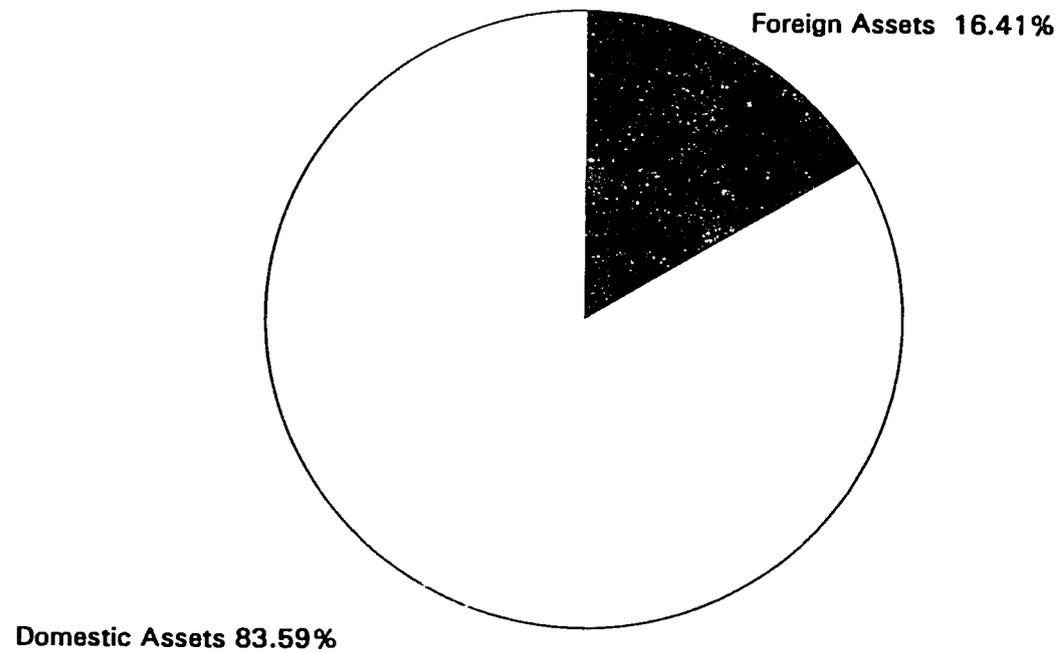
The monetary authorities can manipulate the money supply through direct lending or a repurchase of domestic loans. An increase in lending by the Central Bank would lead to both an expansion of the money supply and a reconfiguration of the balance sheet of the monetary authorities. In this example, domestic assets would increase relative to foreign assets. This is similar to the shifting in the asset side of the balance sheet that has occurred in many countries that undergo sustained periods of sterilized foreign exchange market intervention.

The impact of a shift in the composition of assets of monetary authorities can be illustrated by reviewing the balance sheet of the Central Bank of Taiwan. The Taiwan experience suggests that a change in the asset composition of the balance sheet can alter monetary policy, but only for a limited period. The Central Bank of Taiwan sold domestic assets throughout the mid-1980s to offset the inflationary impact of an accumulation of foreign assets through its massive trade surpluses and to prevent an appreciation of the exchange rate. However, the effectiveness of these policies were only temporary. By 1987, foreign assets of the central bank accounted for 96 percent of total assets. In other words, it ran out of domestic assets to sell and changes in exchange rate policy were necessary.<sup>17</sup>

Similarly, the National Bank of Panama could and has manipulated its asset composition to alter monetary policy. However, the Panamanian situation is the reverse of the Taiwanese one. Foreign assets of the monetary authorities have fallen from 16.4 percent of total assets in 1970 to 6.1 percent by 1987 (see graphs 6 and 7).

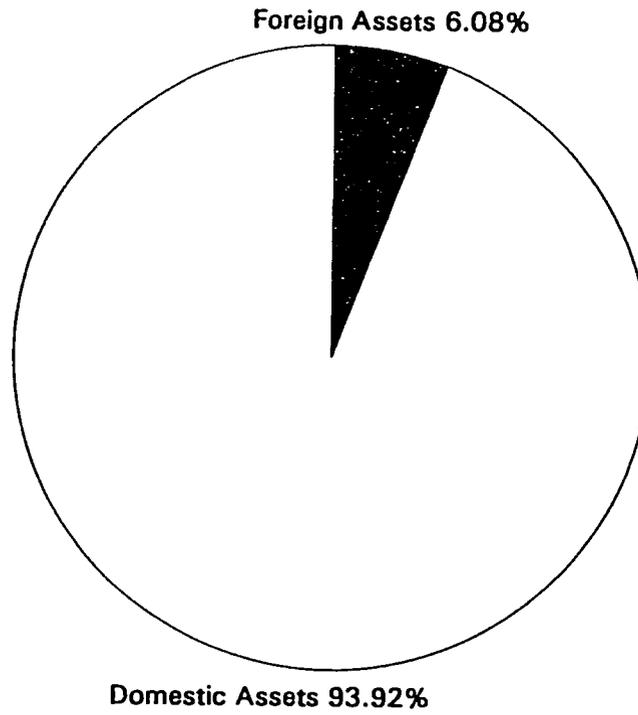
Graph 6

Share of Foreign vs Domestic Assets  
of the Monetary Authorities: 1970



Graph 7

**Share of Foreign vs Domestic Assets  
of the Monetary Authorities: 1987**



The percentage of foreign assets of the monetary authorities peaked in 1978 at 30.8 percent (see table 5). This is coincident with the increase in foreign exchange earnings through the 1970s.

Through the 1980s, liquidity from abroad fell coincident with a deterioration of current and capital inflows. The monetary authorities extended an increased amount of domestic credit to compensate for the monetary squeeze emanating from the balance of payments. This policy was likely to have some impact on smoothing the monetary contraction from the balance of payments. However, the monetary authorities' control of liquidity through this process is more severely limited. Domestic assets of the monetary authorities were approximately 94 percent of its total assets, restricting the creation of new domestic assets. Thus, the recent advance of domestic credit by the monetary authorities prevents the use of these policy measures in the future. The authorities are now constrained with the ability to only promote a contraction in the monetary supply through the sales of domestic assets.

The second policy instrument with which the authorities can influence the creation of credit would be a manipulation of the reserve requirements within the banking system. In the short term, a lowering of the reserve requirements would lead to an expansion of domestic loans and the money supply. If credit is created by the government without sufficient reserves, a weakening of banking system would occur. This would ultimately auger for a contraction in the assets of the banking system and the money supply.

Manipulation of the reserve requirements has generally not been used in Panama and for good reason. The domestic banking system is crucial for the development of the Panamanian economy, where the banking system is dominated by the activities of private banks. For example, total assets of the deposit money banks are between 90 and 98 percent of total assets within the entire banking system. In other words, the monetary authorities control less than 10 percent of the assets in the banking system.

TABLE 5

INTERNATIONAL LIQUIDITY: MONETARY AUTHORITIES	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>Total Assets</b>	<b>95.7</b>	<b>115.4</b>	<b>169.0</b>	<b>194.5</b>	<b>231.9</b>	<b>273.1</b>	<b>397.4</b>	<b>360.4</b>	<b>489.4</b>
<b>Foreign Assets</b>	<b>15.7</b>	<b>21.1</b>	<b>43.2</b>	<b>41.7</b>	<b>39.3</b>	<b>34.4</b>	<b>78.9</b>	<b>70.9</b>	<b>150.5</b>
% of total assets	16.4%	18.3%	25.6%	21.4%	16.9%	12.6%	19.9%	19.7%	30.8%
<b>Claims on Central Government</b>	<b>26.8</b>	<b>26.7</b>	<b>39.2</b>	<b>35.8</b>	<b>60.1</b>	<b>89.8</b>	<b>168.5</b>	<b>155.4</b>	<b>129.7</b>
% of total assets	27.8%	23.1%	23.2%	18.4%	25.9%	32.9%	42.4%	43.1%	26.5%
<b>Claims on Official Entities</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2.5</b>	<b>2.1</b>	<b>8.2</b>	<b>25.6</b>	<b>12.3</b>	<b>33.7</b>
% of total assets	0.0%	0.0%	0.0%	1.3%	0.9%	3.0%	6.4%	3.4%	6.9%
<b>Claims on Private Sector</b>	<b>53.4</b>	<b>67.6</b>	<b>86.6</b>	<b>114.5</b>	<b>130.4</b>	<b>140.7</b>	<b>124.4</b>	<b>121.8</b>	<b>175.5</b>
% of total assets	55.8%	58.8%	51.2%	58.9%	56.2%	51.5%	31.3%	33.3%	35.9%
<b>Total Liabilities</b>	<b>95.7</b>	<b>115.3</b>	<b>168.9</b>	<b>194.5</b>	<b>231.5</b>	<b>273.2</b>	<b>397.5</b>	<b>360.3</b>	<b>489.3</b>
<b>Banker's Deposits</b>	<b>17.8</b>	<b>19.3</b>	<b>32.9</b>	<b>31.3</b>	<b>32.4</b>	<b>52.0</b>	<b>79.5</b>	<b>88.0</b>	<b>61.5</b>
% of total liabilities	18.4%	16.7%	19.5%	16.1%	14.0%	19.0%	20.0%	24.4%	12.6%
<b>Demand Deposits</b>	<b>15.4</b>	<b>17.1</b>	<b>34.3</b>	<b>29.9</b>	<b>23.5</b>	<b>23.9</b>	<b>26.2</b>	<b>28.2</b>	<b>32.0</b>
% of total liabilities	16.1%	14.8%	20.3%	15.4%	10.2%	8.7%	6.6%	7.8%	6.5%
<b>Time, Savings, &amp; Fgn. Currency Deposits</b>	<b>15.1</b>	<b>17.3</b>	<b>22.5</b>	<b>22.3</b>	<b>23.4</b>	<b>25.4</b>	<b>30.5</b>	<b>37.8</b>	<b>45.8</b>
% of total liabilities	15.8%	15.0%	13.3%	11.5%	10.1%	9.3%	7.7%	10.5%	9.4%
<b>Foreign Liabilities</b>	<b>15.1</b>	<b>24.0</b>	<b>26.8</b>	<b>28.7</b>	<b>73.3</b>	<b>104.3</b>	<b>157.6</b>	<b>144.0</b>	<b>147.5</b>
% of total liabilities	15.8%	20.8%	15.9%	14.8%	31.7%	38.2%	39.6%	40.0%	30.1%
<b>Long Term Foreign Liabilities</b>	<b>2.9</b>	<b>3.7</b>	<b>3.6</b>	<b>3.4</b>	<b>5.0</b>	<b>9.1</b>	<b>11.8</b>	<b>12.6</b>	<b>12.3</b>
% of total liabilities	3.0%	3.2%	2.1%	1.7%	2.2%	3.3%	2.9%	3.5%	2.5%
<b>Central Government Deposits</b>	<b>25.3</b>	<b>29.7</b>	<b>48.3</b>	<b>59.2</b>	<b>63.4</b>	<b>88.9</b>	<b>103.0</b>	<b>109.5</b>	<b>205.2</b>
% of total liabilities	26.4%	25.8%	28.6%	30.4%	27.4%	25.2%	25.9%	30.4%	41.9%
<b>Capital Accounts</b>	<b>18.2</b>	<b>23.7</b>	<b>28.8</b>	<b>32.5</b>	<b>30.9</b>	<b>32.5</b>	<b>32.8</b>	<b>36.5</b>	<b>45.6</b>
% of total liabilities	19.0%	20.6%	17.1%	16.7%	13.3%	11.9%	8.3%	10.1%	9.3%
<b>Other Items (net)</b>	<b>-13.9</b>	<b>-19.5</b>	<b>-28.3</b>	<b>-12.8</b>	<b>-20.4</b>	<b>-42.9</b>	<b>-43.7</b>	<b>-96.3</b>	<b>-60.6</b>
% of total liabilities	-14.5%	-16.9%	-16.8%	-6.6%	-8.8%	-15.7%	-11.0%	-26.7	-12.4%
<b>INTERNATIONAL LIQUIDITY: MONETARY AUTHORITIES</b>	<b>1979</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>
<b>Total Assets</b>	<b>583.9</b>	<b>590.5</b>	<b>805.9</b>	<b>883.8</b>	<b>1118.7</b>	<b>1283.3</b>	<b>1250.2</b>	<b>1310.3</b>	<b>1280.0</b>
<b>Foreign Assets</b>	<b>118.7</b>	<b>117.4</b>	<b>119.9</b>	<b>101.0</b>	<b>208.7</b>	<b>215.6</b>	<b>98.0</b>	<b>170.2</b>	<b>77.8</b>
% of total assets	20.3%	19.9%	14.9%	11.4%	18.5%	16.8%	7.8%	13.0%	6.1%
<b>Claims on Central Government</b>	<b>170.4</b>	<b>172.3</b>	<b>343.1</b>	<b>346.4</b>	<b>480.0</b>	<b>638.0</b>	<b>737.3</b>	<b>713.8</b>	<b>795.6</b>
% of total assets	29.2%	29.2%	42.6%	39.2%	42.9%	49.7%	59.0%	54.5%	62.2%
<b>Claims on Official Entities</b>	<b>78.5</b>	<b>32.8</b>	<b>59.4</b>	<b>96.5</b>	<b>96.1</b>	<b>93.7</b>	<b>92.3</b>	<b>102.0</b>	<b>105.6</b>
% of total assets	13.4%	5.6%	7.4%	10.9%	8.6%	7.3%	7.4%	7.8%	8.3%
<b>Claims on Private Sector</b>	<b>216.3</b>	<b>268.0</b>	<b>283.5</b>	<b>339.9</b>	<b>335.9</b>	<b>336.0</b>	<b>322.6</b>	<b>324.3</b>	<b>301.0</b>
% of total assets	37.0%	45.4%	35.2%	38.5%	30.0%	26.2%	25.8%	24.8%	23.5%
<b>Total Liabilities</b>	<b>587.6</b>	<b>594.2</b>	<b>805.9</b>	<b>883.8</b>	<b>1118.8</b>	<b>1283.3</b>	<b>1250.1</b>	<b>1310.2</b>	<b>1280.0</b>
<b>Banker's Deposits</b>	<b>143.4</b>	<b>155.9</b>	<b>221.5</b>	<b>207.5</b>	<b>207.5</b>	<b>210.2</b>	<b>198.0</b>	<b>223.3</b>	<b>135.5</b>
% of total liabilities	24.9%	26.2%	27.5%	23.5%	18.5%	16.4%	15.8%	17.0%	10.6%
<b>Demand Deposits</b>	<b>38.7</b>	<b>42.0</b>	<b>40.7</b>	<b>48.8</b>	<b>45.7</b>	<b>46.7</b>	<b>50.0</b>	<b>55.7</b>	<b>46.2</b>
% of total liabilities	6.6%	7.1%	5.1%	5.5%	4.1%	3.6%	4.0%	4.3%	3.6%
<b>Time, Savings, &amp; Fgn. Currency Deposits</b>	<b>49.3</b>	<b>63.2</b>	<b>83.7</b>	<b>99.7</b>	<b>123.8</b>	<b>157.3</b>	<b>154.4</b>	<b>201.9</b>	<b>179.3</b>
% of total liabilities	8.4%	10.6%	10.4%	11.3%	11.5%	12.3%	12.4%	15.4%	14.0%
<b>Foreign Liabilities</b>	<b>165.8</b>	<b>188.0</b>	<b>283.0</b>	<b>326.5</b>	<b>489.2</b>	<b>577.2</b>	<b>621.0</b>	<b>635.6</b>	<b>645.6</b>
% of total liabilities	28.2%	31.6%	35.1%	36.9%	43.7%	45.0%	49.7%	48.5%	50.4%
<b>Long Term Foreign Liabilities</b>	<b>13.8</b>	<b>20.6</b>	<b>31.3</b>	<b>38.2</b>	<b>41.9</b>	<b>46.3</b>	<b>48.6</b>	<b>50.0</b>	<b>51.5</b>
% of total liabilities	2.3%	3.5%	3.9%	4.3%	3.7%	3.6%	3.9%	3.8%	4.0%
<b>Central Government Deposits</b>	<b>147.5</b>	<b>144.0</b>	<b>210.3</b>	<b>218.6</b>	<b>243.4</b>	<b>223.7</b>	<b>266.6</b>	<b>305.9</b>	<b>323.1</b>
% of total liabilities	25.1%	24.2%	26.1%	24.7%	21.8%	17.4%	21.3%	23.3%	25.2%
<b>Capital Accounts</b>	<b>52.1</b>	<b>71.9</b>	<b>82.4</b>	<b>94.0</b>	<b>102.7</b>	<b>101.2</b>	<b>108.6</b>	<b>113.6</b>	<b>120.6</b>
% of total liabilities	8.9%	12.1%	10.2%	10.6%	9.2%	7.9%	8.7%	8.7%	9.4%
<b>Other Items (net)</b>	<b>-26.0</b>	<b>-91.4</b>	<b>-147.0</b>	<b>-149.5</b>	<b>-140.4</b>	<b>-79.3</b>	<b>-197.1</b>	<b>-275.8</b>	<b>-221.8</b>
% of total liabilities	-4.4%	-15.4%	-18.2%	-16.9%	-12.6%	-6.2%	-15.8%	-21.1%	-17.3%

