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PORTUGUESE CURRENCY EXPERIENCE: AN HISTORICAL PERSPECTIVE

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Portuguese Currency Experience:

an Historical Perspective

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* Lecturer, Department of Economics and Economic Growth Center, Yale University. This paper draws on Section I of Essay III of my Ph.D. dissertation and is to appear in Vol. 2 of Estudos an Homenagem as Prof. Doutor, J. J. Teixeira Ribeiro, Faculdade de Direito de Coimbra, Coimbra, Portugal. I am grateful to the members of my committee Carlos Diaz, Pentti Kouri, and Albert Fishlow and to Barry Eichengreen for comments on an earlier draft. Errors are my own.

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Introduction

Professor Teixeira Ribeiro is mostly known for his work on public finance, in particular his celebrated mimeographed Notes that have educated generations of economics and law students in Coimbra and Lisbon. It is, however, his contribution to the knowledge of international monetary economics, and specifically, his analysis of monetary and exchange rate policy in Portugal in Introdução ao Estudo da Moeda, over thirty years ago, that is emphasized in the present essay.

A new phase of the Portuguese currency experience was about to begin and Ribeiro was already aware of it. As he points out, the predominance of the escudo-sterling rate in exchange rate policy had been gradually decreasing since the fatal 21st. of September 1931. Indeed, a few months after the book was published, in September 1949, the escudo remained closer to the U.S. dollar and did not follow the pound.

For over five years now, the predominance of the U.S. dollar has itself been eroded and the primary concern of exchange rate policy has become the average price of a basket of major currencies, where the D. mark and the French franc are as important as the former reserve currencies.

This paper attempts to shed some light on the various exchange rate policies followed by the Portuguese monetary authorities since the advent of generalized floating in April 1973, by taking an historical perspective on the "acceleration hypothesis", according to which appreciation of the real exchange rate is associated with a real current account surplus.

This central proposition of the portfolio approach to exchange rate determination is only tested for the last fifty years, but the analysis begins when Portugal adopted the gold standard, one hundred and twenty five years ago.

With such an horizon, the striking feature of the Portuguese currency experience is how resilient the commitment to a fixed nominal price of foreign currency has been. Despite vast differences in ideology and competence, it can be said that, in this respect, Salazar in the 1930's and the Revolutionary central bankers of 1974-75 are closer to each other than they are to contemporary monetary authorities in Mediterranean and Latin American countries.

Indeed, so paradoxical an invariance might well have rooted in the days of the Pax Britannica, with the political economy of which we begin.

I. The Sterling Standard (1854-1949)

1. In 1854, Portugal adopted the gold standard, rather than the more widespread bimetallism, as part of a "regeneration" program which emphasized free trade and railroads, that is to say the British alliance. The unit of account was the real and one pound sterling was worth 4,500 reis. The Banco de Portugal, established in 1846 during a financial crisis, issued convertible notes in Lisbon, processed the Treasury's cash transactions and was a major underwriter of government bonds.¹

The program of public works and the industrialization drive of the 50's and 60's were associated with large government and external deficits, further enhanced by the increase in the relative price of home goods during the international deflation of the 70's and 80's.² Having survived and grown, the Bank of Portugal was granted in 1887 the national monopoly of the right to issue bank notes up to three times its gold reserves and twice its capital. Government credit, on the other hand, was subject to a ceiling of about one sixth of the bank's net worth. In the late 80's, however, crop failures increased imports and the spread of the phylloxera decreased wine exports, thus increasing the trade deficit. As for public finance, Portugal had, after France, the highest debt per capita in Europe, the service of which took about half of the government budget.

Against this background, three adverse shocks provoked the traumatic crisis of 1891. First, in January 1890, a British ultimatum to withdraw from the coveted territories between Angola and Mozambique culminated a

growing tension between the two unequal allies over colonial policy. Second, the customary million pounds in emigrants' remittances from Brazil was reduced to a fifth because of the republican revolution there. Third, in November, the main underwriter of Portuguese loans, in London, Baring Brothers, found itself on the verge of bankruptcy because of overcommitments in Argentina and requested a payment of one million pounds on the Portuguese debt. The Bank of Portugal was thus forced to use its gold reserves and, despite the negotiation in early 1891 of a large loan from the proceeds of the sale of the tobacco monopoly to French bankers, Portugal went off the gold standard on July 9.³

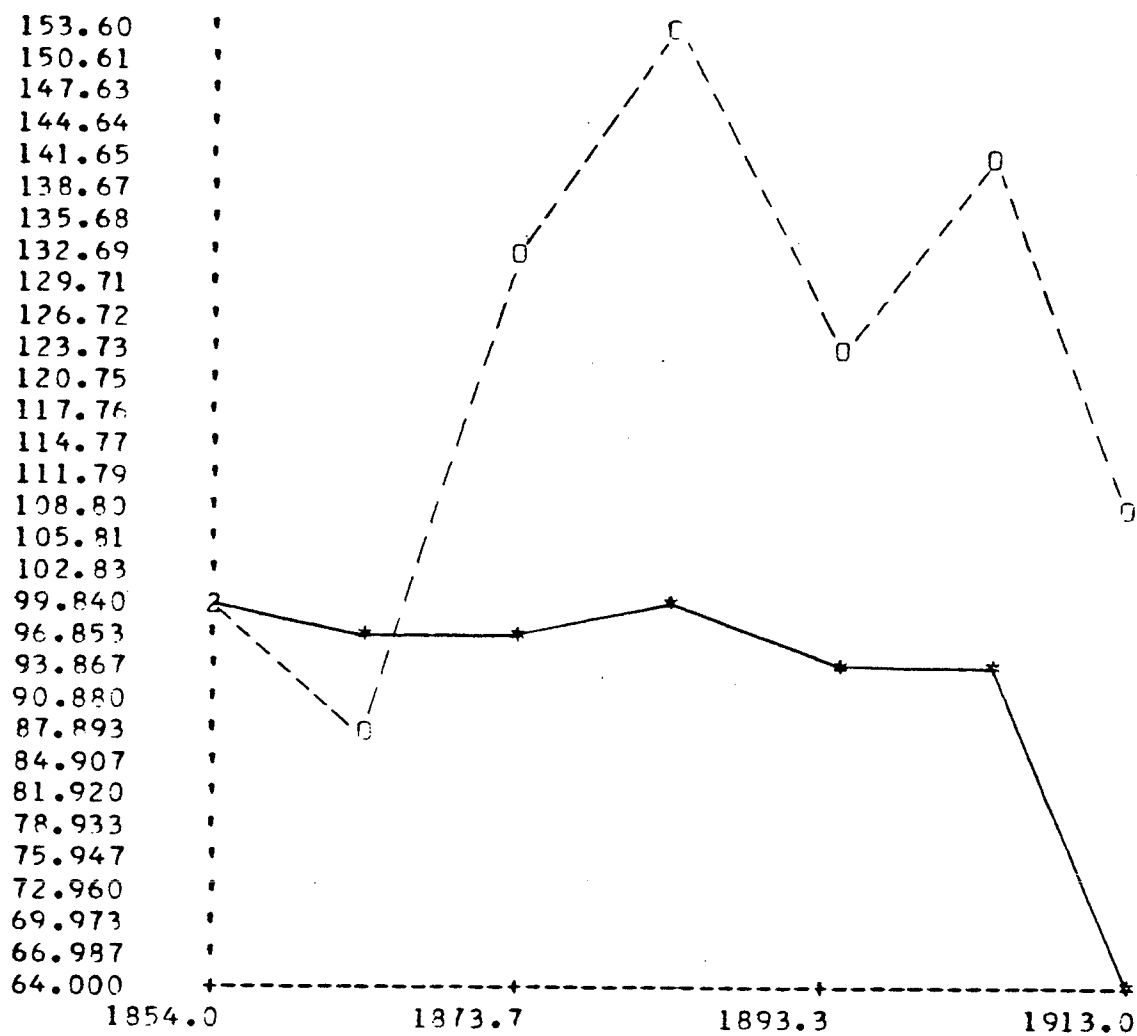
With the notes of the Central Bank rendered inconvertible, gold was exported and the price of sterling increased by 27 percent. Portugal remained a net exporter of bullion until 1908, and experienced deflation during the international upswing starting in the mid-90's. However, the immediate depreciation of the currency and drastic increases in protection expanded domestic manufacturing and exports after the 1892 tariff and agricultural output after the 1899 restrictions on imports of wheat. At the turn of the century the currency began to appreciate and almost reached par in 1906. By that time, however, overproduction was besetting the textile and wine industries, whilst the more active colonial policy and the foreign debt settlement of 1902 caused new strains on the government budget. Politically the crisis was blamed on the monarchy, which fell almost without resistance in October 1910.

These developments are illustrated in Figure 1, where ten year averages of the Portuguese terms of trade index against Britain are plotted, together with an index of the capacity to import (value of exports deflated by the price of imports), both based in 1854.⁴ The export promotion from the mid-60s to the mid-80s, the depression of the 80s and the recovery of the exports in the 90s are apparent, but the most remarkable feature is certainly the decline in the terms of trade and the capacity to import from 1904 to 1913.