Sources:  
International Financial Statistics  
International Monetary Fund

Therefore, frequent and dramatic changes in reserve requirements would severely hamper the efficacy of the banking system and encourage private banks, many of which are large foreign institutions, to take their business elsewhere. Additionally, as previously discussed, the monetary authorities are comprised of two separate entities: the National Bank (BNP) and the Banking Commission. Each institution has different objectives. It is unlikely that the Banking Commission would alter reserve requirements to expand the monetary base on behalf of BNP at the risk of jeopardizing the health of the entire banking system.

Reserve requirements placed on private sector financial institutions, which account for the majority of the financial intermediation in Panama, limit the powers of the monetary authorities. This would serve to strengthen the relation between the money supply and the balance of payments. Thus, a direct change in export capacity or foreign aid receipts would have a greater impact on the monetary accounts than the domestic policy instruments available to the authorities.<sup>18</sup>

#### **4.3. Contribution of the Foreign Banking Sector to Credit Expansion**

The foreign banking sector contributes to the development of the Panamanian economy through both an increase in employment and an extension of credit. In addition to an increase in the number of job opportunities, the private banking sector employment includes higher than average wages and professional development of the labor force. More importantly, the foreign banking sector has also contributed to the development of financial intermediation in Panama and the availability of credit.

The enhancement to financial intermediation can be illustrated both by the size of participating foreign banks and by the deepening of the financial system. The deepening of the financial system has already been illustrated by the increase in broad money in relation to narrow money (graph 3). This development in the 1970s is also coincident with the increase in participation of foreign banks in the economy. A graph

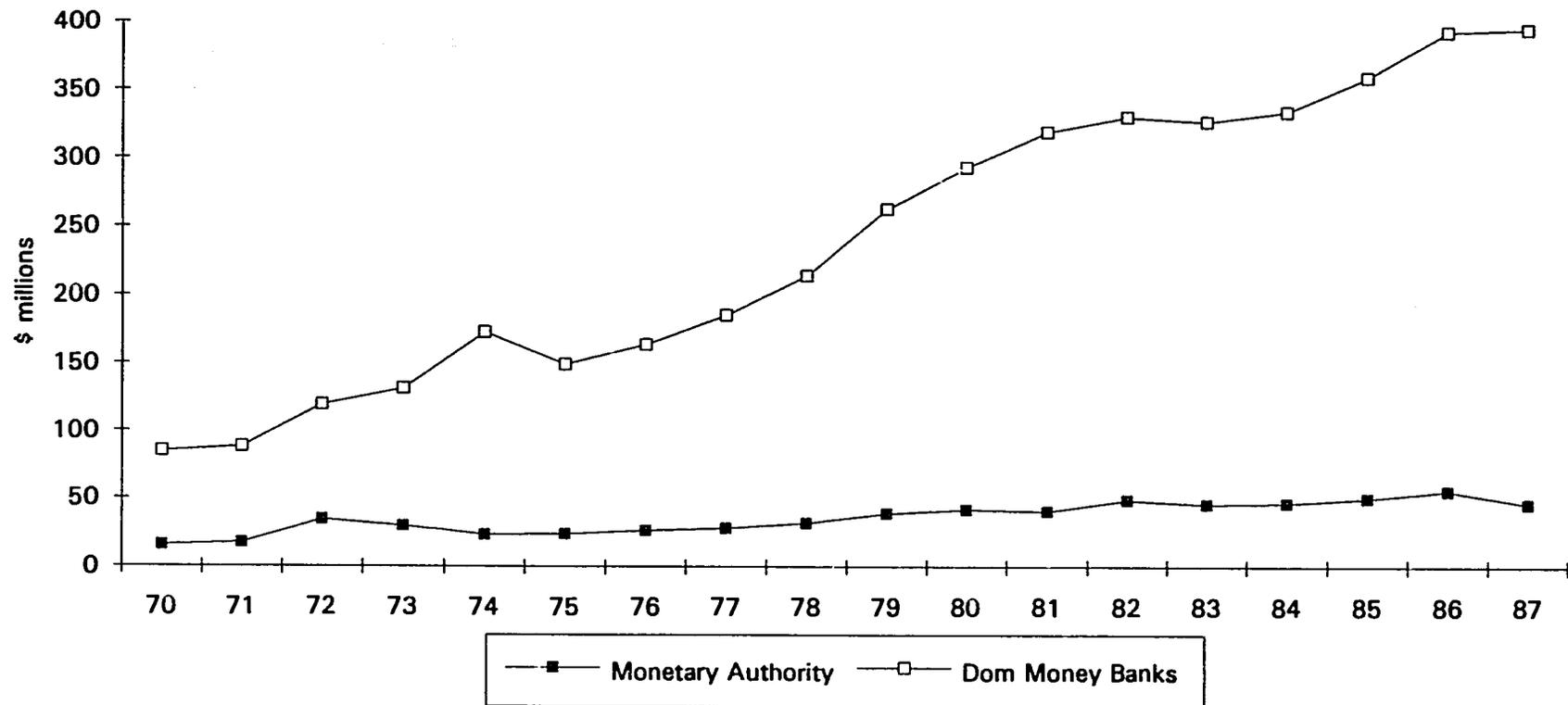
(graph 8) of the composition of demand deposits highlights the participation of domestic money banks, of which the majority are foreign, and the contribution to the money supply of the monetary authorities. Additional evidence of the substantial participation of the foreign banks in the economy is illustrated by a graph of the liabilities of foreign banks (graph 9). This graph shows the rapid increase in the 1970s, followed by a substantial decline after the beginning of the debt crisis in 1982. Liabilities of private banks increased from \$0.6 billion in 1970 to nearly \$30 billion by 1982. By 1987, liabilities of private banks had fallen to \$19 billion. This is coincident with the general deterioration in the expectations of future economic performance. It is important to note that although deposits have fallen by over \$10 billion in five years, private banks still account for the majority of all liabilities within the banking system in 1987. Thus, private banks remain a vital force in the allocation of credit in the Panamanian economy.

A general criticism of the presence of an offshore financial industry is that there is little contribution to the financial development of the economy. In other words, deposits and loans are booked in the offshore center, but have no visible impact on credit creation in the host country. This is not the case in Panama. A reconstruction of the banking systems balance sheet shows that the presence of the offshore financial center has been beneficial in terms of transferring credit from abroad to the local Panamanian economy.

The reconstruction of the balance sheet follows an analysis presented in 1976 by the economist Harry Johnson. The reconstruction groups the foreign accounts separately from the domestic ones (see table 6).<sup>19</sup> The analysis begins with an examination of the consolidated foreign assets and liabilities. In Panama's case, foreign liabilities exceed assets in each year between 1970 and 1987. This is evident by the negative number in the foreign accounts line, which evaluates the net contribution from the foreign sector. This excess suggests that funds deposited from

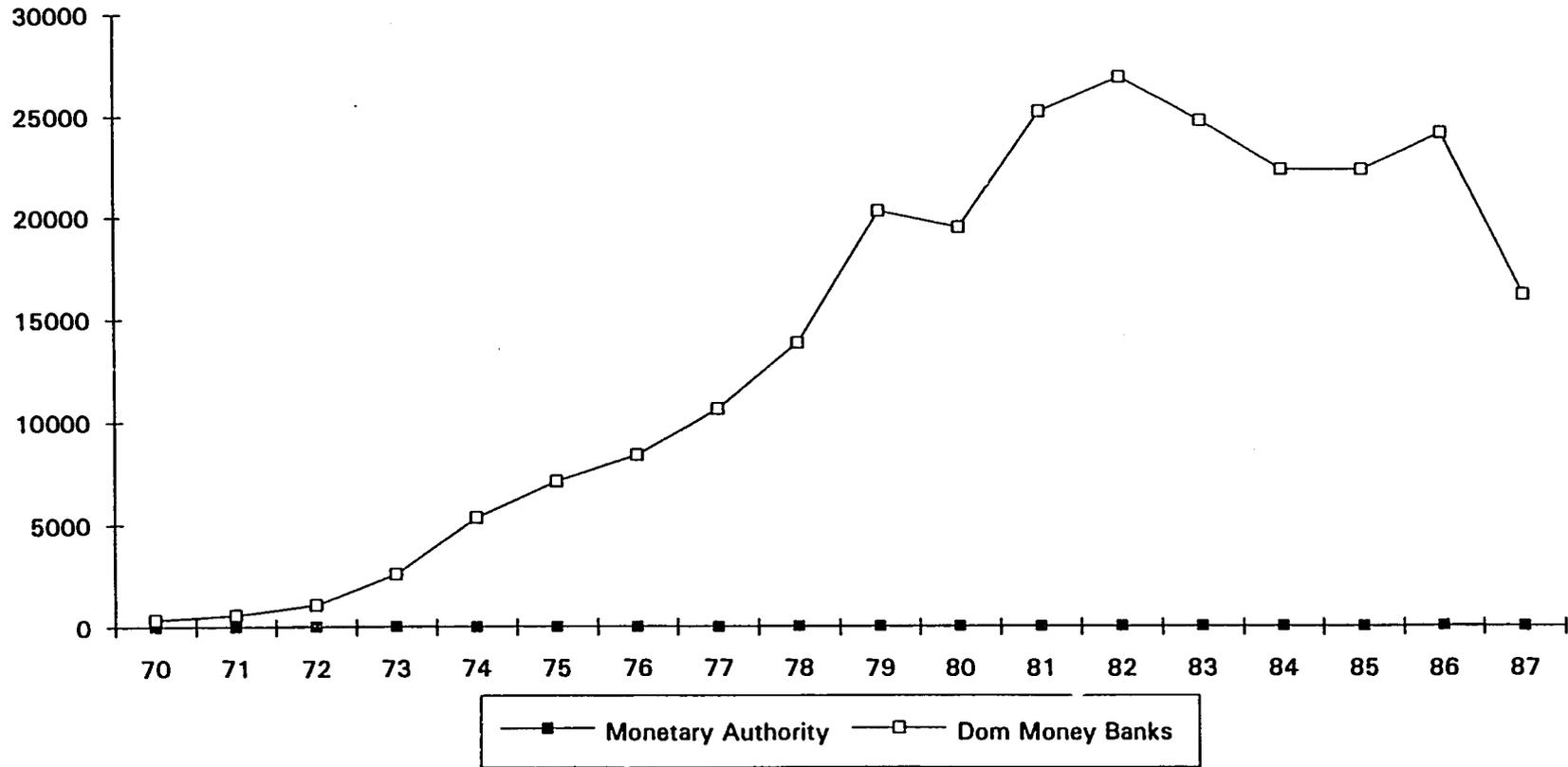
Graph 8

Demand Deposits  
Components of M1



Graph 9

Liabilities of Private Banks  
\$ millions



**TABLE 6**

INTERNATIONAL LIQUIDITY: RECONSTRUCTION OF THE ACCOUNTS OF THE CONSOLIDATED BANKING SYSTEM	1970	1971	1972	1973	1974	1975	1976	1977	1978
Foreign Accounts	-79	-140	-186	-319	-584	-713	-766	-750	-473
Foreign Assets	303	475	942	2302	4835	6517	7776	10041	13533
Foreign Liabilities	382	616	1127	2620	5418	7230	8542	10790	14006
Domestic Accounts	79	141	186	318	584	713	766	750	473
Domestic Assets	393	515	685	872	1236	1426	1532	1591	1599
Domestic Liabilities	314	376	499	553	652	713	766	842	1126
Total Assets	696	991	1627	3173	6070	7943	9308	11632	15132
Total Liabilities	696	991	1626	3173	6070	7943	9308	11632	15132
Net Foreign Effect (flow)		-61	-46	-133	-265	-129	-53	16	277
Net Domestic Effect (flow)		61	46	132	265	129	53	-16	-277
INTERNATIONAL LIQUIDITY: RECONSTRUCTION OF THE CONSOLIDATED BANKING SYSTEM	1979	1980	1981	1982	1983	1984	1985	1986	1987
Foreign Accounts	-931	-629	-753	-127	-466	-559	-402	-261	-651
Foreign Assets	19564	19088	24794	27203	24856	22445	22653	24629	16231
Foreign Liabilities	20495	19717	25548	27330	25322	23004	23055	24890	16882
Domestic Accounts	927	626	754	127	466	559	402	165	667
Domestic Assets	1980	2346	2869	3057	3195	3422	3514	3760	3813
Domestic Liabilities	1053	1721	2115	2930	2728	2863	3112	3595	3146
Total Assets	21544	21434	27663	30260	28050	25867	26167	28388	20043
Total Liabilities	21543	21438	27663	30260	28050	25867	26167	28485	20028
Net Foreign Effect (flow)	-458	301	-124	627	-339	-92	157	141	-390
Net Domestic Effect (flow)	454	-301	128	-627	339	92	-157	-237	502

Source:  
International Financial Statistics (Various)  
International Monetary Fund

abroad into the Panamanian financial system create domestic assets on a net basis. The obverse is a positive number in the domestic accounts.

It is important to realize that the balance sheet items are stocks and not flows. The \$79.2 million created in domestic assets by the foreign sector is the summation of continued net credit creation. The amount of foreign credit extended to the domestic economy peaked prior to the debt crisis, at \$931 million in 1979. This suggests that after 1979 the net credit extended from the foreign sector to the domestic sector declined. An analysis of the net credit created on an annual basis can be observed by taking the first differences of the net contributions from the foreign and domestic accounts, and are labeled "net foreign effect" and "net domestic effect" in table 6. The flow series shows positive domestic credit extended by the foreign sector through the mid-1970s and mixed performance, in terms of net flows, through 1987. However, by 1987 a negative \$651 million in the foreign accounts suggests that a stock of credit from the foreign to the domestic sectors remains. We can therefore conclude that the existence of the participation of foreign banks in the Panamanian economy has had a positive impact on the domestic economy in addition to employment.

#### **4.4. Exchange Rate and Trade Policy**

Although Panamanian and US inflation have moved in tandem, there is a clearly delineated trend for Panamanian inflation to have been lower than US inflation. This would suggest that the real exchange rate would have been devalued substantially since 1970. The real exchange rate is evaluated by adjusting the original exchange rate in 1969 at 1 balboa per dollar by changes in the price of tradable goods relative to non-tradable goods.

$$\text{RER} = \text{ER}(1969) * (\text{PT} / \text{PN})$$

Where RER, ER, PT, and PN are the real exchange rate, nominal exchange rate, price of tradables, and price of non-tradables. Between 1974 and 1987, the exchange rate in real terms devalued by 32 percent. This proxy for Panama's price competitiveness in international markets suggests that Panama has become 32 percent more competitive in relation to the US over the 13 year period.<sup>20</sup> Real exchange rate movements are presented in graph 10.

In the case of Panama, the calculation of the real exchange rate fails to fully consider changes in productivity, which is also a critical measure of international competitiveness. In terms of real productivity, the Panamanian economy clearly lagged behind that of the US. In a small open economy with flexible exchange rates, the balboa would have depreciated to take into consideration productivity differentials. This would have boosted both current and capital inflows. Non-traditional exports would have advanced more rapidly, while imports would have been curtailed. Similarly, capital inflows would have increased as the dollar price of local investments would have fallen. The following equations were used to estimate the productivity of labor coefficient in both economies:

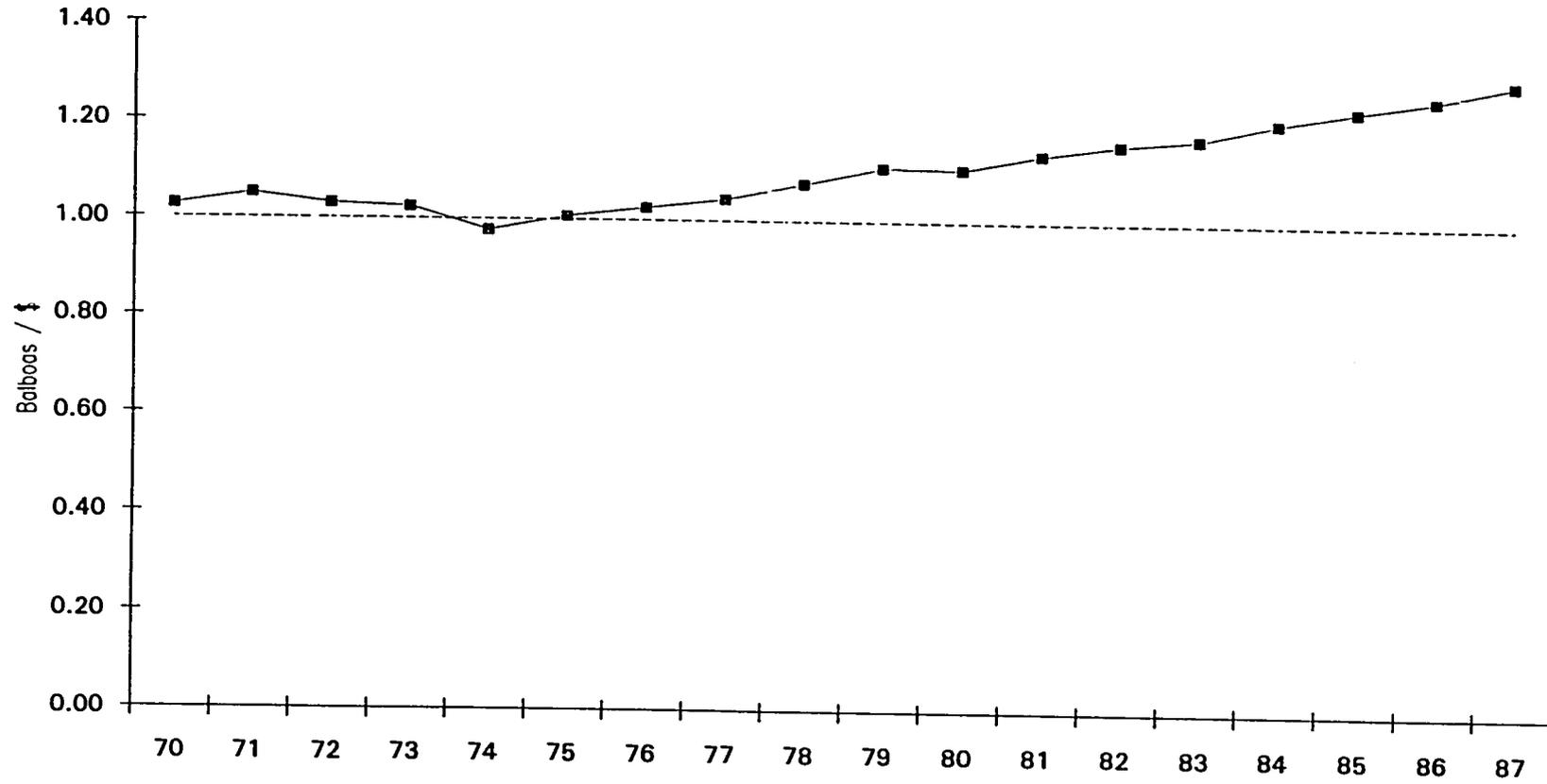
$$\ln Y = c + \ln L$$

Where Y and L represent real GDP and the labor force.

The estimated coefficient over the period 1970 to 1987 for Panama was 1.6 and the US was 2.5 (see appendix 4 for regression estimates and table 7 for exchange rates). This suggests that the annual real growth in productivity in the US was over one and one half of one percent greater per annum than in Panama. This growth combined with the compounding effect over an eighteen year period is enough to reduce gains from advances in price competitiveness.

Graph 10

Real Exchange Rate  
1969 = 1



**TABLE 7**

EXCHANGE RATE	1970	1971	1972	1973	1974	1975	1976	1977	1978
Balboa / \$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Real Exchange Rate (1969 = 1)	1.03	1.05	1.03	1.02	.98	1.01	1.03	1.04	1.08
-----									
Annual Labor Productivity									
Panama	2.5%	2.6%	1.7%	1.6%	0.8%	0.9%	0.0%	0.4%	4.0%
United States	-0.3%	2.2%	4.4%	5.2%	-0.6%	-1.3%	4.9%	4.5%	4.8%
Average Productivity (1970 - 1987)									
Panama	1.6%								
United States	2.5%								
-----									
Real Productivity Exchange Rate	1.00	1.02	1.03	1.06	0.99	1.00	1.07	1.13	1.18
EXCHANGE RATE	1979	1980	1981	1982	1983	1984	1985	1986	1987
Balboa / \$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Real Exchange Rate (1969 = 1)	1.11	1.11	1.14	1.16	1.17	1.21	1.23	1.26	1.29
-----									
Annual Labor Productivity									
Panama	2.0%	5.0%	1.9%	1.1%	0.2%	-0.2%	2.0%	1.5%	1.3%
United States	2.2%	-0.1%	1.8%	-2.6%	3.6%	6.7%	3.5%	2.9%	3.4%
Average Productivity (1970 - 1987)									
Panama	1.6%								
United States	2.5%								
-----									
Real Productivity Exchange Rate	1.22	1.16	1.19	1.17	1.22	1.34	1.39	1.44	1.51

Source:  
IFS/IMF

In open economy macroeconomics, a decline in relative productivity decreases the domestic purchasing power and demand for goods and labor. With a dearth of demand for domestic goods and services, wages and prices should fall. If wages are rigid downwards, as in many countries where the labor representation has a strong influence in policy determination, the adjustment from a change in productivity is not fully incorporated into price changes. Hence a productivity gap would emerge between the two countries. To achieve equilibrium, a relative decline in the price of domestic non-tradables to tradables should occur. In the case of Panama, it is fair to assume that the authorities have no control over the price of tradables. Therefore, a change in the real exchange rate is limited to implementing policies through lower domestic prices of non-tradables. This can be accomplished through income reductions or real productivity gains.<sup>21</sup>

The differences in productivity becomes apparent when evaluating a real productivity exchange rate. The construction of the exchange rate is as follows:

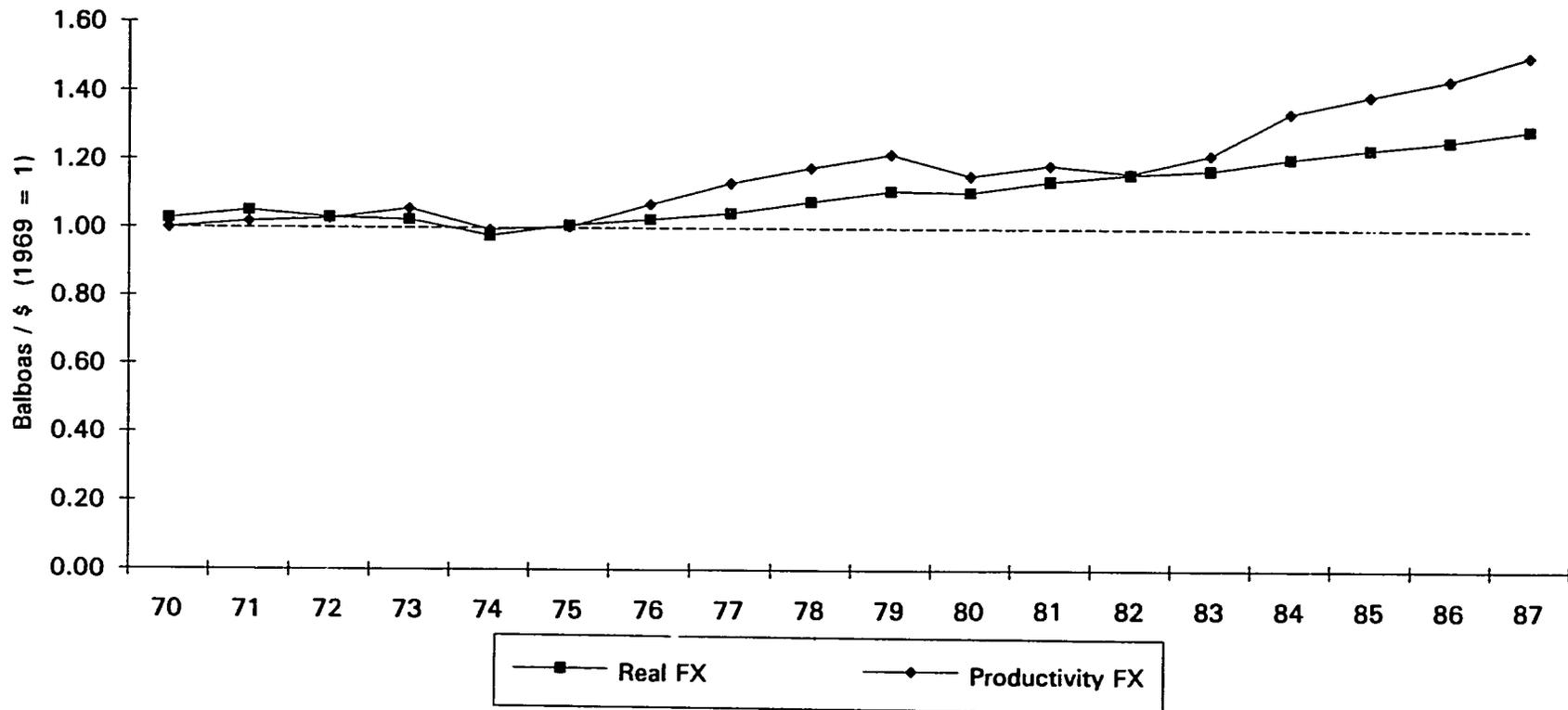
$$RPER = ER(1969) * (PT / PN) * (RP_{us} / RP_{pa})$$

Where RP represents an annual index of real productivity. The real productivity exchange rate is graphed with the real exchange rate in graph 11. This illustrates the divergence of productivity and prices after 1975.