2. The republican provisional government pledged to balance the budget and to restore convertibility. In May 1911 a new unit of account, the escudo (= 1000 reis) was created. Having depreciated by 21 percent since 1910, sterling was then worth about 5 escudos, so that keeping the gold parity of 1854 entailed a 10 percent revaluation of the escudo. The return to convertibility did not materialize and the budget was only balanced in 1913 and 1914 during the government of Afonso Costa (who held the first economics chair at the University of Lisbon). The reluctant decision to join the Allies in 1916, in order to protect Portugal's colonial interests, entailed a severe drain on government finances: the budget deficit and the money supply doubled every two years until 1920. In June, the real money supply was still up 29 percent from 1913 and the money supply expressed in foreign currency was up 80 percent. The continuing political crisis and a substantial increase in capital flight related to the defeat of a monarchist uprising led, however, to a brutal fall in the exchange. Relative to 1913 values, the figures on the money supply expressed in foreign currency were -20 percent at year end and -44 percent in June 1924.

FIGURE 1

Terms of Trade with and Capacity to Import from
Britain



--*-- Terms of Trade

---o--- Capacity to Import

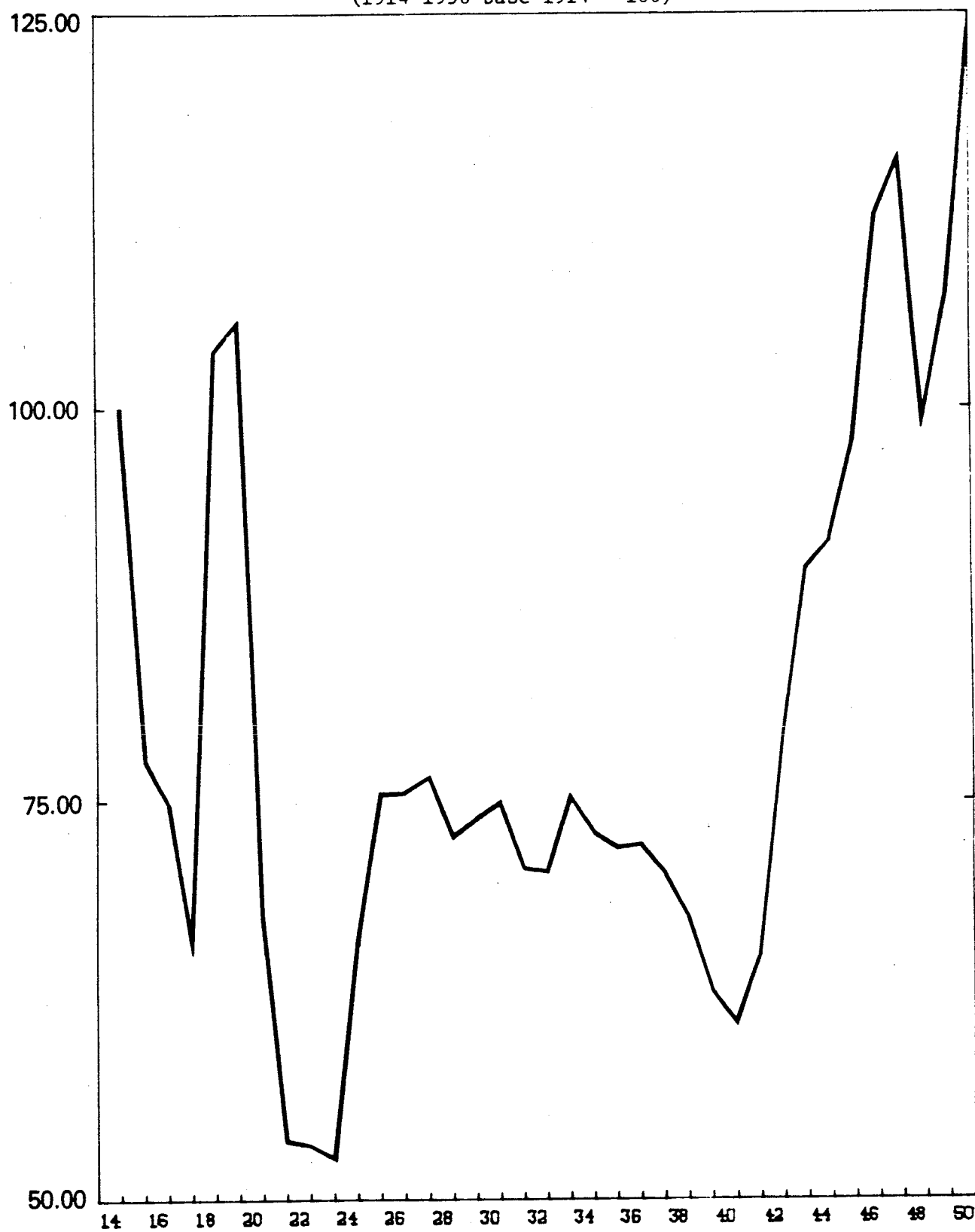
Source: Sideri (1970)

The enormous increase in note circulation (650 percent from 1918 to 1924) was made possible by an amendment introduced in 1918 to the Charter of the Bank of Portugal whereby the rule of the third would only apply to the "bank component" of circulation, leaving the "debt component" with no backing. Indeed the government debt to the central bank increased by 735 percent during the period.

At the end of 1923, with sterling at 128 escudos, the newly elected government of Alvaro de Castro (an army major with financial expertise) created, through sales of gold and silver balances of the government abroad, an Exchange Stabilization Fund to intervene in the foreign exchanges. In December 1924, when the money supply expressed in foreign currency reached the 1913 level, two other governments had already been appointed after Castro's fall in July. Sterling reached a peak of 157, then started to decline and was finally stabilized until June 1927 at about 95.

An illustration emphasizing purchasing powers rather than traded goods prices is provided in Figure 2, where the average annual real escudo-sterling exchange rate⁵ is plotted with base 1914 = 100. Until 1917 the rate depreciated owing primarily to British wartime inflation. In 1918 and 1919, the Portuguese hyperinflation brought the rate of about its base value. But the increase of 500 percent in the nominal rate between 1920 and 1923 left a real depreciation of ten times less, with the index at about 54. The effect of the 1924 stabilization measures, and the offset of the pound revaluation of 1925 by domestic inflation are also apparent in the Figure.

FIGURE 2
REAL STERLING-ESCUDO EXCHANGE RATE
(1914-1950 base 1914 = 100)



Source: Series (4) in Appendix.

Meanwhile, domestic political and social instability continued to take toll. In the five years before May 1926 there were ten attempted coups which reached the streets and 15 governments (in 1925 alone in the figures are 3 and 4 respectively.⁶ The last of these coups, on May 28, bloodlessly replaced parliamentary institutions with a military dictatorship. Soon conservative Gen. Carmona became President and appointed as Minister of Finance conservative Gen. Sinel de Cordes.

In December 1927 the government decided to appeal to the League of Nations in order to secure a foreign loan. The condition that a representative of the League in Nations supervised its use and repayment was, however, refused⁷ and instead in April 1928 Carmona yielded to the conditions set by a prestigious economics professor from Coimbra, Oliveira Salazar, to become Minister of Finance.

3. The refusal of the League of Nations loan shot up the price of sterling in London to 114, from 105 in March, but in one year, Salazar succeeded in bringing the budget into surplus, in lowering the interest rate from 11 to 3.75 percent, in paying the external short term debt, and in stabilizing the pound at around 108.

The return to convertibility was the next step. Based on the observation that both market prices and the money stock were twenty times higher than in 1914, and the escudo was worth 5 percent of the gold parity established in 1911, Salazar argued for a definition of the new escudo at about that value, or 110 to the pound. The departure from purchasing power parity was explicitly stated: "it is convenient that the currency should have a higher purchasing power at home than abroad" and promoting the industrialization of the country, spreading the utilization of credit instruments and inducing a decline in hoarding were identified as reasons for seeking a

lower real exchange rate. The convertibility of the new escudo into gold was to be effective July 1st, 1931, forty years after.

However, on September 21, Britain abandoned the gold standard and the pound depreciated about 30 percent against the dollar. That very day, the decision was taken to follow suit, as long as the depreciation of sterling would be less than 32 percent.⁸ Thus the escudo appreciated relative to the dollar in 1933-34 and remained in the sterling bloc throughout the depression.

4. In September 1939, the war-induced depreciation of sterling in New York led to greater concern for the stability of the escudo-dollar rate. After an initial devaluation of about 3.3 percent, the rate for bilateral payments with the sterling area fixed in July 1940 kept the price of the dollar at the 1939 level, so that the escudo appreciated 9.1 percent relative to sterling. During the war, the balance of payments, and in 1941-43 the trade balance as well, was in surplus. These surpluses were entirely monetized by the central bank, which kept domestic credit at a low level, and despite increases in taxation and public borrowing, were transmitted into wholesale prices at the average annual rate of 15 percent. The cost of living increased at a lower rate, so that the relative price of non traded goods must have declined by about 4 percent p.a. during the war, whilst real GDP only grew about .4 percent p.a. between 1938 and 1947.⁹

The revaluation of gold reserves in 1940, the balance of payments surpluses and the accumulation of wartime credits on the Bank of England increased the stock of foreign assets of the Bank of Portugal substantially.

Thus, in 1946, the Bank's Charter was amended to increase the backing of domestic currency from one third to one half, of which only one half in gold. That same year, however, the surplus dropped by 73 percent and in 1947 the trade deficit more than doubled, with the overall deficit reaching 9 percent of GDP.¹⁰ The real price of sterling was then at 116, its highest level since 1914.

Protectionist measures, in particular import licensing, were imposed in October 1947 and February 1948 and the loss of reserves were not sterilized so that the money supply declined significantly in the Fall of 1947 and 1948, together with prices. The deficit remained, however, and after depreciating in 1948, the real rate appreciated again in 1949 with the 30 percent devaluation of sterling, to reach 124.

A new parity which entailed a 13 percent devaluation was then established with respect to the dollar. It was to be accepted by the International Monetary Fund when Portugal joined twelve years later and, despite the sterling devaluation of 1967, remained in force until the Smithsonian realignment of December 1971.

II. The Dollar Standard (1950-1973)

1. In 1950, after almost twenty years of cautious pegging to sterling, the escudo became effectively pegged to the U.S. dollar. American postwar foreign policy, however, was initially viewed with some suspicion. Even though Portugal participated in the Marshall Plan Conference of 1947, and was a founder member of OECE, Marshall aid was only accepted in 1950, after NATO had been established, and the postwar deficits were making the offer difficult to refuse.

The impact of the European Cooperation Administration and the European Payments Union on the technical staff of the Central Bank and of the newly established National Development Fund was significant. The pattern of Portuguese economic development in the quarter century of prosperity after World War II was, at least in part, the result of the tension between the emphasis on internal stability of the financial reform and industrial regulation of the thirties and the emphasis on international cooperation of the postwar growthmanship.¹¹

In the fifties the Portuguese growth record was inferior to the Southern European average and about the same as the European OECD area (4.5 percent p.a. in Portugal from 1950 to 1960, versus 6.7 percent and 4.6 percent respectively). Even though industrial production increased 90 percent during the decade, employment in industry increased by 17 percent only and in agriculture, output stagnated and employment declined. Capital intensive manufacturing investment was emphasized in the First Development Plan (1953-58), causing the output of capital goods industries to increase at a rate of 22 percent p.a. from 1953 to 1959 versus 4.9% for consumer non-durables. Despite the high import content of investment and the current account deficit of Portugal, the trade surplus of the African territories led to an increase in foreign exchange reserves of the Escudo Area and the capacity to import throughout the decade.

In the late fifties, the effort at import substitution was shifted to an export promotion strategy, largely as a result of the incentives offered by the participation in the European Free Trade Agreement. The treaty of Stockholm (1959) allowed Portugal an infant-industry type of

protection whilst giving Portuguese exports the benefits of the elimination of tariffs. In fact the growth of exports to EFTA, and in particular to the U.K. and Sweden, exceeded the 15 percent p.a. growth of dollar exports between 1951 and 1973.¹²

2. The balance of payments was, nevertheless a source of concern in the early 60's, largely because of the impact of the events in the Portuguese possessions in India and Africa. As precautionary loans were being arranged in New York and London,¹³ however, the labour pull in the booming EEC was attracting more and more Portuguese workers. From an average of .2 million p.a. in the 50's and early 60's, emigration jumped in 1965 to .5 million and did not decrease significantly until 1973. In 1966 migrants remittances increased by 32 percent and were multiplied by four in the six following years.

Thus, in the early 70's one tenth of the population was working abroad and remittances reached one tenth of nominal income, in other words, remittances per emigrant were about the same as income per resident.¹⁴

The induced increase in the capital labour ratio may explain the otherwise peculiar evolution of the distribution of output by activity. From 1963 to 1973 the share of manufacturing in GDP increased from 30 to 36 percent whereas the combined share of agriculture, forestry and fisheries fell from 22 to 15 percent in the same period. This is a large share for industry than a per capita income of \$1410 in 1973 would have predicted, which would be, for a small country, 17 percent in agriculture and 30 percent in manufacturing. Similarly, the share of exports of manufactured goods increased from 55 to 62 percent between 1963 and 1973.

whereas the share of agricultural and processed food fell from 26 to 19 percent.¹⁵

3. Overall, emigration brought growth because of the very low labour elasticity of output. In fact, in the period 1969-1973, it accelerated to a remarkable 8.7 percent p.a., higher than Greece (7.8 percent) and Spain (6.9 percent) and much higher than the EEC (4.8 percent).¹⁶

This trend was associated with the more liberal economic policies followed by Salazar's successor, Marcello Caetano, who became Prime Minister in the fall of 1968. During this period, inflation exceeded the EEC average, but real wages increased and stock market prices were soaring.¹⁷

The 1972 free trade agreement with the EEC brought renewed prospects for export led growth. In that year, exports reached 27 percent of real GDP, with the EEC share increasing from 44 to 47 percent.

Via goods and factor markets, therefore, Portugal was then economically integrated with a growing Europe and benefitting from the development boom in Angola and Mozambique, on the one hand, and the bold schemes of the "Luso-Brazilian Cultural Community", on the other.¹⁸

On the financial side, persistent current account surpluses after 1965, some international borrowing by the State and the growth of foreign direct investment led to the accumulation of gold and foreign exchange reserves by the Central Bank. This, despite exchange controls, turned the escudo into a strong currency. Thus, at the time of the Smithsonian Agreement of 1971, a central rate of 27.5 escudos per dollar was established which entailed a revaluation relative to the earlier dollar parity of 28.75 escudos. Following the second devaluation of the dollar, the escudo was

allowed to "float" upward and in July 1973 the dollar was worth only 22.31 escudos.

4. Nevertheless, there were disturbing features in the Portuguese real growth process. In effect, both the ratio of investment to output and the rate of growth of productivity were significantly lower than in the fast growing southern European countries.¹⁹ Also, the traditional uneven development of the coast and the interior was exacerbated. In 1970, 80 percent of the population, and 90 percent of GDP were concentrated on the coast from Minho to Setubal, which accounts for only 37 percent of the area. The implication was the continuing stagnation of agriculture, wide wage differentials across sectors and regions and a marked industrial concentration.

Finally, a long military service called for by the protracted frontier war in the African territories involved a greater cost in terms of wages foregone, and one that was increasingly difficult to justify in a society more exposed to affluence.

Economy and society were, however, about to be subject to dramatic external and internal shocks.

III. Revolution and the IMF Standard (1974-)

In fact, in the fall of 1973 the "oil crisis" had a particularly severe impact on Portugal who felt the brunt of the boycott without being able to avail itself of the abundant oil in Angola. From a foreign policy viewpoint, it implied the loss of the Brazilian discreet support of the government's colonial stance and helped create the political vacuum which preceded a bloodless take over by the "Armed Forces Movement" on April 25, 1974.²⁰

In February, consumer prices in Lisbon increased at an annual rate of 32.4 percent from 8.4 percent in January, and remained at 16.8 percent in March to actually decrease in April.²¹ The military "junta" closed the stock market and encouraged substantial wage increases which wiped out profits. The drop in profits was further aggravated by extreme union militancy and impossible industrial relations. All this led to a substantial decline in savings and investment, even before the widespread takeovers of 1975.

Thus, between 1973 and 1975 savings declined from 19 percent of real GDP to 4 percent, and the domestic share of investment expenditure fell from 72 to 24 percent. At the same time, worker's compensation relative to Portugal's main trading partners increased 23.6 percent and her competitive position declined about 13 percent.²² During the same period, the oil bill increased from less than 7 percent of imports to over 17 percent, the terms of trade fell by 23 percent and the capacity to import by 35 percent.

Yet, the redistribution of income toward consumption and public investment led to a dramatic increase in imports, particularly prior to the surcharge of May 1975. At the same time, political uncertainty depressed remittances and increased capital flight further accelerated the loss of international reserves.²³

Despite their ideological commitment to active policies, the monetary authorities of this period found themselves following the rules of the game of the gold standard. At the end of 1975, the exchange rate had depreciated by 5 percent relative to the SDR parity of March 1973, and had revalued by 10 percent relative to the currency of what was still the main export market,

the U.K.,²⁴ whereas the decline in the foreign component of the domestic monetary base, which had been responsible for money creation before the revolution, was not matched by an increase in domestic credit until mid 1975.²⁵ Whilst real money supply declined, the absence of other financial assets and the redistribution of income must have increased real money demand. The nationalization of the banking system in March 1975, at any rate, caused a marked shift away from bank deposits and an increase demand for currency.²⁶

The determination of the military government to establish a command economy was rejected in the April 1975 elections and led to a power struggle which lasted until the return of the last military contingent from Angola in November. The moderate military won and in alliance with social democratic parties pledged to restore the original spirit of the revolution, namely political democracy and a mixed economic system, compatible with integration with the European Community. Not surprisingly, what came to be called the "anarcho-populist" phase of the revolution had left the economy in complete disarray.