After 1979, the benefits from the Carter/Torrijos Canal Treaty advanced Panamanian productivity. Downward pressure on wages subsided, creating a convergence of the productivity and real exchange rates. After 1982, however, the productivity exchange rate began to deviate from the real exchange rate at a more rapid pace. The increase in both rates suggests a move towards relative devaluation. The emergence of a gap between the productivity rate and the real rate suggests that the

Graph 11

Real vs Productivity  
Exchange Rates



exchange rate has failed to devalue enough to compensate for real differences in productivity. Thus, the balboa exchange rate based on real productivity is overvalued when compared to relative prices. Hence, the emergence of a productivity gap.

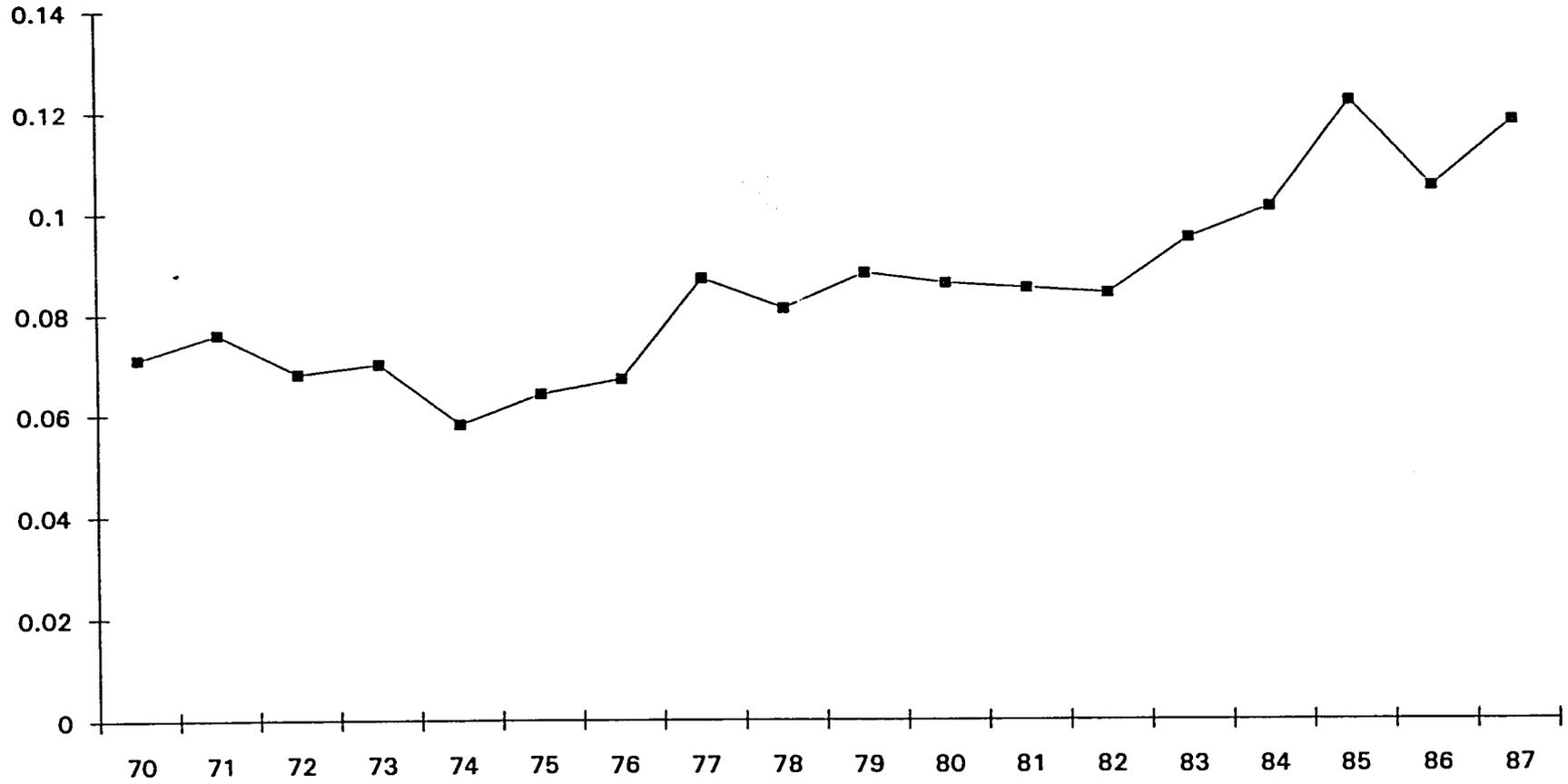
The existence of a productivity gap and overvalued exchange rate has led to the generation of unemployment. As previously described, the productivity gap and overvalued exchange rate could be eliminated with a lowering of domestic prices. This would effectively increase both local and foreign demand for domestically produced products, while lowering the demand for foreign goods. With price rigidity, the only way to lower costs is to lower output. Thus, a reduction in output ultimately led to greater unemployment or under-unemployment.<sup>22</sup>

In Panama, an increase in the productivity gap correlates well with a reduction in output and an increase in unemployment. Changes in unemployment (graph 12) correspond closely with the widening and narrowing of the gaps observed in the real rate in contrast to the productivity exchange rate graph. Between 1970 and 1974, a close correspondence between the two exchange rates led to a marked reduction in unemployment. However, an increase in the exchange rate gap created an increase in unemployment in both the mid-1970s and mid-1980s. Officially estimated unemployment increased from a low of 5.8 percent in 1974 to 11.8 percent in 1987. This increase in unemployment is commensurate with larger overall gaps observed in the productivity in contrast to the real exchange rate.

Although the unemployment statistics reflect intuition with respect to exchange rate changes, it is important to note that the official unemployment figures beginning in the mid-1970s are an underestimate. This reflects a shrinkage in the labor participation force, due to both greater schooling for adolescents and a lowering of the minimum retirement age for social security benefits to 55 years.<sup>23</sup> These figures also fail to reflect underemployment, which is currently estimated as high as 50 percent of the

Graph 12

Official Unemployment Estimates



participating labor force. Therefore, the impact of the productivity gap is even more significant than reflected in the official estimates of unemployment.

## CHAPTER 5

### CONCLUSION - What can developing countries learn from the Panamanian case?

The use of the dollar as the unit of exchange in Panama has been beneficial for the development of the economy. The dollarization of the Panamanian economy has created exchange rate and price stability. This has instilled private sector confidence in the authority's ability to manage monetary policy and has promoted the expansion of an international banking center. The presence of price stability in Panama is important especially in comparison to other heavily indebted South American countries, many of which have suffered from endless hyperinflation.

The Panamanian monetary system also restricts the authorities' ability to influence economic development through manipulating the money supply or changing exchange rate policy. A recent contraction in the balance of payments and monetary prospects in Panama has highlighted the ill-effects of monetary and exchange rate rigidity. The decline in the availability of imported money from the balance of payments should be met with a commensurate decline in relative prices of non-tradables vis-a-vis tradables or a depreciation of the exchange rate. The inability of the authorities to effect the price of tradables or devalue the exchange rate, however, has placed the burden on either reducing domestic prices or increasing productivity. The failure to lower wages or advance productivity has led to a decline in output and an increase in unemployment.

Unemployment is Panama's most significant economic problem. The limit on employment generation is clearly the most profound adverse consequence of the maintenance of the fixed exchange rate regime in Panama. The most substantial challenge for government officials is addressing the problem of adjustment of labor costs i.e. workers will not easily accept lower wages. However, a reduction in unemployment and underemployment can be achieved through a comprehensive reform

program addressing wages, the rights of employees, and most importantly high indirect labor costs. If a change in labor policies is adopted, the stability of the Panamanian monetary system will heighten private sector confidence, bolstering economic development.

The maintenance of monetary stability since 1904 is unprecedented in comparison to many developing countries. This clearly compensates for the ill-effects of monetary and exchange rate rigidity. Therefore, the monetary system has served the country well and would contribute to a rapid economic expansion once wage and employment reform is undertaken.

The Panamanian experience with a fixed exchange rate regime is transferable to other highly indebted nations searching for a solution to hyperinflation. The abdication of monetary policy creates an environment of price stability. This helps to establish international credibility in domestic policies, which promotes foreign investment. Ultimately, the burden of adjustment shifts to potential economic output. This suggests that a fixed exchange rate regime is not a substitute for economic reform, but a mechanism to provide price stability in tandem with sound economic management.

## Appendix 1

### Characteristics of Current and Capital Flows

Panama's balance of payments are unique, owing to both the domestic dependence on the US dollar as the unit of exchange and the Republic's major export revenue base. The predominant source of foreign exchange is from services offered by the Panamanian economy that exploit its geographic location. Thus, the services account generally offsets a large trade imbalance. This limits the Republic's ability to influence trade patterns and heightens the impact of external events on the balance of payments cash flow and domestic liquidity.

Adjustment in Panama's external accounts is accomplished through changes in imports. Export revenues and net capital flows are both exogenously determined abroad and cannot be influenced by changes in exchange rate policy. Therefore, Panama's current and capital flows can most accurately be measured within the context of the country's ability to import goods from abroad.<sup>24</sup>

Imports for a less developed economy such as Panama are critical for future development. Imports first provide more advanced technology from abroad such as capital goods that either could not be produced domestically or could be produced only at a prohibitively expensive cost. Second, the importation of goods from abroad also leads to the need to import services, which demonstrates managerial skills and entrepreneurship. Third, it provides for the establishment of a relationship with a more developed country. This relationship would provide both capital to facilitate the transaction and the intangible benefit of establishing connections to facilitate future export and import opportunities for the developing country. Fourth, the importation of goods from abroad increases competition in local markets and is likely to heighten domestic productivity.<sup>25</sup>

The capacity to import in Panama is influenced by other balance of payments flows, namely, exports of goods and services and public and private capital flows. For example, subsequent to the finalization of the Carter/Torrijos Panama Canal Treaty, the Panamanian government received a portion of the fees and tolls associated with the Canal, in addition to the revenue received for leasing of the Canal Zone.<sup>26</sup> The benefits escalated from a transfer of \$2.3 million in 1978 from the Canal Zone to the Republic to a \$293 million payment by 1980 (see Table 8). This advance in revenues increased the availability of foreign exchange in the economy and heightened the country's capacity to import. These relationships will be explored later in greater detail. However, at this point it is worthwhile to discuss the determinants of balance of payments flows.

### **1.1. Current Flows**

As previously illustrated, foreign exchange inflows are critical for the supply of money in Panama and the ability to import. It is within this context that two alarming trends are evident. First, credit items in the current account are increasingly service orienting. Second, exports of goods and services have fallen in nominal terms in the 1980s. This has reduced Panama's capacity to import as well as reducing growth in real GDP per capita.

Panama has become increasingly dependent on exports of services for foreign exchange earnings. An analysis of the composition of exports of goods and services is presented in table 9. In 1970, services represented 53 percent of total exports. By the mid-1980s, the portion of services averaged 75 percent. The increasing importance of services in the determination of the Republic's capacity to import is marked by an increasing value of services and a decline in the value of goods exports.

A more alarming trend is the fact that exports on a nominal basis peaked in 1982 at \$1.5 billion, leveling off to approximately \$1.3 billion between 1985 and 1987.

TABLE 8

BALANCE OF PAYMENTS (\$ MN)	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>CURRENT ACCOUNT</b>	-64.2	-73.4	-98.5	-111.1	-224.4	-168.7	-176.2	-155.4	-207.7
Merchandise Exports (fob)	130.3	137.8	146.1	161.9	250.9	330.9	269.0	288.5	304.4
% change	-1.3%	5.8%	6.0%	10.8%	55.0%	31.9%	-18.7%	7.2%	5.5%
Merchandise Imports (fob)	330.1	363.0	408.7	458.1	760.6	823.1	783.3	790.4	862.1
% change	15.8%	10.0%	12.6%	12.1%	66.0%	8.2%	-4.8%	0.9%	9.1%
<b>Trade Balance</b>	-199.8	-225.2	-262.5	-296.2	-509.8	-492.2	-514.3	-501.9	-557.8
<b>Non-Factor Services</b>	77.3	89.7	101.8	127.6	229.8	221.3	248.8	267.0	254.9
<b>Credits</b>	145.8	168.9	187.0	222.3	350.3	353.6	377.3	413.5	419.5
Oil Shipments & Pipeline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canal Tolls & Fees	1.9	1.9	2.0	2.1	2.3	2.3	2.3	2.3	2.3
Other (77-79)	114.2	129.7	143.9	170.8	284.3	288.6	295.0	309.7	306.4
Colon Free Zone (net)	29.7	37.3	41.1	49.4	63.7	62.7	80.0	101.5	110.9
Credits	n/a								
Debits	n/a								
<b>Debits</b>	68.5	79.2	85.1	94.8	120.5	132.2	128.5	146.5	164.6
<b>Factor Services</b>	57.1	58.1	57.5	61.8	59.2	107.1	93.3	82.0	97.3
<b>Credits</b>	121.6	143.5	162.4	219.7	458.6	538.3	584.4	686.1	1019.9
<b>Debits</b>	64.5	85.5	104.9	158.0	399.4	431.2	491.1	604.2	922.6
o/w Interest Deposit & Banks	n/a	442.8	705.9						
o/w Interest Int'l Lic Banks	n/a								
o/w Other	n/a	0.7	0.4						
<b>Transfers</b>	1.2	4.0	4.7	-4.2	-3.6	-4.9	-3.9	-2.5	-2.1
<b>BALANCE OF PAYMENTS (\$MN)</b>	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>CURRENT ACCOUNT</b>	-311.0	-310.9	55.7	-50.9	415.6	218.2	286.4	366.4	263.8
Merchandise Exports (fob)	355.6	321.6	326.4	388.6	338.3	290.2	330.8	349.1	369.8
% change	16.8%	-9.6%	1.5%	19.1%	-12.9%	-14.2%	14.0%	5.6%	5.9%
Merchandise Imports (fob)	1085.8	1205.4	1322.4	1344.3	1186.5	1175.2	1147.9	997.5	1077.3
% change	25.9%	11.0%	9.7%	1.7%	-11.7%	-1.0%	-2.3%	-13.1%	8.0%
<b>Trade Balance</b>	-730.2	-883.8	-996.0	-955.7	-848.1	-885.0	-817.1	-648.3	-707.5
<b>Non-Factor Services</b>	329.1	354.0	413.2	569.7	818.6	649.2	683.8	663.4	633.7
<b>Credits</b>	537.0	890.1	1006.1	1128.8	1091.9	939.1	975.2	984.3	953.1
Oil Shipments & Pipeline	0.0	32.5	36.9	88.0	258.4	211.6	228.1	183.8	165.5
Canal Tolls & Fees	14.9	293.4	303.1	325.6	287.8	209.2	300.8	322.7	329.9
Other (77-79)	342.3	407.8	445.7	392.9	342.8	376.8	385.8	364.3	345.9
Colon Free Zone (net)	179.8	156.4	220.4	322.4	202.9	61.6	60.4	113.4	111.9
Credits	n/a	1945.4	2213.7	2022.4	1337.2	1395.5	1643.5	2036.6	2150.9
Debits	n/a	1788.9	1993.3	1700.0	1134.3	1333.3	1583.1	1923.1	2039.1
<b>Debits</b>	207.9	536.1	592.9	559.2	273.2	289.9	291.4	320.9	319.4
<b>Factor Services</b>	77.9	204.5	607.3	289.6	400.9	341.7	311.0	255.6	255.6
<b>Credits</b>	1691.2	4735.4	6595.9	6189.4	4714.0	3974.3	3418.3	2899.3	2572.8
<b>Debits</b>	1313.3	4530.9	5988.6	5899.8	4313.1	3632.6	3107.3	2643.7	2317.1
o/w Interest Deposit & Banks	1313.6	2432.6	3168.7	3361.9	2402.1	2144.6	1684.7	1486.7	1160.4
o/w Interest Int'l Lic Banks	n/a	1665.4	2365.1	2000.6	1394.2	997.3	836.9	615.2	688.3
o/w Other	0.6	6.0	12.5	73.3	69.4	63.0	39.7	38.8	24.6
<b>Transfers</b>	12.3	14.4	31.1	45.6	44.3	112.2	108.7	95.6	81.9