The domestic shocks depressed labor productivity, and led to a sudden increase in population, and the external shocks implied a deterioration in the terms of trade and a reduction in the demand for exports. The macroeconomic dilemma of Portugal in early 1976 was that restoring external balance and some basic market mechanisms seemed to involve either reducing workers compensation, or increasing unemployment or both.²⁷

At that, time, the newly appointed team at the Bank of Portugal decided to implement an active exchange rate policy, thus starting to devalue the escudo against a basket of currencies: at mid year the rate was 7 percent below its level at the end of 1975. However, the appointment of a socialist government in August, following the April and June elections for Parliament and the Presidency of the Republic respectively, was associated with a return to a passive exchange rate policy. In fact, the trade weighted rate appreciated almost 1 percent from July to October. By then, the objective of the government was stated to be the correction of the external deficit, but by year end there was only a 13 percent effective depreciation relative to the 1973 parity, coupled with an 18 percent appreciation relative to the pound.

In early 1977, it became known that the current account deficit had increased by 50 percent. An 18 percent devaluation relative to the dollar was thus announced on February 25, together with the intention to peg the effective exchange rate then in use. In August another discrete effective devaluation of 4 percent was followed by a crawling peg policy²⁸ at a rate of 1.1 percent per month coupled with forward cover by the Central Bank. At year end the dollar was worth 40 escudos, whilst the current account deficit had increased by another 20 percent and reached 9 percent of GDP.

Since early 1977 Portugal had been attempting to reach an agreement with the IMF, so that the "Big Loan" from industrial countries, promised by the government, would materialize. It took, however, almost two governments before the priority of external balance was written into the stand-

by agreement negotiated with the IMF in the Summer of 1978. According to the letter of intent, tight ceilings on net foreign liabilities, on net domestic credit and government credit by the banking system were to be established, interest rates were to be raised substantially and the crawling peg was to be maintained. Along with the Fund's aversion to current account restrictions and flexible exchange rates, import quotas and the forward cover were to be discontinued.²⁹

Largely as a result of the austerity program the balance of payments improved dramatically in 1978. The current account deficit was halved, to 775 million dollars, thanks to a 20 percent increase in dollar exports, a 4.7 percent increase in dollar imports and a substantial increase in remittances. Indeed, very high interest rates and the spreading of deposits in foreign currency for emigrants attracted 1.5 billion dollars in remittances, whereas the capital inflow has been estimated at about 1 billion. This led to a balance of payments surplus of .157 million dollars in 1978, after a deficit of 1,437 in 1977.³⁰

On the other hand, real growth was also halved to 3 percent, unemployment remains at well over 12 percent, real wages must have fallen by about 4 percent and the government borrowing requirements were about 28 percent above the target of 60 million contos. The current negotiations for a new standby agreement with the IMF, which were interrupted when the 1979 Budget and Plan were defeated in Parliament in March, concentrated on meeting the public sector target for 1979 through increased taxation.³¹ The recent increase in the price of oil has led to a forecast of an oil bill of 14-19 percent of imports and it is unlikely that the current

account deficit will improve in 1979.³² The rate of crawl is nevertheless supposed to decrease from an average of 1.31 percent in January and February to about .75 percent per month, in an effort to fight inflation.

IV. The Exchange Rate and the Balance of Payments in the Long Run

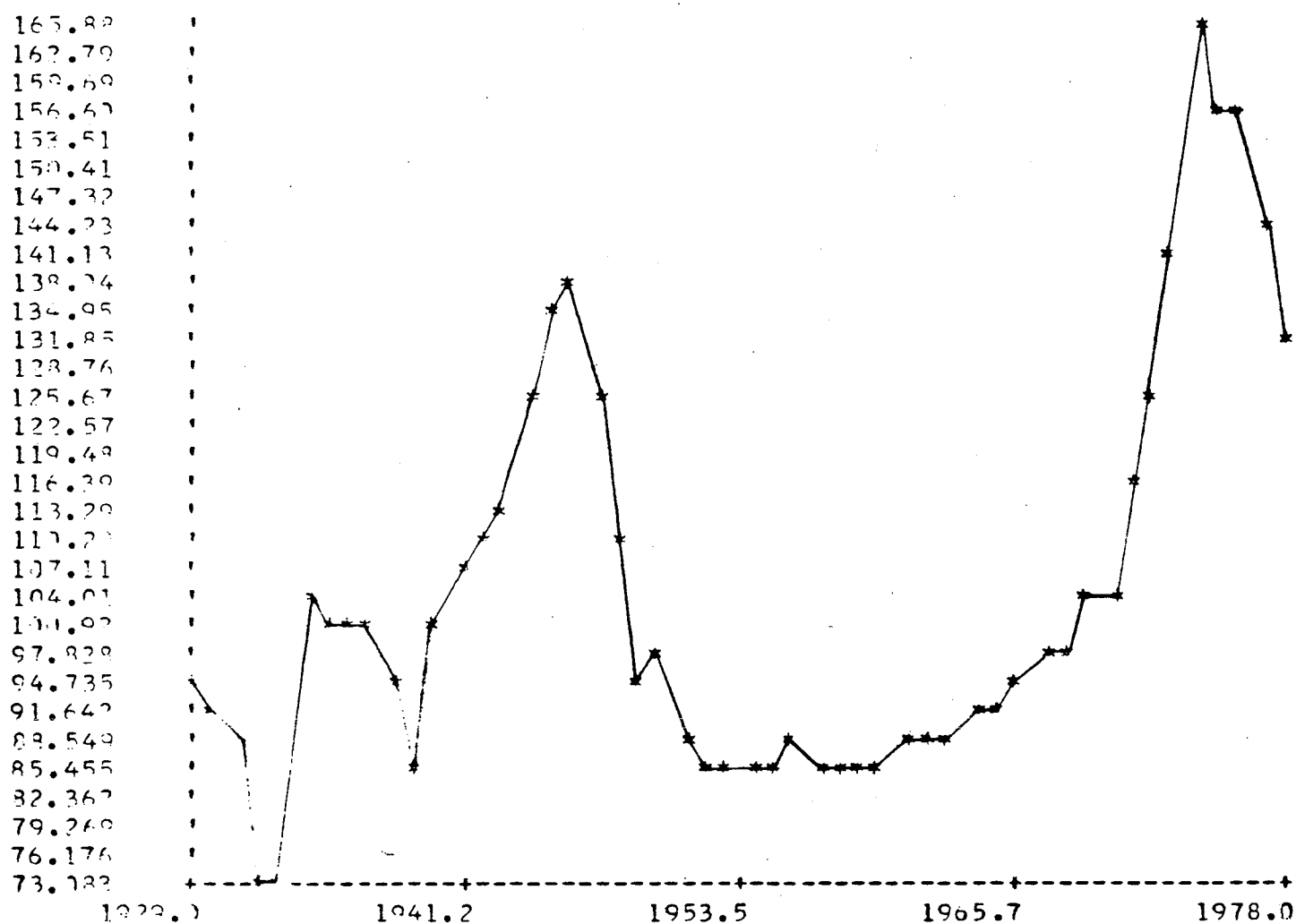
The interaction of world inflation and the domestic price of foreign exchange since the bilateral rate against the U.S. dollar became of greater concern can be summarized by an index of the purchasing power of the escudo for a U.S. investor.³³ Of course, if Portugal fixes the price of the U.S. dollar, as she did from 1950 to 1970, U.S. inflation determines the rate of decline of the purchasing power of the escudo over U.S. goods and services, an average of 2.42 percent p.a.

From 1929 to 1934, on the other hand, the purchasing power of the escudo increased by 33 percent due to both the dollar devaluation and U.S. deflation. In the periods 1934-1949 and 1975-78 the decline in the purchasing power of the escudo was also due to exchange rate depreciation and U.S. inflation. In 1949, the purchasing power had declined by 60 percent relative to 1934 and in 1978 it was 60 percent below the 1973 level and 87 percent below the 1929 value. Over the fifty year period, therefore the purchasing power of the escudo has decreased at a rate of 4.2 percent p.a., whereas domestic inflation has proceeded at a rate of 4.9 percent p.a. so that the real price of the escudo in terms of dollars had increased by about .7 percent p.a. and was in 1978 41 percent above the 1929 value.

The real escudo price of the dollar at year end is plotted in Figure 3 from 1929 to 1978. The choice of the beginning year is rather conventional and does not carry the implication that in that year the real exchange rate was at its long run equilibrium value. Between the periods

Figure 3

The Real Escudo-Dollar Exchange Rate
(1929-78 base 1936 = 100)



Source: Series (9) in Appendix

1931-34 and 1947-50, when there were sizable changes in the sterling-dollar rate, the real price of the dollar exhibits roughly the same behavior as the real price of the pound in Figure 2 above. Thus, after a depreciation until 1940, both rates appreciated during the war years, the dollar slightly more than the pound. Then the dollar rate depreciated rapidly until 1951³⁴ and remained stable for about 15 years. In 1970 it was back to the 1936 level. The first half of the 70's witnessed a very severe appreciation: in 1975 the real escudo-dollar rate was over 55 percent above the 1970 level. The last three years brought the real rate roughly to the 1973 level.

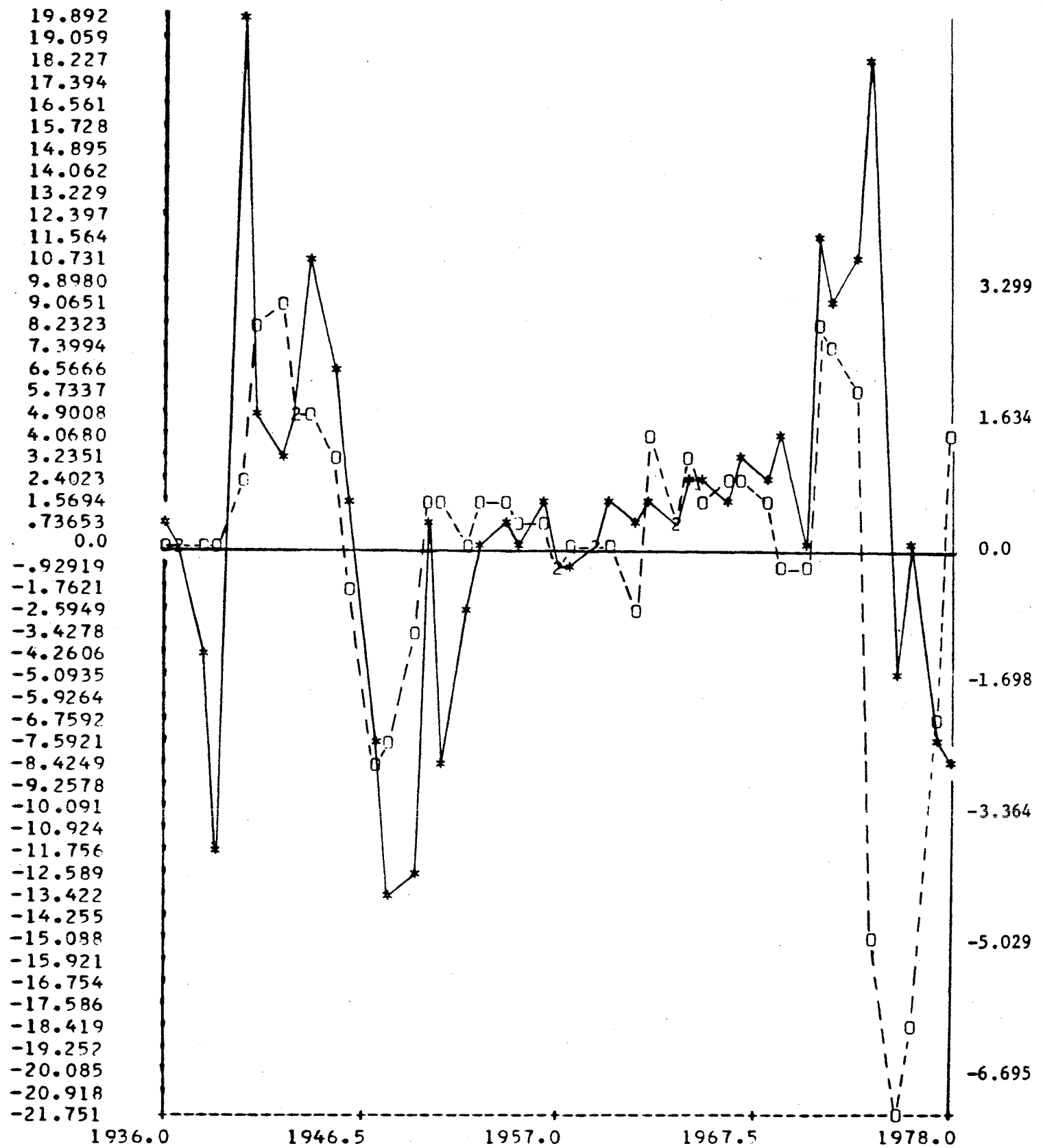
In the last 40 years Portugal went through two similar cases of a quick reversal of the real appreciation of the escudo. The first occurred in the immediate postwar period and stabilized after the pound devaluation of 1949³⁵ whereas the second is still in the making.

These reversals were associated with balance of payments deficits, as shown in Figure 4, where the percentage rate of change of the real exchange rate against the dollar is plotted together with the changes in the real stock of foreign assets of the Bank of Portugal from 1936 to 1978.

That a real appreciation of the currency is associated with a real current account surplus in a stationary economy with inflation is a straightforward implication of the main message of the portfolio approach to flexible exchange rates and currency convertibility, the "acceleration hypothesis".³⁶ But that the association would remain in an environment of exchange controls, predominantly fixed rates and negligible private capital account would be startling. Indeed, Table 1 shows that the association explains less than 10 percent of the variance in the real exchange rate.

FIGURE 4

Changes in the Real Exchange Rate and the Real Current Account



*- Changes in the Real Exchange Rate(%p.a.) Left Scale

- -O- Changes in the Real Stock of Foreign Assets of the Central Bank
in billion escudos Right Scale

Sources: Series (66) and (67) in Appendix 4

TABLE 1
THE REAL ESCUDO-DOLLAR RATE
AND THE REAL BALANCE OF PAYMENTS
(annual data 1936-78)

	a	b	R ²	SER	D.W.	ρ	F
1. Ordinary Least Squares	.943	.997	.087	6.869	1.396	-	3.916
Standard error	1.048	.504					
Significance Level %	15	2.5					5.2
2. Cochrane-Orcutt iterative auto-correlation correction	.837	.874	.053	6.589	2.019	.284	2.282
standard error	1.390	.578				.021	
Significance Level	25	75					13.5

Notes: a) Regression $GREXIE = a + b \text{ RBNMT}$

Where $GREXIE$ is the percentage change in the end of year real rate, series (12) in the Appendix

$RBNMT$ is the stock of foreign assets of the central bank in billion of constant purchasing power escudos, series, series (13) in the Appendix.

b) standard errors in parenthesis below coefficients

c) D.W. upper bound at 5% significance level = 1.45

The regression implies that on an average a one billion real escudos (where real means in units of purchasing power over U.S. goods) surplus is associated with a 1 percent increase in domestic inflation or, in the periods 1936-49 and 1973-78 a 1 percent appreciation of the nominal exchange rate or some combination of the two. Therefore, the association between the Portuguese inflation in the late 60's and early 70's and the pegging of the nominal rate can be seen as a consequence of the real acceleration hypothesis for about 7 percent of the 36 percent increase in the real rate between 1969 and 1973 (with about 42 percent domestic inflation).

In 1974, the real rate went up by 19 percent, close to the peak of 20 percent in 1940, whereas there was a real deficit of 5 billion escudos. In 1975, there was a real depreciation of about 5 percent but the real deficit was 7 billion escudos and in 1976 the real rate was roughly constant whilst the deficit remained at a high 6 billion escudos. In 1977, the real depreciation was over 7 percent and the real deficit 2 billion. The perverse relationship of 1974 and 1976 went in the opposite direction in 1978 since the real depreciation of over 8 percent was associated with a surplus of 1.3 billion, rather than a deficit of 8 billion predicted by the regression in Table 1. Accordingly, the regression of the real effective exchange rate of the escudo against the real balance on non-monetary transactions from 1973 to 1978, shown in line 3 of Table 2, is insignificant.