Source:  
Balance of Payment Statistics (Various)  
International Monetary Fund

TABLE 9

BALANCE OF PAYMENTS (MN \$)	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>COMPOSITION OF GOODS &amp; SERVICES EXPORTS</b>	<b>276.1</b>	<b>306.7</b>	<b>333.1</b>	<b>384.2</b>	<b>601.2</b>	<b>684.4</b>	<b>646.3</b>	<b>702.0</b>	<b>723.9</b>
Merchandise	130.3	137.8	146.1	161.9	250.9	330.9	289.0	288.5	304.4
Bananas	61.8	62.9	64.7	63.2	49.6	59.5	61.7	66.5	71.9
Refined Petroleum	21.5	25.1	21.5	24.4	86.3	128.3	68.3	68.3	60.1
Shrimp	10.2	12.0	14.6	16.7	15.2	19.0	33.5	30.0	30.3
Sugar	5.0	6.3	5.9	8.8	27.5	48.3	26.4	21.9	20.4
Other	31.8	31.5	39.4	48.8	72.3	75.8	81.1	101.8	121.7
Services	145.8	168.9	187.0	222.3	350.3	353.6	377.3	413.5	419.5
Oil Pipeline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Panama Canal Tolls & Fees	1.9	1.9	2.0	2.1	2.3	2.3	2.3	2.3	2.3
Colon Free Zone	29.7	37.3	41.1	49.4	63.7	62.7	80.0	101.5	110.9
Other	114.2	129.7	143.9	170.8	284.3	288.6	295.0	309.7	306.4
<b>% OF TOTAL EXPORTS</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Merchandise	47%	45%	44%	42%	42%	48%	42%	41%	42%
Bananas	22%	21%	19%	16%	8%	9%	10%	9%	10%
Refined Petroleum	8%	8%	6%	6%	14%	19%	10%	10%	8%
Shrimp	4%	4%	4%	4%	3%	3%	5%	4%	4%
Sugar	2%	2%	2%	2%	5%	7%	4%	3%	3%
Other	12%	10%	12%	13%	12%	11%	13%	14%	17%
Services	53%	55%	56%	58%	58%	52%	58%	59%	58%
Oil Pipeline	0%	0%	0%	0%	0%	0%	0%	0%	0%
Panama Canal Tolls & Fees	1%	1%	1%	1%	0%	0%	0%	0%	0%
Colon Free Zone	11%	12%	12%	13%	11%	9%	12%	14%	15%
Other	41%	42%	43%	44%	47%	42%	46%	44%	42%
<b>BALANCE OF PAYMENTS (\$ MN)</b>	<b>1979</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>
<b>COMPOSITION OF GOODS &amp; SERVICES EXPORTS</b>	<b>892.5</b>	<b>1211.7</b>	<b>1332.5</b>	<b>1517.4</b>	<b>1430.2</b>	<b>1229.3</b>	<b>1306.0</b>	<b>1333.5</b>	<b>1323.0</b>
Merchandise	355.6	321.6	326.4	388.6	338.3	290.2	330.8	349.1	369.8
Bananas	65.7	61.6	69.2	65.9	75.0	74.6	78.1	69.5	85.7
Refined Petroleum	72.4	79.6	58.4	70.1	35.9	5.3	20.0	0.0	0.0
Shrimp	45.0	43.6	42.7	52.9	51.5	49.3	59.8	68.0	65.5
Sugar	26.2	65.8	52.6	23.7	41.3	33.3	27.3	20.1	17.0
Other	146.3	71.0	103.5	176.0	134.6	127.7	145.6	191.5	201.6
Services	537.0	890.1	1006.1	1128.8	1091.9	939.1	975.2	984.3	953.1
Oil Pipeline	0.0	32.5	36.9	88.0	258.4	211.6	228.1	183.8	165.5
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Other	342.3	407.8	445.7	392.9	342.8	376.8	385.8	364.3	345.9
<b>% OF TOTAL EXPORTS</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
Merchandise	40%	27%	24%	26%	24%	24%	25%	26%	28%
Bananas	7%	5%	5%	4%	5%	6%	6%	5%	6%
Refined Petroleum	8%	7%	4%	5%	3%	0%	2%	0%	0%
Shrimp	5%	4%	3%	3%	4%	4%	5%	5%	5%
Sugar	3%	5%	4%	2%	3%	3%	2%	2%	1%
Other	16%	6%	8%	12%	9%	10%	11%	14%	15%
Services	60%	73%	76%	74%	76%	76%	75%	74%	72%
Oil Pipeline	0%	3%	3%	6%	18%	17%	17%	14%	13%
Panama Canal Tolls & Fees	2%	24%	23%	21%	20%	24%	23%	24%	25%
Colon Free Zone	20%	13%	17%	21%	14%	5%	5%	9%	8%
Other	38%	34%	33%	26%	24%	31%	30%	27%	26%

Source: Balance of Payment Statistics (Various) / International Monetary Fund

This radically reduces the country's import purchasing power and is a major factor that limited real growth in the mid-1980s. The graph of real merchandise imports (graph 13) illustrates the decline in import capacity after 1982. This also corresponds with a drop in real GDP growth shown in graph 14. Conversely, periods of relatively high growth, on balance the 1970s, reflect significant increases in imports. It is important to note that in 1976 and 1977, GDP growth was stymied owing to uncertainties regarding the negotiations on the Panama Canal Treaty.

#### **1.1.1. Merchandise exports**

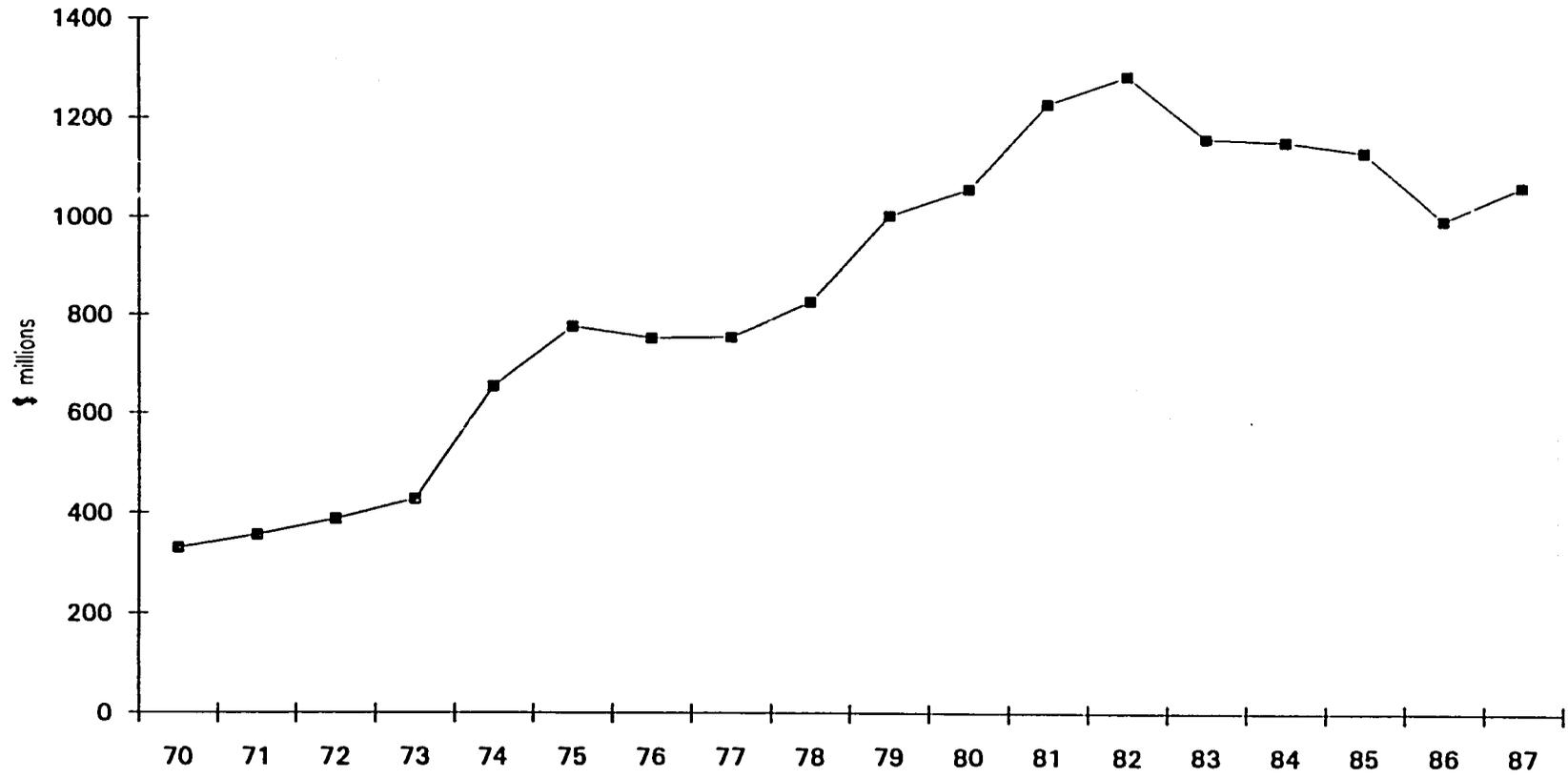
Merchandise exports are predominantly basic commodities such as bananas, shrimp, and sugar. Revenues earned from these commodities are subject to the vagaries of price swings in international markets. This further subjects the Republic to external shocks emanating from abroad.<sup>27</sup> Adverse changes in commodity prices have significantly effected Panama's balance of payments and domestic growth performance. Strong commodity prices enhanced economic development in the early and late 1970s. However, significant price declines in the early to mid-1980s exacerbated the deterioration in economic performance.

#### **1.1.2. Service exports**

Exports of services exploit Panama's strategic geographic importance in the role of a conduit of international trade and banking. The services are the Panama Canal, Transcontinental Oil Pipeline, the Colon Free Zone, and international banking. The revenues derived from these services are largely determined by forces out of the control of the Panamanian authorities, such as shifts in international trade and law. Between 1970 and 1982, the increase in capacity and utilization of the service economy was a primary contributor to growth. However, since 1983 many of the revenues derived from these sources have fallen precipitously. This is coincident with the decline in real income growth in Panama and the Republic's capacity to import goods. The declining