The changes in the nominal exchange rate, in particular in the effective rate, are, however, well explained by the current account, as shown in lines 1 and 2 of Table 2. Plotting together changes in the dollar rate and the current account--the balance on nonmonetary transactions is included for comparison with the earlier measures, based on changes in the real stock of foreign assets of the central bank--shows quite clearly the relevance of the nominal acceleration hypothesis in the recent Portuguese currency experience (see Figures 5).³⁷

Table 2
The Exchange Rate and the Current Account
Quarterly data 1973; 2 - 1978; 4

	a	b	R ²	SER	DW [*]	F
1. Escudo-dollar rate						
Ordinary least squares	-1.120 (1.309)	.196 (.112)	.129	5.00	1.90	3.103
Significance level %	15	5				8.9
2. Effective rate						
Ordinary least squares	-1.523 (.942)	.193 (.080)	.216	3.60	1.64	5.771
Significance level %	8	2				2.4
3. Real effective rate						
Ordinary least squares	-.025 (1.348)	.141 (.240)	.016	5.28	1.76	.344
Significance level %	100	25				57.1

Notes: * D.W. upper bound at 5% significance level is 1.32

a) 1-2: regression $\left[\frac{e - e_{-1}}{e_{-1}} \right] 100 = a + bCAB$

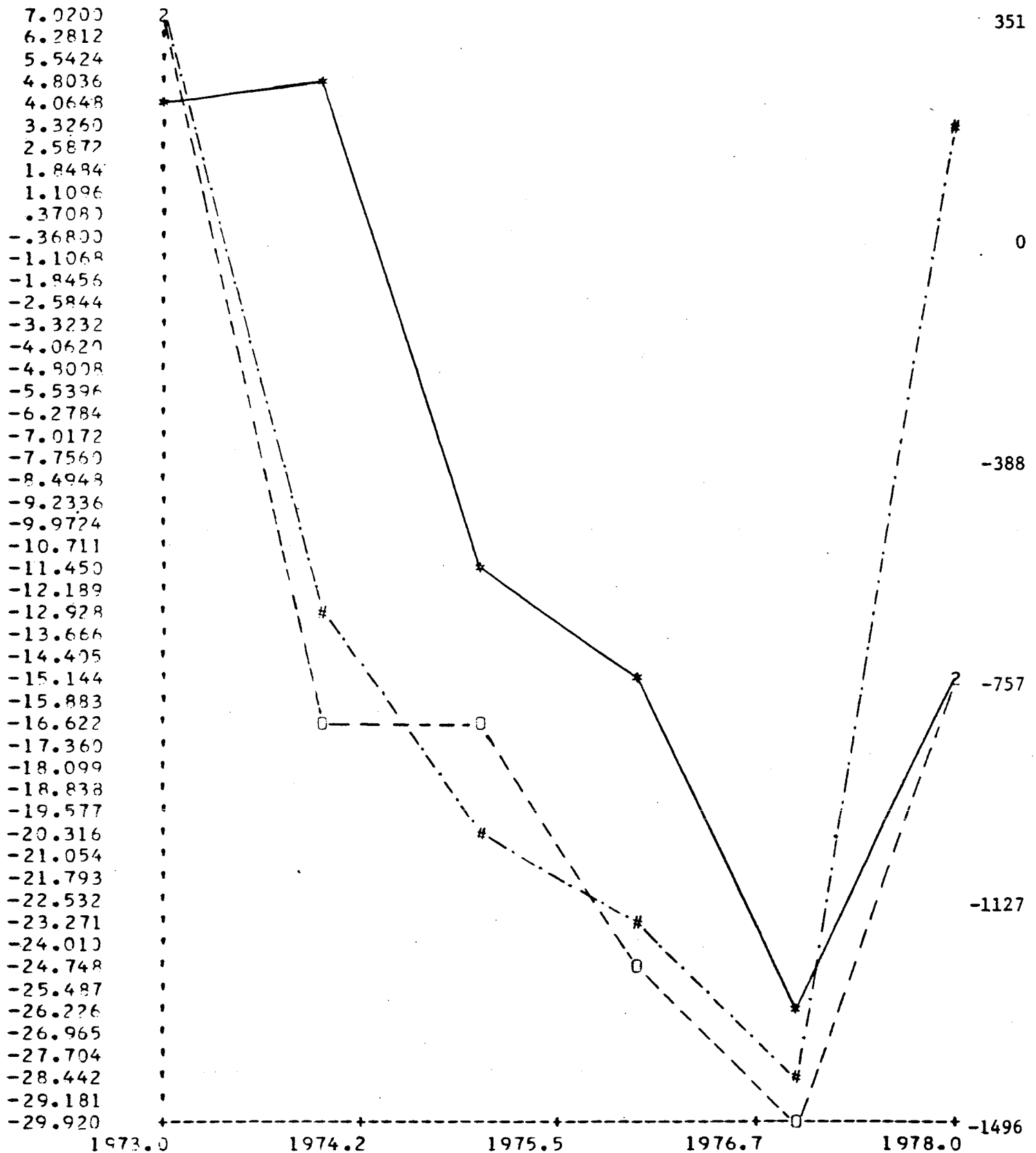
where e is the period average price of foreign currency,
CAB is the current account balance in hundred million
dollars at an annual rate from series (39) in Appendix 4.
3: Regression as in Table 1

b) Standard errors in parentheses

FIGURE 5

The Acceleration Hypothesis

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- *- Changes in dollar rate(% p.a.)
- Balance on Current Account in million dollars
- .-#- Balance on Non-Monetary Transactions in \$million

Left Scale
Right Scale
Right Scale

Sources: Dollar rate Series (5) in the Appendix.

Balance of payments figures reported in Krugman-Macedo(1979)

Conclusion

The foregoing description of exchange rate policies in Portugal shows a long term commitment to pegging to a dominant currency, sterling until the thirties, the dollar until the early seventies and a kind of world money since 1977. Episodes of "flexibility" were associated with the aftermath of the 1891 crisis, the hyperinflation of the early 20's and the recent macroeconomic difficulties.

Our analysis suggested that, despite such commitment the real exchange rate has moved roughly in line with the prediction of the acceleration hypothesis, and furthermore, that a perverse relationship occurred during the current floating rate period, particularly in 1974, 1976 and 1978. The greater importance of the capital account, in particular of external operations of the banking sector, explains the case of the last two years, whilst the first is to be attributed to a passive exchange rate policy on the part of the central bank. Taking inflation as given, however, the changes in the nominal exchange rate have followed closely the current account strictly defined in the last five years. It can be shown that this reaction function for the monetary authorities is theoretically acceptable, not only in a regime of free float, but also in a regime where private capital account transactions are restricted, and the stock of foreign assets of the private sector is therefore valued at a "black market" exchange rate.³⁸

It is not clear, however, that such was indeed the predominant reaction function of the Portuguese monetary authorities during the period. As shown elsewhere, the rate of crawl is better explained by the government deficit than by the current account deficit, and given that exchange rate depreciation determines inflation in the traded goods sector, the relation-

ship between the real exchange rate and the real current account is perverse when the government deficit moves differently from the current account, as occurred in 1975, 1977 and 1978.³⁹

But the details of the current experience are well beyond the scope of this paper. Suffice it to restate the paradox that the commitment to a fixed exchange rate, or in the limit a fixed rate of change in the exchange rate, was taken by monetary authorities with widely different ideological values. Given the acceptance of the rules of the game, the episodes of external disequilibrium are associated with disequilibria in the accounts of the public sector. It is therefore no wonder that the analysis of monetary policy in Portugal has owed so much to public finance specialists. Professor Teixeira Ribeiro is in good company.

FOOTNOTES

¹References about the monetary history of Portugal in this period are virtually non-existing. The money textbooks of Ribeiro (1949), Lumbrales (1962) and Cunha (1970) are short in history and the historical works of Livermore (1966), Marques (1972) and Wheeler (1978) are short in economics. A. Martins (1976) has a curious but thin Marxian-Rostowian interpretation of the 1910-33 period. A remarkable interpretation in terms of "informal colonialism in Anglo-Portuguese relations", building on the famous free trade treaty of Methuen in 1703, is in Sideri (1970). In his discussion of "Mercantilism versus free Trade", Sideri subscribes to the Hecksheer view of Hume which deemphasizes the relative price effect of the price-specie-flow mechanism to emphasize the positive effect of an increase in money on production (see p. 78-81 and p. 93 note 59), whereas the conventional view, expressed by Viner, contends that changes in the terms of trade are the main mechanism of adjustment. The perennial controversy about the transfer problem is, of course, at the heart of the monetary approach to the balance of payments, where the divergence between income and expenditure, rather than change in relative prices, becomes the central mechanism for balance of payments equilibrium. For the doctrinal aspects of the Chicago-IMF approach see Frenkel (1976_a p.41) and Macedo (1978a). Given Sideri's right intuition, his assertion "although the country adopted the gold standard in 1854, she never obtained monetary autonomy..." (p. 150) is puzzling. On the 1846 financial crisis, see Subercaseaux (1912, p. 22 and 387), who draws on O. Martins (1899).

²The relative magnitudes are crucial to assess whether there was a private domestic savings gap, since

$$S_p - I_p = DEF - CAD$$

where S_p is private domestic savings

I_p is private domestic investment

DEF is the government overall deficit

CAD is the current account deficit in domestic currency.

Roughly if the government deficit is larger than the current account deficit, wealth is increasing by more than the addition to the capital stock. Of course changes in the valuation of claims to physical capital, of the price of government bonds and of the exchange rate blur this simple identity, but the following numbers in million pounds show that this was probably the case during the 19th century.

	Increase in Pub. Debt (1)	Trade Deficit (2)	Increase in Bank Note Circulation (3)
1855-65	21.8	3.2	.133
1865-75	24.9	3.1	.508
1878-85	36.6	5.1	.512
1886-1910	23.7	20.8	n.a.

Source: (1) and (2) Reported in Sideri (1970, p. 176 and 238); (3) European Historical Statistics p. 675.

Even though the absence of figures during the interval 1886-1910 is particularly troublesome we see that there was no savings gap. Using available data from EHS on government tax revenue and expenditure we have, denoting bank notes by C, in million pounds:

	DEF	CAB	ΔC
1878-87	23.11	5.7	1.1
1888-91	-48.44	3.1	6.3

and we see that there was indeed a savings gap in the wake of the 1891 crisis.

³Another difficulty of the period had to do with the "cause celebre" of the Dom Miguel loan. Floated in Paris in 1832, during the war that his brother Pedro, former emperor of Brazil, was waging to recover the throne for his daughter Maria, the bonds were not considered an obligation of the Crown, and after Miguel's defeat in 1834 no further payments were made. Even though new Portuguese bonds were floated in London, this incident undermined the credit worthiness of the State. Thus, in 1837, no more loans could be secured, leading the country into successive debt adjustments in 1840, 1845 and 1852. Only in 1856 -- and not in 1852 as Sideri (1970, p. 150) would have it -- did the settlement seem satisfactory and new bonds were issued. Despite continued protests from holders of defaulted bonds, there were numerous Portuguese issues until, in 1890, a French issue failed and this was ascribed to the influence of the bond-holders leading to a final settlement of the matter in the "tobacco loan" of 1891. See details in Wynne (1951 p. 361) and further references in Macedo (1970, p. 181 note 312). The Baring crisis had a great impact in Argentina as well. See Williams (1920, p. 114) and, for a passionate account, Ortega-Duhalde (1968).

⁴These are ratios of unit value indices of British exports to Portugal and Portuguese Imports into Britain linked from series based in 1854 and 1870, computed by Sideri (1970, p. 202). He also links an index from 1913 to 1938, but after having decreased for 4 decades the coverage of the index increases drastically (from 54 percent to 72 percent for exports and from 61 percent to 89 percent for imports) (see p. 228) and it was therefore left out of the figure. The values are

	Terms of Trade (P^X/eP^M)	Capacity to Import ($P^X_Q X/eP^M$)
1914-23	43.3	93.7
1924-33	48.5	94.7
1934-38	51.0	93.9

so that it is clear that the decline goes on until 1923 and some improvement occurs in the thirties.

⁵This index is obtained by dividing the Portuguese cost of living index based in 1914 = 100 (which is a simple average of retail prices for food and housing supplies in Lisbon and Oporto computed by the Instituto Nacional de Estatistica and reported in INE, Anuario Estatistico) by the product of the index of the average price of sterling in London (from the same source) and the British cost of living index, based in 1914 = 100 (also a simple average computed by the Ministry of Labour and reported in the Board of Trade, Statistical Abstract of the United Kingdom until 1947). Diaz (1978 p. 15) and (1979a, p. 6) computes three year averages of the inverse of our index using the import exchange rates against the dollar of seven major Latin American countries from 1929 to 1960. See footnote 35 below.

⁶Wheeler (1978), from where these figures are taken, has a detailed account of the political history of the First Republic. Another reference is Marques (1975), who has a chapter on economic conditions. A political-economic analysis of a 1917 urban revolt motivated by lack of bread (one in many) is in Valente (1978), and the curious bank note forgery of 1925 is the subject of Kisch (1932). In Nurkse et al. (1946), there is a brief account of the stabilization measures of 1924, from where the index

numbers on the money supply in foreign currency are drawn. They are not comparable to the ones underlying Figure 2 because only the dollar rate is reported but they eliminate the effect of the changes in the sterling-dollar rate between 1913 and 1924 (.9 percent p.a. increase in the dollar price of sterling on an average).

⁷ Sinel did not wait for the outcome of his budget (a deficit five times higher than the previous year) to attempt to secure a foreign loan. He went immediately to Paris and London, where, in December 1926, he arranged a settlement of the war debt with Churchill. In January 1927, as Mr. E. B. Baring came to Lisbon to discuss the details of the operation, republican exiles in Paris (the "Paris League") made it be known that such a loan was unconstitutional and would therefore not be honored if they returned to power. Given several attempted coups making their threat credible. Baring and associates suggested that the government obtain the approval of the operation by the League of Nations (the first such request for an Ally). After the request was issued and the League of Nations team (including Loveday and Rueff) had come to Lisbon, the Paris League sent another letter of protest, signed by Afonso Costa and Alvaro de Castro among others, to Geneva where they use as one argument against the loan that Salazar had written an article against it (!)--The document is in Marques (1976, p. 94) and the article is cited in Nogueira (1977, I, p. 327)--After the team returned to Geneva, a Portuguese delegation was sent but the issue of control was not solved and the League of Nations requested a postponement. As the Portuguese mission refused, the negotiations were closed on March 9 (ibid., p. 231). This episode mentioned in Livermore (1966, p. 331), is part of the oral tradition about Salazar's arrival to power, strikingly revived in Nogueira (1977) and Marques (1976) has a collection of press clips on the topic. Wynne (1951), quoted in Dornbusch (1979), gives the story. In footnote 68, p. 384

Wynne refers that his source was Tyler (1945), even though he cites the publication date as 1944. Furthermore, instead of the "detailed account on pp. 117-124" of his quote, there is a single reference on p. 16: "Schemes concerning Albania, Portugal and Roumania were also considered, but did not mature for reasons illustrating some of the pitfalls that beset the path of reconstruction." Probably Wynne had access to a more complete version than the one that was published. That this particular episode would have been cut is no surprise since, as Wynne starts by saying, "no League report on Portugal was ever printed." To my knowledge, the only League source where the matter was discussed is Nurkse et al. (1946) where, almost as an Appendix to Nurkse's analysis in Part I, there is in the anonymous Part II, "Survey of European Currency Stabilizations", a 2 page account of the Portuguese experience with a few lines devoted to the League loan: "A renewed rise of the import surplus in 1927 increased the strain on the provisional stabilization rate. Negotiations for an international loan under League auspices were therefore opened in January 1928, but they proved abortive because the Government declined to accept the arrangements for supervision which were made a condition. The weakening of the exchange in the early part of 1928 was undoubtedly connected with the negative outcome of the loan negotiations. Temporary stabilization credits were, however, obtained abroad, while the government wisely set to work the effect the necessary reforms without the aid of any long term loans. This action was crowned with signal success ..." (p. 117). We can also gather the significance of the episode from a note from the Ministry of Finance dated February 5, 1936 and written by Salazar in cooperation with Lumbrakes, entitled "The Budget and Public Accounts in the League of Nations Yearbook", reproduced in

Salazar (1945 p. 383 ss). After criticizing the concept of budget deficit accepted by the Yearbook, the note concludes by saying that the director of the Financial Department (Loveday) had agreed with the Portuguese view and it adds: "It turns out that the director of the Financial Department was the secretary of the financial committee who came to Portugal in 1927 to study our situation. As he has known the past, he admires more than the others the present..." (p. 394). Incidentally, the substance had to do with the difference between current deficit and borrowing requirements. As Ribeiro (1976, p. 60 footnote 2 in fine) points out, the justification given in Salazar's note could not apply to all borrowing by the State but only to borrowing for investment.

⁸ A discussion of the various alternatives as seen by the Central Bank is in Emidio da Silva (1937). See also Ribeiro (1949). The return to the gold standard was decided in Decree-Law 19869 of 6/9/31. Decrees-Law 20683 of 12/29/31 and 21900 of 5/2/32 postponed its enforcement successively until 4/30/33. By then the hopes of a return to the gold standard must have faded and Decree-Law 22496 of 5/4/3 postponed it indefinitely. The initial financial package is collected in Salazar (1930). A fascinating personal account is Salazar (1937). This book, entitled How to Rebuild a State, was published in France and was not translated into Portuguese until 1977!

⁹ Ribeiro (1952, p. 240) reports the first estimates of Portuguese nominal GNP for 1938 and 47-51. It was deflated by a weighted average of the wholesale price index (the share of manufacturing in gnp = .36) and the retail price index of the Bank of Portugal, both reported in Wallich (1951, p. 53), which were also used to arrive at the estimate of the

change in the relative price of non traded goods during the war. On the position of Portugal in the sterling area and its various accounts see Cassels (1951, esp. p. 26, 94, 191) and Tew (1952, p. 118).

¹⁰Data from Ribeiro (1949, p. 88) and (1952, p. 240). See also J. Beleza (1950) and Wallich (1951) for detailed accounts of monetary policy at the time.

¹¹As Wallich (1951, p. 29) puts it: "the Bank (of Portugal) has been a tower of strength, but it has not been a major element of flexibility." The political implications of the Atlantic Alliance are exposted in Salazar (1949), and the pedagogic effect of the Marshall aid is emphasized by A. M. Barbosa (1969). A description of the various operations can be found in Macedo (1970). On the participation of Portugal in the OECE and the EPU see Lumbrales (1964) and Xavier (1970).

¹²One basic reference for the growth process in the 50's and early 60's is Pintado (1964). See also Chabrier-Rosenblatt (1966). For trends in foreign trade and investment in the early 70's see Macedo (1977, p. 271 ss) and for industrial concentration see M. Martins (1973).

¹³For an account of these operations involving (of course) Baring Brothers, see Macedo (1970 p. 181ss).