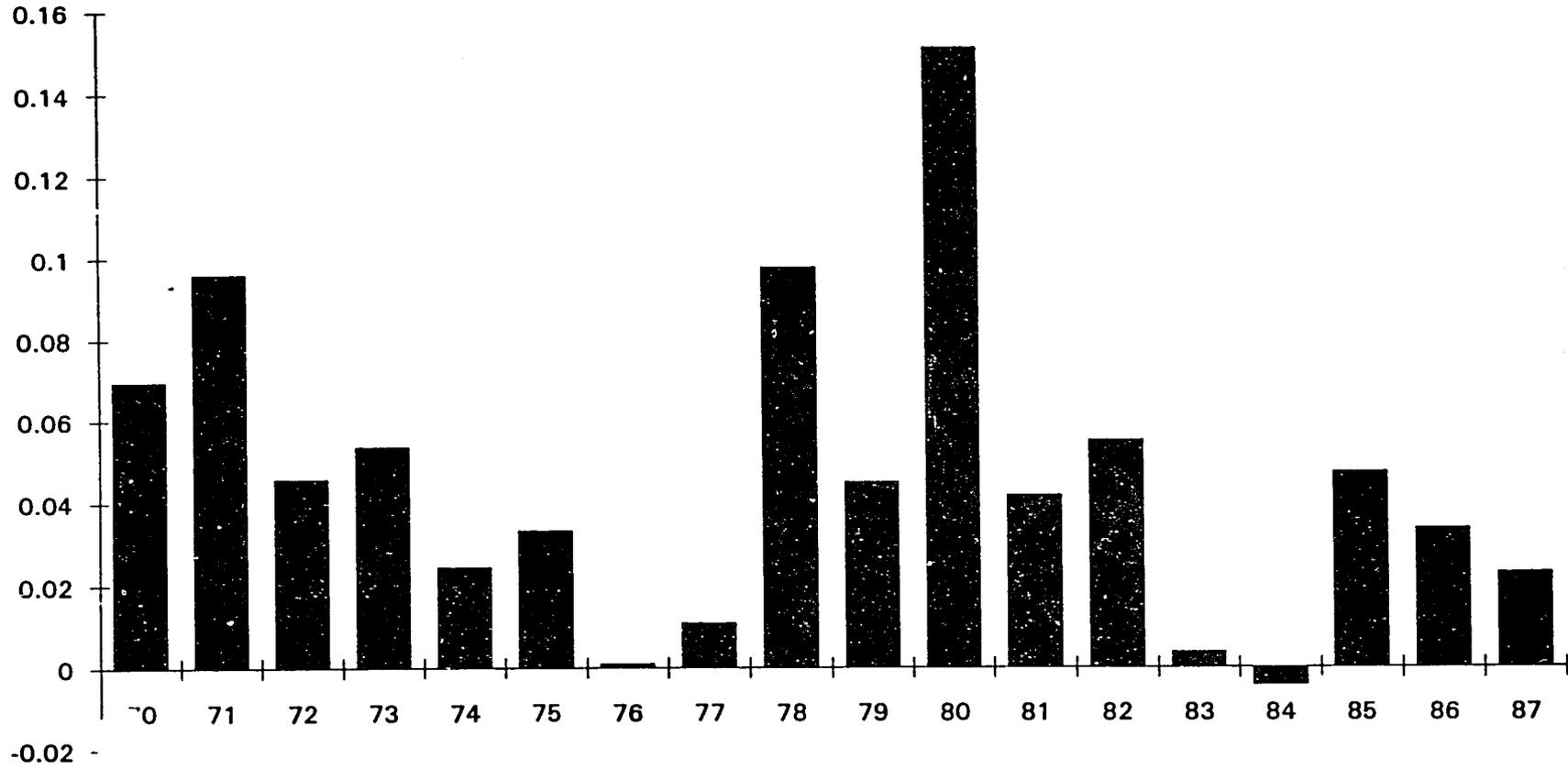
Graph 13

Real Merchandise Imports  
BOP basis



Graph 14

Real GDP (% change)



trend in these service revenues should be of substantial concern to the authorities involved in economic policy making. The following section will briefly illustrate the determinants of the downward trends within each of the industries. Developments in international banking will be addressed later.

The oil pipeline, probable the government's most fruitful investment, became operational in 1980. The pipeline was designed primarily to transport Alaskan North Slope crude oil from the Pacific Northwest to the US eastern seaboard. In the early 1980s, the pipeline produced a continually increasing stream of earnings for the Republic consistent with strong demand for oil on the eastern seaboard. However, with an increase in consumption of Alaskan oil on the West Coast, the oil throughput and nominal foreign exchange earnings declined. Revenues from the pipeline peaked in 1983 at \$258 million and fell to \$166 million by 1987.<sup>28</sup>

The Colon Free Zone is a reexport center that is used for processing, assembling, and redistributing merchandise throughout South and Central America. The Zone, established in 1948, exhibited rapid growth in the 1960s and 1970s. The advantages for international trading companies in using the Panamanian facilities are the Republic's strategic location and the fact that the importation of goods intended for reexport takes place duty free.<sup>29</sup>

The net contribution of the Colon Free Zone to the Panamanian economy is manifold. The Zone has increased the demand for local labor, transmitted business and entrepreneurial skills to residents, and contributed to the balance of payments. The balance of payments effects can be measured by the difference between the exports and the reexports. For example, the volume of credits peaked in 1981 at \$2.2 billion (see table 8). However, the net contribution to the balance of payments was \$0.2 billion. By 1982, net revenues from the Colon Free Zone peaked at \$0.3 billion. After 1982, a fall in revenues was due to a deterioration in the demand for consumer and manufactured goods in Central and South America related to the international debt

crisis, an external event. The net contribution of the Colon Free Zone is illustrated in graph 15. This highlights the rapid increase through the 1970s and the rapid deterioration after 1982.

The export revenues from the Panama Canal, also illustrated in graph 15, demonstrate both the importance of the Canal to export earnings and the significant balance of payments boost from the 1978 Carter/Torrijos Treaty. It is important to realize that the Canal has also contributed to the Panamanian economy indirectly through the existence of the Canal Zone. The military and US presence in the Zone has provided an increased demand for goods and services provided by Panamanians outside the Canal Zone, in addition to Panamanian employment within the Zone. The contributions have also been from the maintenance of US wage laws within the Zone. This includes the US minimum wage, which is significantly higher than the Panamanian minimum wage. The significance of the Carter/Torrijos Treaty is a linkage of profit sharing with the Panamanian government and the move towards complete Panamanian control of the Canal by January 1, 2000.<sup>30</sup>

## **1.2. Capital Flows**

Between 1970 and 1987, the availability of foreign credit in Panama was greatly influenced by events surrounding the International Debt Crisis. Prior to 1982, the official commencement of the Debt Crisis, capital was available to Panama at a seemingly increasing and limitless pace.<sup>31</sup> Capital included flows to both the public and private sectors and of all tenors (short, medium, and long). In 1970, net capital inflows (excluding direct foreign investment) to Panama were \$102.1 million (see table 10). Net capital inflows peaked in 1979, when the same concept reached \$655.4 million. Subsequent to 1982, net capital flows to Panama plummeted to below \$200 million per annum. By 1985, Panama lost capital on a net basis of \$210.2 million.

Graph 15

Foreign Exchange Revenues  
Colon Free Zone & Panama Canal

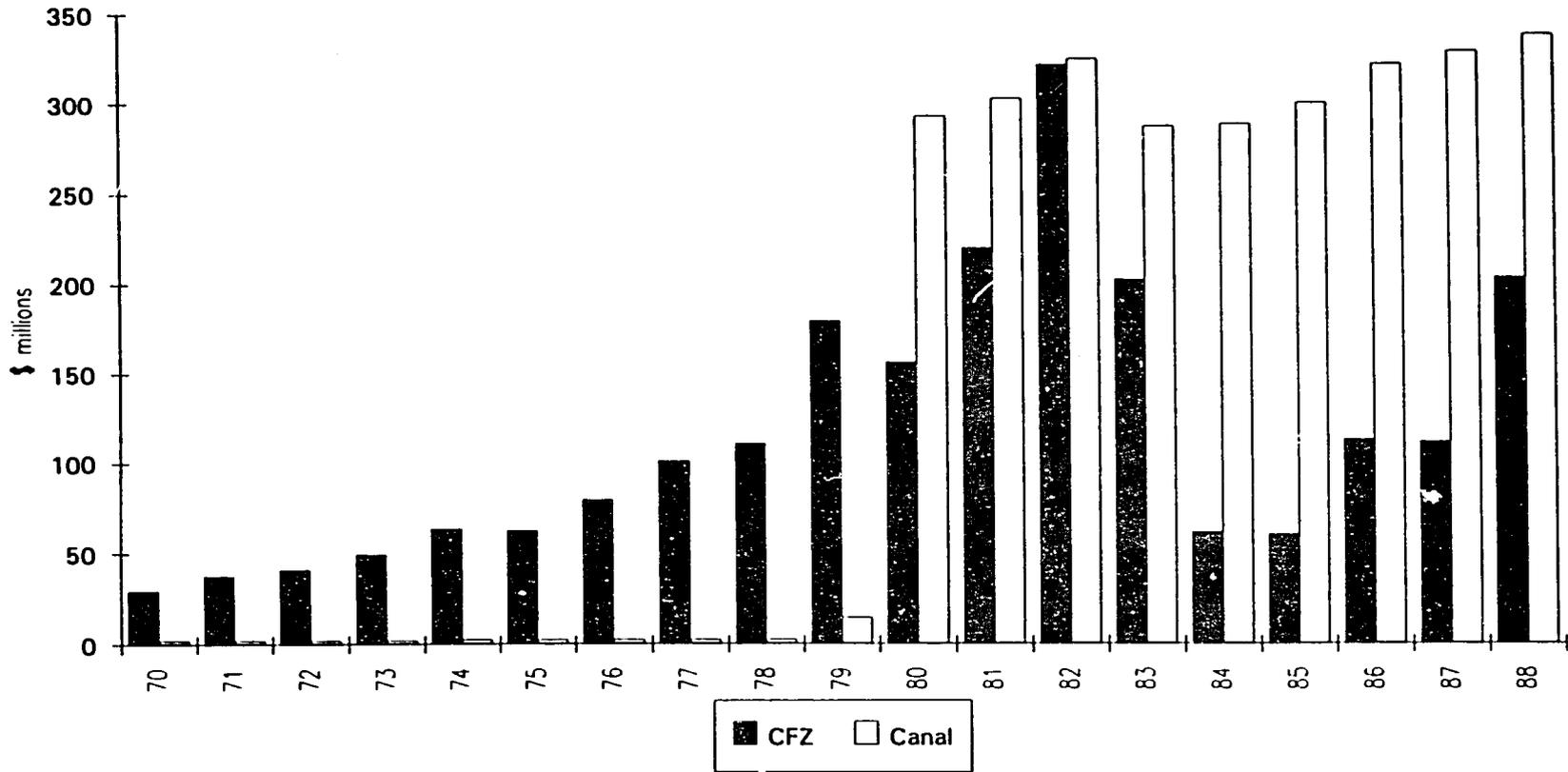


TABLE 10

BALANCE OF PAYMENTS (\$ MN)	1970	1971	1972	1973	1974	1975	1976	1977	1978
<b>CAPITAL ACCOUNT</b>	<b>135.5</b>	<b>103.8</b>	<b>179.6</b>	<b>214.0</b>	<b>336.1</b>	<b>262.8</b>	<b>345.4</b>	<b>218.0</b>	<b>295.6</b>
Direct Foreign Investment	33.4	21.8	13.4	35.6	34.5	7.6	-10.6	10.9	-2.5
Total Public Sector	37.3	30.7	90.4	98.5	92.2	150.1	289.5	294.3	503.1
Short Term Public	0.2	0.9	-0.4	2.6	0.7	-1.8	0.8	3.4	5.1
Long Term Public	37.1	29.8	90.9	95.8	91.5	151.9	288.7	290.9	497.9
Portfolio Investment	37.1	29.8	19.2	-1.2	-20.3	-0.8	-0.8	12.6	70.2
Resident Official Sector	n/a	n/e	21.3	84.4	80.8	66.4	87.5	89.9	341.3
Other Public	n/a	n/e	50.4	12.6	31.0	86.3	206.1	188.4	86.4
Total Private Sector	64.8	51.4	75.8	79.9	209.4	105.0	66.5	-87.2	-205.0
Short Term Private	15.5	16.8	51.7	63.5	222.0	79.7	-378.0	327.7	-161.0
Deposit Money Banks	19.7	23.5	65.8	100.4	256.4	93.3	-376.9	377.3	-162.0
Other Private	-4.2	-6.7	-14.1	-36.8	-34.4	-13.6	-1.0	-49.6	1.0
Long Term Private	49.3	34.6	24.1	16.3	-12.6	25.4	444.5	-414.9	-43.9
Portfolio Investment	7.6	13.4	-0.1	0.1	0.0	1.5	0.3	0.0	0.3
Deposit Money Banks	41.7	21.2	15.0	12.0	-11.2	15.3	444.8	-410.8	-33.4
Other Private	n/a	n/a	9.2	4.2	-1.4	8.6	-0.7	-4.1	-10.8
NET INTERNATIONAL RESERVES	0.4	-0.5	-18.3	2.9	12.3	22.7	-17.0	7.2	-86.3
ERRORS & OMISSIONS	-71.1	-29.9	-62.5	-105.6	-124.0	-117.3	-152.9	-70.1	-1.5
<b>BALANCE OF PAYMENTS (\$ MN)</b>	<b>1979</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>
<b>CAPITAL ACCOUNT</b>	<b>705.2</b>	<b>-340.7</b>	<b>111.0</b>	<b>76.0</b>	<b>137.3</b>	<b>72.0</b>	<b>-151.0</b>	<b>69.0</b>	<b>204.8</b>
Direct Foreign Investment	49.7	-46.6	5.7	2.8	71.6	9.5	59.2	-59.0	-5.8
Total Public Sector	217.7	207.8	103.5	443.3	192.8	143.5	19.8	136.9	3.5
Short Term Public	-3.2	1.7	2.4	4.9	0.3	1.9	-5.4	2.8	1.0
Long Term Public	220.9	206.2	101.2	438.4	192.5	141.6	25.2	134.1	2.5
Portfolio Investment	204.1	16.3	25.4	-9.7	-35.8	-17.6	-22.2	-31.3	-10.3
Resident Official Sector	114.3	215.0	84.3	368.0	161.6	101.7	30.8	123.7	38.7
Other Public	-97.5	-25.1	-8.5	80.2	66.7	57.5	16.7	41.8	-25.9
Total Private Sector	437.7	-502.0	1.8	-370.1	-127.2	-81.1	-230.0	-8.9	207.2
Short Term Private	394.6	378.1	-461.4	-1128.3	-275.3	-189.0	107.1	11.4	269.0
Deposit Money Banks	432.9	-305.1	-87.0	-629.5	-148.8	-83.3	-175.2	-16.0	356.2
Other Private	-38.4	763.2	-374.4	-498.8	-126.5	-105.7	282.4	27.3	-87.3
Long Term Private	43.2	-880.1	463.2	758.2	148.1	107.9	-337.1	-20.3	-61.8
Portfolio Investment	-0.4	-901.7	177.7	361.4	98.5	76.8	-161.2	98.1	-52.2
Deposit Money Banks	42.9	41.5	134.4	256.0	204.2	114.9	-126.8	-100.2	-8.4
Other Private	0.6	-19.9	151.1	140.8	-154.6	-83.7	-49.0	-18.2	-1.2
NET INTERNATIONAL RESERVES	27.1	-11.3	75.5	15.5	11.8	83.6	117.1	-59.6	37.5
ERRORS & OMISSIONS	-421.5	662.7	-241.9	-40.3	-564.4	-373.7	-252.6	-375.8	-506.1

Source:  
Balance of Payment Statistics (Various) / International Monetary Fund

This change in the availability of capital during the 1970s and 1980s has had a substantial impact on liquidity, the achieved growth rate, and most importantly the ability to invest for future growth and prosperity.

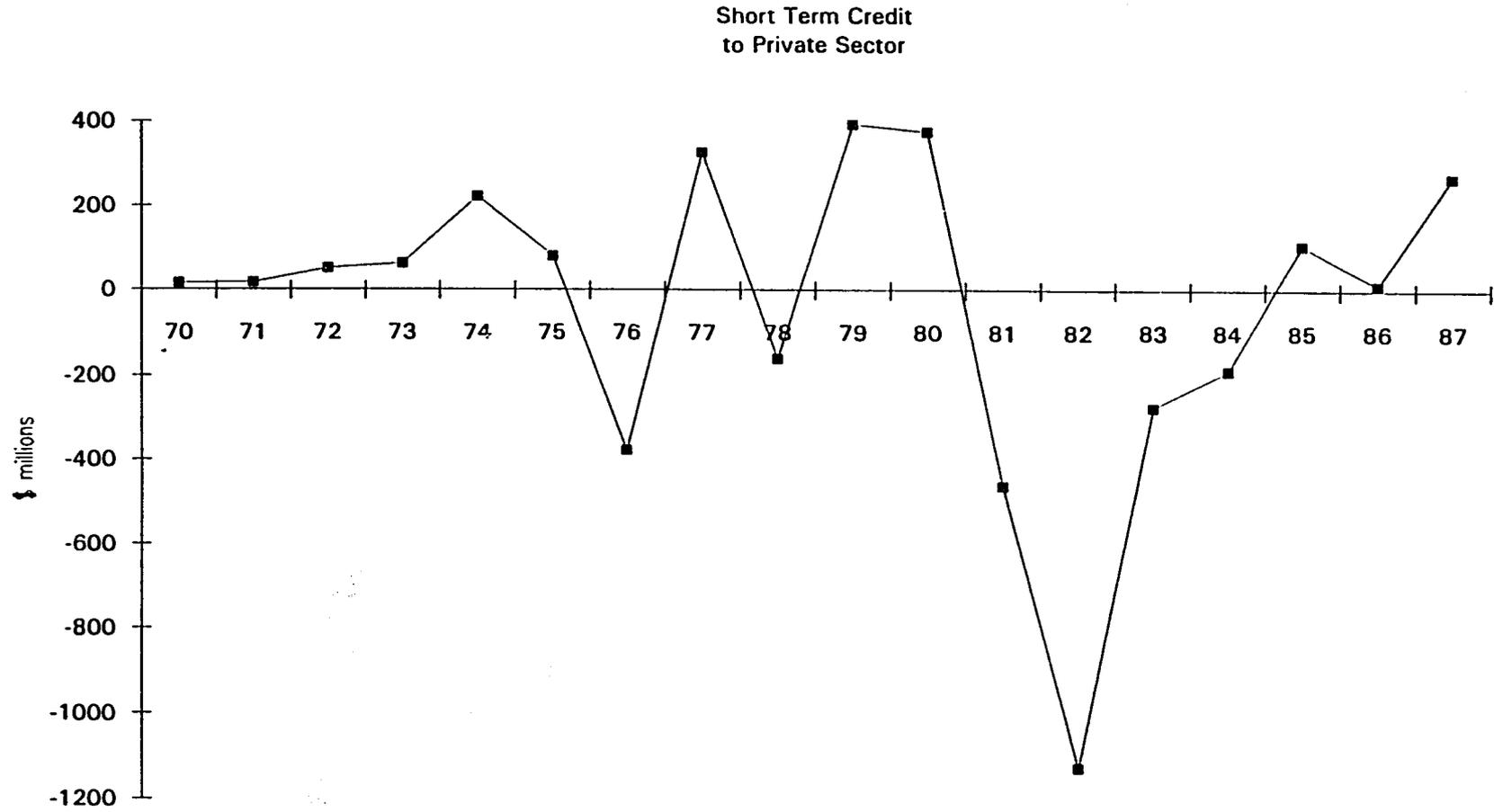
### **1.2.1. Short Term Capital**

Short term capital flows are credits of 1 year and less to finance trade in the private sector and are traditionally sourced from private financial institutions. The short term nature of these credits creates a situation where trade lines can be extended or dropped rapidly. Through the 1970s, short term credits were available in abundance (see graph 16). However, access to short term credit moved in tandem with the confidence of the private sector in the future performance of the economy. This is highlighted by both the volatility of utilized trade credits in the late 1970s and the drop in trade credit after 1982 (see graph 16). The volatility of credit extended to the private sector in the late 1970s is coincident with varying degrees of confidence surrounding the Panama Canal Treaty negotiations. However, the more striking trend is the rapid drop of short term trade after 1982. In 1982, creditors reduced the availability of short term credit by over \$1 billion.

### **1.2.2. Medium and Long Term Capital**

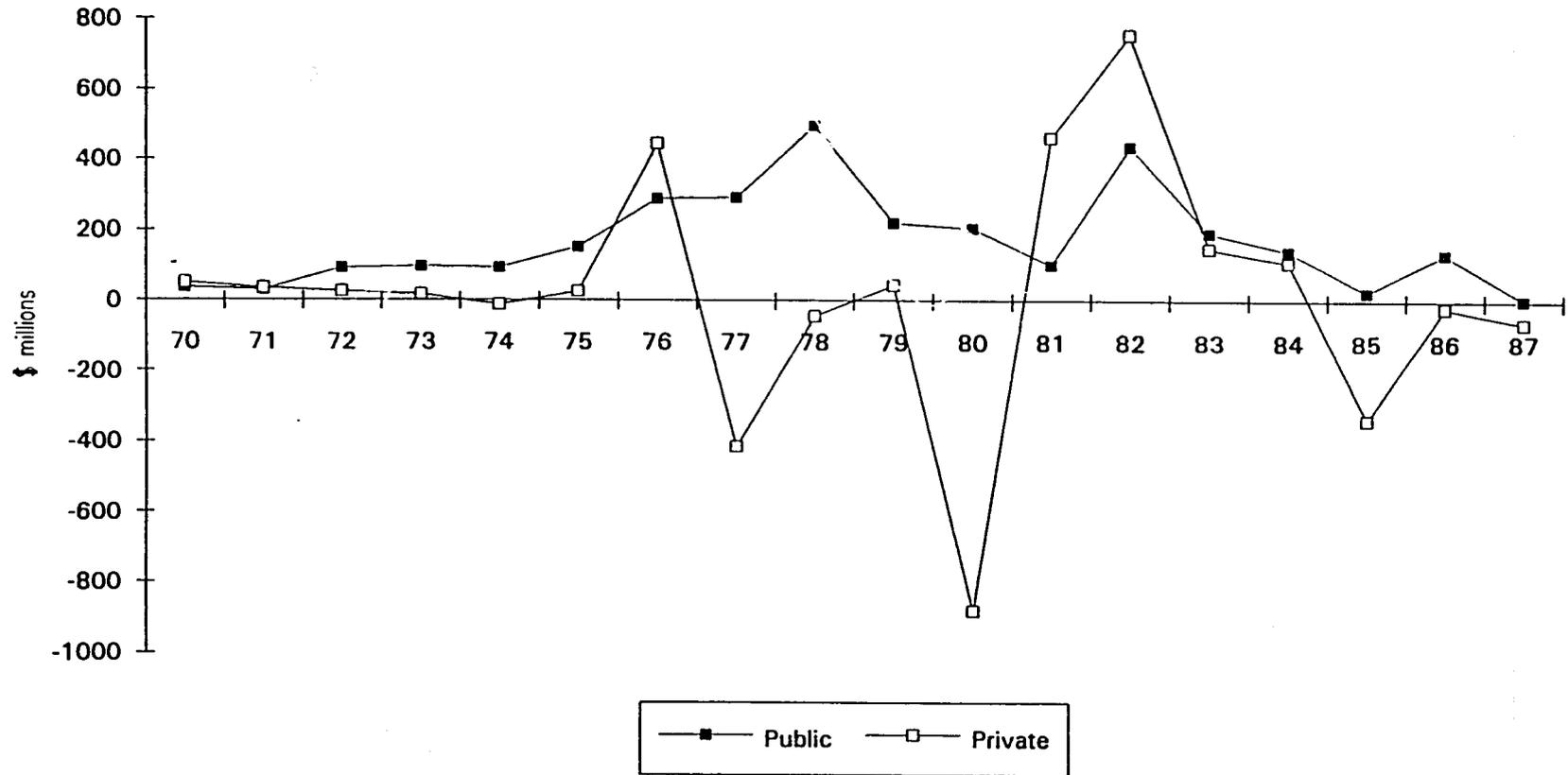
Both the public and private sectors had access to significant amounts of medium and long term credit through the 1970s from both public and private financial institutions (see graph 17). The availability of term debt began to deteriorate in both sectors by the late 1970s. By the early 1980s, net credit to the public and private sectors deteriorated rapidly. However, the public sector's access to credit was less affected owing to increased borrowings from official sources such as the World Bank, IMF, and Inter-American Development Bank. It is also of interest that the borrowing capacity of the private sector capital flows was much more volatile than that of the public sector. This

Graph 16



Graph 17

Public vs Private  
M & L Term Capital Flows (net)



suggests that confidence in the prospects for development had a substantial impact on the private sector's ability to borrow.

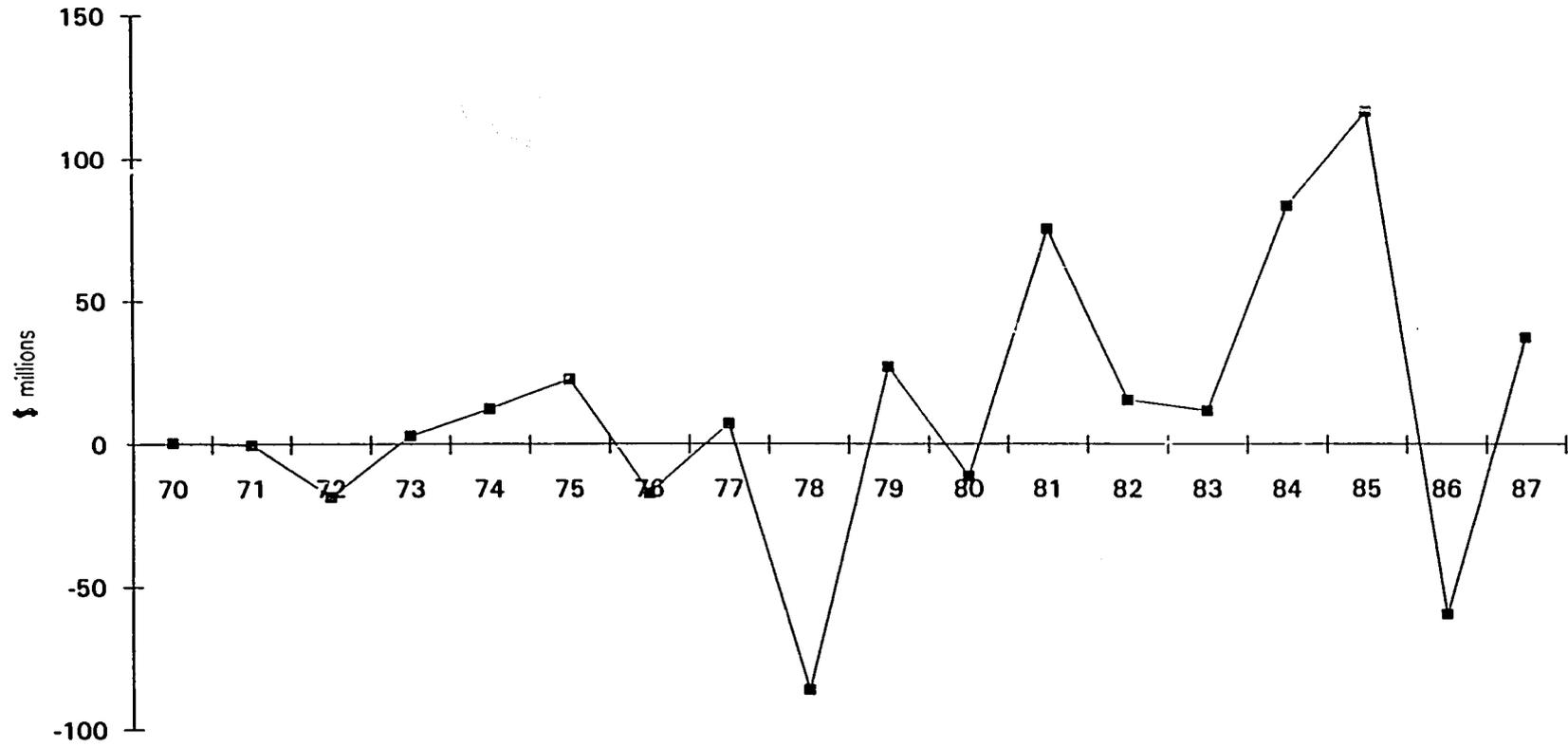
### **1.2.3. Net International Reserves and Others**

Through the 1970s, the advance of net international reserves held by the monetary authorities was basically balanced (see graph 18). An increase in reserves is illustrated using the balance of payments convention of a negative sign.<sup>32</sup> Conversely, through the early 1980s, a shortage of liquidity from external sources was compensated for by a dramatic usage of reserves, draining liquidity of the monetary authorities.

Capital flight was also a factor that reduced the availability of external liquidity in the Panamanian economy. Capital flight was prevalent through the 1970s; however, the expansion of capital flight increased dramatically after 1982 (see graph 19). By 1987, the stock of capital of Panamanian residents outside the country was approximately \$4.8 billion or over 90 percent of GDP. This figure does not include interest earned on capital outside the Republic. Although capital flight is difficult to estimate, a reasonable representation is considered to be the difference between debt creating flows and changes in the stock of external debt.<sup>33</sup> Any unexplained capital outflows are likely to be capital flight.

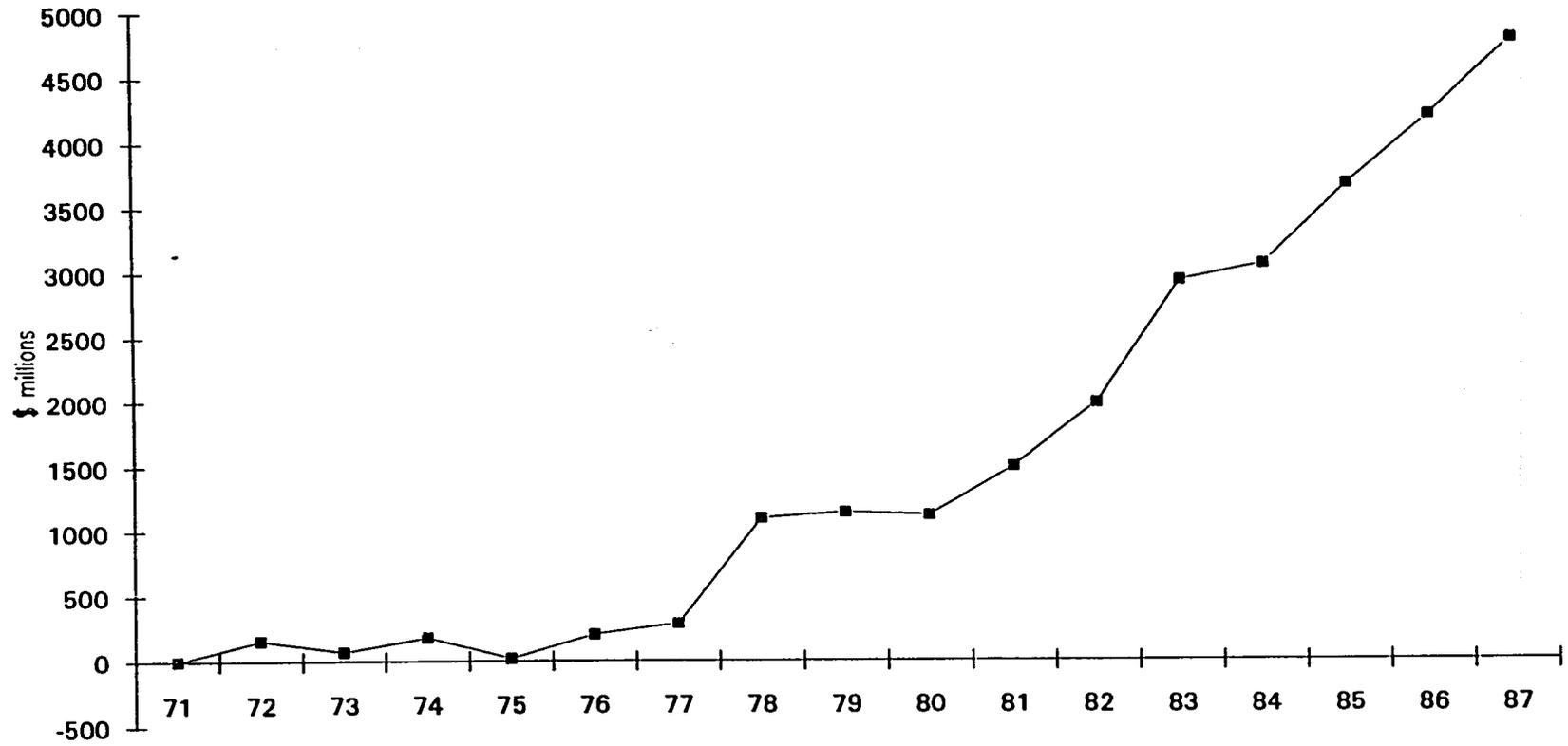
Graph 18

Net International Reserves  
(- = increase in NIR)



Graph 19

Cumulative Capital Flight  
(net of interest earned)



## Appendix 2

### Estimates of Money Demand and Capital Flows

Where:

- RM2 is real Money Supply
- RGDP is real Gross Domestic Product
- NGDP is nominal Gross Domestic Product
- M2 is Money Supply
- L as a prefix is natural log
- XAK is exports of goods and services plus net capital flows

LS // Dependent Variable is RM2

Date: 5-12-1991 / Time: 17:03

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-426.54938	39.549154	-10.785297	0.000
RGDP	0.6507096	0.0245726	26.481098	0.000
R-squared	0.977693	Mean of dependent var		594.5329
Adjusted R-squared	0.976298	S.D. of dependent var		242.3626
S.E. of regression	37.31257	Sum of squared resid		22275.64
Durbin-Watson stat	1.846817	F-statistic		701.2486
Log likelihood	-89.62879			

LS // Dependent Variable is LRM2

Date: 5-12-1991 / Time: 17:03

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-6.7232181	0.4140209	-16.238838	0.000
LRGDP	1.7768995	0.564415	31.482152	0.000
R-squared	0.984113	Mean of dependent var		6.304540
Adjusted R-squared	0.983120	S.D. of dependent var		0.427265
S.E. of regression	0.055511	Sum of squared resid		0.049304
Durbin-Watson stat	1.863781	F-statistic		991.1259
Log likelihood	27.56024			

Appendix 2, cont'd

LS // Dependent Variable is LRGDP

Date: 5-12-1991 / Time: 17:03

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	3.8400466	0.1111504	34.548200	0.000
LRM2	0.5538373	0.0175921	31.482152	0.000
R-squared	0.984113	Mean of dependent var		7.331736
Adjusted R-squared	0.983120	S.D. of dependent var		0.238538
S.E. of regression	0.030991	Sum of squared resid		0.015367
Durbin-Watson stat	1.854467	F-statistic		991.1259
Log likelihood	38.05203			

LS // Dependent Variable is LM2

Date: 5-12-1991 / Time: 17:03

SMPL range: 1971 - 1987

Number of observations: 17

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.4837391	0.1786256	2.7081177	0.017
LXAK	0.0939619	0.0489373	1.9200452	0.075
LM2(-1)	0.8389893	0.0609075	13.774813	0.000
R-squared	0.989314	Mean of dependent var		6.881098
Adjusted R-squared	0.987787	S.D. of dependent var		0.678040
S.E. of regression	0.074931	Sum of squared resid		0.078605
Durbin-Watson stat	1.630980	F-statistic		648.0522
Log likelihood	21.57854			

Appendix 2, cont'd

LS // Dependent Variable is LM2

Date: 5-12-1991 / Time: 17:03

SMPL range: 1972 - 1987

Number of observations: 16

Convergence achieved after 3 iterations

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.5347184	0.2792664	1.9147254	0.080
LXAK	0.1039665	0.0604448	1.7200257	0.111
LM2 (-1)	0.8200973	0.0756273	10.843935	0.000
AR (1)	0.2022968	0.2919958	0.6928075	0.502
R-squared	0.987197	Mean of dependent var	6.954224	
Adjusted R-squared	0.983996	S.D. of dependent var	0.627233	
S. E. of regression	0.079349	Sum of squared resid	0.075555	
Durbin-Watson stat	1.749708	F-statistic	308.4267	
Log likelihood	20.14088			

### Appendix 3

#### Import Propensity and Elasticities

Where:

MNIAR are real imports (NIA basis)

RGDP is real GDP

L as a prefix is natural log

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	254.15090	35.702867	7.1185013	0.000
RGDP	0.2013693	0.0221828	9.0777073	0.000
R-squared	0.837406	Mean of dependent var		570.1362
Adjusted R-squared	0.827244	S.D. of dependent var		81.04097
S.E. of regression	33.68380	Sum of squared resid		18153.57
Durbin-Watson stat	1.218859	F-statistic		82.40477
Log likelihood	-87.78715			

LS // Dependent Variable is LMNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	2.1725472	0.4113622	5.2813490	0.000
LRGDP	0.5678707	0.560790	10.126256	0.000
R-squared	0.865026	Mean of dependent var		6.336025
Adjusted R-squared	0.856590	S.D. of dependent var		0.145644
S.E. of regression	0.055155	Sum of squared resid		0.048673
Durbin-Watson stat	1.331123	F-statistic		102.5411
Log likelihood	27.67620			

Appendix 3, cont'd

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1970 - 1982

Number of observations: 13

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	158.51152	36.019704	4.4006892	0.001
RGDP	0.2753609	0.0252824	10.891394	0.000
R-squared	0.915138	Mean of dependent var		543.8769
Adjusted R-squared	0.907423	S.D. of dependent var		79.92737
S.E. of regression	24.31902	Sum of squared resid		6505.560
Durbin-Watson stat	1.613021	F-statistic		118.6225
Log likelihood	-58.84671			

LS // Dependent Variable is LMNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1970 - 1982

Number of observations: 13

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	1.0993473	0.4945308	2.2230105	0.048
LRGDP	0.7181381	0.0684104	10.497493	0.000
R-squared	0.909239	Mean of dependent var		6.288995
Adjusted R-squared	0.900988	S.D. of dependent var		0.144413
S.E. of regression	0.045441	Sum of squared resid		0.022714
Durbin-Watson stat	1.586728	F-statistic		110.1974
Log likelihood	22.82701			

Appendix 3, cont'd

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1983 - 1987

Number of observations: 5

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	577.92187	332.14420	1.7399728	0.180
RGDP	0.0300880	0.1650805	0.1822628	0.867
R-squared	0.010952	Mean of dependent var		638.4102
Adjusted R-squared	-0.318731	S.D. of dependent var		26.06926
S.E. of regression	29.93690	Sum of squared resid		2688.654
Durbin-Watson stat	1.487804	F-statistic		0.033220
Log likelihood	-22.81309			

LS // Dependent Variable is LMNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1983 - 1987

Number of observations: 5

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	5.6207071	4.0015000	1.4046500	0.255
LRGDP	0.1101337	0.5261412	0.2093235	0.848
R-squared	0.014395	Mean of dependent var		6.458303
Adjusted R-squared	-0.314140	S.D. of dependent var		0.041329
S.E. of regression	0.047378	Sum of squared resid		0.006734
Durbin-Watson stat	1.500439	F-statistic		0.043816
Log likelihood	9.430409			

Appendix 3, cont'd

LS // Dependent Variable is LMNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1971 - 1987

Number of observations: 17

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	2.3098428	0.6466590	3.5719640	0.003
LRGDP	0.4983304	0.1665151	2.9927041	0.010
LMNIAR (-1)	0.0596830	0.2509432	0.2378347	0.815
R-squared	0.839162	Mean of dependent var		6.353088
Adjusted R-squared	0.816185	S.D. of dependent var		0.130268
S.E. of regression	0.055850	Sum of squared resid		0.043670
Durbin-Watson stat	1.522437	F-statistic		36.52206
Log likelihood	26.57468			

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1971 - 1987

Number of observations: 17

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	247.54628	71.984735	3.4388718	0.004
RGDP	0.1646545	0.0638044	2.5806132	0.022
MNIAR (-1)	0.1192228	0.2729153	0.4368492	0.669
R-squared	0.816856	Mean of dependent var		578.8265
Adjusted R-squared	0.790692	S.D. of dependent var		74.38919
S.E. of regression	34.03316	Sum of squared resid		16215.58
Durbin-Watson stat	1.481252	F-statistic		31.22126
Log likelihood	-82.43633			

Appendix 3, cont'd

LS // Dependent Variable is LMNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1972 - 1987

Number of observations: 16

Convergence achieved after 6 iterations

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	3.0551154	1.7787961	1.7175186	0.112
LRGDP	0.6188620	0.2490176	2.4852139	0.029
LMNIAR (-1)	-0.1976741	0.5066477	0.3901608	0.703
AR (1)	0.3438530	0.5449915	0.6309327	0.540
R-squared	0.823633	Mean of dependent var		6.365971
Adjusted R-squared	0.779541	S.D. of dependent var		0.122848
S.E. of regression	0.057681	Sum of squared resid		0.039925
Durbin-Watson stat	1.581503	F-statistic		18.67995
Log likelihood	25.24368			

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1972 - 1987

Number of observations: 16

Convergence achieved after 12 iterations

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	431.39883	152.93452	2.8208075	0.015
RGDP	0.2892148	0.0766969	3.7708779	0.003
MNIAR (-1)	-0.5513103	0.3445654	1.6000166	0.136
AR (1)	0.4967892	0.3228699	1.5386669	0.150
R-squared	0.786348	Mean of dependent var		585.7969
Adjusted R-squared	0.732935	S.D. of dependent var		70.86347
S.E. of regression	36.62108	Sum of squared resid		16093.24
Durbin-Watson stat	1.191377	F-statistic		14.72201
Log likelihood	-78.01154			

Appendix 3, cont'd

LS // Dependent Variable is MNIAR

Date: 5-12-1991 / Time: 17:20

SMPL range: 1971 - 1987

Number of observations: 17

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	247.54628	71.984735	3.4388718	0.004
RGDP	0.1646545	0.0638044	2.5806132	0.022
MNIAR (-1)	0.1192228	0.2729153	0.4368492	0.669
R-squared	0.816856	Mean of dependent var		578.8265
Adjusted R-squared	0.790692	S.D. of dependent var		74.38919
S.E. of regression	34.03316	Sum of squared resid		16215.58
Durbin-Watson stat	1.481252	F-statistic		31.22126
Log likelihood	-82.43633			

## Appendix 4

### Estimates of Labor Productivity

Where:

RGDP is real GDP  
 L as a prefix is natural log  
 PA as a second prefix is Panama  
 US as a second prefix is United States

LS // Dependent Variable is LPARGDP

Date: 5-12-1991 / Time: 17:24

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	6.3661335	0.0462053	137.77915	0.000
LPAL	1.6012685	0.0745739	21.472223	0.000
R-squared	0.966461	Mean of dependent var		7.331736
Adjusted R-squared	0.964365	S.D. of dependent var		0.238538
S.E. of regression	0.045029	Sum of squared resid		0.032442
Durbin-Watson stat	0.667443	F-statistic		461.0564
Log likelihood	31.32704			

LS // Dependent Variable is LUSRGDP

Date: 5-12-1991 / Time: 17:24

SMPL range: 1970 - 1987

Number of observations: 18

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	1.5968005	0.6312991	2.5293881	0.022
LUSL	2.4829614	0.1166519	21.285219	0.000
R-squared	0.965889	Mean of dependent var		15.03350
Adjusted R-squared	0.963757	S.D. of dependent var		0.137793
S.E. of regression	0.026232	Sum of squared resid		0.011010
Durbin-Watson stat	0.973388	F-statistic		453.0605
Log likelihood	41.05292			

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