¹⁴See estimates and further evidence in Macedo (1972b). In discussing the employment problem, Pintado (1964) mentions rural migration to the cities but only within the territory. In the analyses of Barbosa (1977a), Mateus (1978a) and Beleza (1979) international migration is of course a fundamental feature. Barbosa, in particular, integrates labor mobility, growth and the monetary approach to the balance of payments in a portfolio model to conclude the emigration should have been higher for the rate of return on securities to reach the steady-state level (1977a, p. 160).

¹⁵ See Balassa (1977, p. 226 note 1), who takes as the norm the cross section results of Chenery-Syrquin (1975).

¹⁶ The figures refer to GDP at 1975 market prices (OECD, National Accounts 1952-1977). The average for 16 industrialized countries between 1949 and 1972 at 1970 U.S. prices was 4.81 percent, from Kouri-Macedo (1979, Table I). Portuguese regular national account figures start in 1953. The rate of growth from 1953 to 1973 of GDP at 1970 market prices was 5.6 percent p.a. (IFS, May 1977).

¹⁷ Increasing 31 percent p.a. in the period 1968-1973. Consumer price inflation increased about 8.4 percent p.a. and real wages in manufacturing about 1 percent p.a. on average. They reached a peak in 1970, however, and declined in 1971 and 1972. See Macedo (1979a).

¹⁸ For an analysis of the prospects for political integration at the time see Macedo (1972a).

¹⁹ The investment ratio in the sixties was about 17 percent and in the nine of the EEC the average was about 22 percent. Productivity grew at about 5.5 percent p.a., versus 4.4 percent in the EEC but 8.3 percent in Greece and 6.7 percent in Spain. These numbers, which may not be too reliable, are from the European Commission's document on enlargement, and are discussed in Macedo (1979a).

²⁰ On the effect of the oil crisis on the "shadow price" of gas in Portugal see Macedo (1973b) and on the question of the Brazilian support see Macedo (1978b).

²¹ This understated inflation, in particular because housing subject to rent control is included in the Lisbon CPI used, with a weight of 11.1%. See footnotes 56 and 57 below.

²²See Abel et al. (1977), Kavalsky-Agarwal (1978) and Macedo (1979a) for further evidence.

²³In fact merchandise imports reached an all time high in December 1974: 25.3 billion escudos versus 1973-1975 monthly average of 8. On the terms of trade see Banco de Portugal (1977), Table II.8, p.104 and below in the text. Remittances, on the other hand fell from 26.8 billion escudos in 1974 to 21.6 in 1975. Real remittances per emigrant fell even further. Using 1970 consumer prices and total emigration since 1960 they were computed at 25.4 in 1973, 19.9 in 1974 and 13.8 in 1975. See Taylor (1977) Table VIII, page 14.

²⁴The effective rate then used by the Bank of Portugal (see Appendix 2) had depreciated 3.8 percent in December. See 1976 Report, p. 190. This implies the same level it had in September, when the direction of the bank became "technocratic" again.

²⁵See Cardoso-Hill (1977) Figure 1.

²⁶See Fry (1978), Table 2, page 264. The ratio of currency to M2 was 12.7 in the fourth quarter of 1973 and 26.7 and 28.5 in 1975; 3 and 4 respectively.

²⁷See Krugman-Macedo (1979) for an analysis along those lines.

²⁸Advocating the system see Dornbusch-Taylor (1977) and assessing it see Dornbusch (1979) and Mateus (1978b) and (1979).

²⁹The letter of intent is in Economia, May 1978, p. 307-315.

³⁰On the turnaround of 1978 see Barbosa-Beleza (1979) and Krugman-Macedo (1979). That such quick turnarounds are a mixed blessing is forcefully argued by Diaz (1979b) when reviewing the stabilization experience of Argentina, Chile and Colombia.

³¹Parliament was dissolved in July, however, and the caretaker government appointed then has increased the deficit (of the 1979 budget!) by about 10 percent.

³²The oil share was 16 percent in 1977 and 11 percent in 1978. See Kavalsky-Agarwal (1978) p. 40. The forecast in early 1979 was a \$1 billion deficit (Expresso n° 330 of 4/21/79) which seems unduly pessimistic.

³³This is simply defined as the inverse of the U.S. price level denominated in escudos (see Macedo (1979c) for a discussion and examples). Most annual data in the IFS tapes start in 1948, but the early issues included data from 1936. With respect to Portugal, however, price data started in 1930, so that the retail price index referred to earlier (see footnote 5) was used for the period 1935-38. The consumer price index reported in IFS is the Lisbon CPI based on a 1948 budget survey (and including rent). The rate used in the IFS Tape is the average market rate, which from 1948 to 1972 is the buying rate in New York, fluctuating within 1 percent margins relative to the parity of 28.75. Note finally that the average escudo dollar rate in 1932, before the Roosevelt devaluation, was 33.37 and at the end of the base year it was 22.17, only slightly below the July 1973 low reported above in the text, and about the same as during the period 1928-31, when the escudo was de facto stabilized against the pound.

³⁴With common base 1929 = 100, in 1933 the real price of the dollar was at a low 78 and the real price of sterling at 102. In 1946 the figures were, respectively, 146 and 152, but after the deflation of 1947 which brings the rates to 116 and 134 respectively in 1948, the devaluation of sterling shoots its real price to 168 whereas the real price of dollars is less than 2 percent above the base value.

³⁵ Except for the wartime appreciation, this pattern contrasts with the one observed in major countries in Latin America, where there was a real devaluation of 50 percent and over against the dollar in the thirties, whereas in Portugal the real price of sterling was basically at its 1929 level until 1937 and there was an appreciation with respect to the dollar in 1933 which remained 5 percent above the 1929 level until the war. In the post war a real depreciation against the dollar did occur but unlike Mexico Colombia, or Peru it resulted after 1950 from low domestic inflation. In so far as the rate was virtually fixed since 1929 the comparison with Cuba who pegged to the dollar (Diaz 1978 p. 17) might be more appropriate. Indeed the minister of the U.S. in Portugal Col. Th. Birch had proposed a military intervention in 1919, arguing: "In my opinion the Portuguese are as capable of self government as the Cubans. If they establish a government by legitimate methods and if that government is protected by the Allies as the United States protects Cuba..." (quoted in Wheeler 1978, p. 199). However, Portugal was less open an economy, and did not partake as intensely as Cuba did of the benefits and costs of the international division of labor. The League of Nation's 1938 International Abstract of Economic Statistics 1931-1936 states emphatically. "Few countries can be proud to have been affected so little by the 1929 crisis as Portugal" (p. 194).

³⁶ On the acceleration hypothesis see Kouri (1978). An application to regimes of currency inconvertibility can be found in Macedo (1979c).

³⁷ For a discussion of similar graphs for major industrial countries, see Kouri-Macedo (1979, p. 35).

³⁸ This is shown in Macedo (1979b) and (1979c, Section III).

³⁹ See evidence in Macedo (1979c, Section II)

Data AppendixSample Period 1914-1950

1. POUNDA Average pound escudo exchange rate from AE, see footnote 33 in the text
2. POCOL Portuguese cost of living index 1914 = 100, see same footnote
3. UKCOL UK cost of living index, see same footnote
4. RESX Real escudo sterling rate (2) over (3) times the index from (1)

Sample period 1929-1978

5. ESAE End of period escudo dollar rate. AE before 1936, IFS thereafter (tape begins in 1948)
6. POPIN Portuguese consumer price index 2 until 1952, linked to IFS, line 64
7. USPIN US consumer price index from Bureau of Labor Statistics as reported in Historical Statistics of the US until 1948 linked to IFS, line 64 thereafter
8. PPIE End of year purchasing power of the escudo in terms of dollars, inverse of (7) times index from (5)
9. REXIE End of period real exchange rate, (8) times (6)

Sample period 1935-1978

10. NNFABP Foreign assets of the Bank of Portugal in billion escudos 1935-1947 Wallfch (1951, p. 28)
1948-1975 IFS tape
1976-1978 Relatório do Banco de Portugal
11. RNFABP Real foreign assets of the Bank of Portugal (10) times (8)
12. GREXIE Rate of change of (10) in % per annum
13. RBNMT Real balance on monetary transactions in billion of real escudos. Yearly change in (11).

	POUNDA	POCOL	UKCOL	RESX
1914.	5.6630	100.00	100.00	100.00
1915.	6.7480	115.50	125.00	77.543
1916.	7.0320	137.10	147.50	74.854
1917.	7.7260	162.30	180.00	66.090
1918.	7.9010	292.70	202.50	103.60
1919.	8.1960	316.80	207.50	105.49
1920.	18.329	551.60	252.00	67.629
1921.	39.384	816.70	219.00	53.622
1922.	65.084	1128.0	184.00	53.341
1923.	109.71	1719.5	169.00	52.517
1924.	133.95	2652.0	170.00	65.952
1925.	99.210	2286.4	173.00	75.439
1926.	94.770	2147.9	170.00	75.499
1927.	108.36	2430.1	166.00	76.506
1928.	108.25	2293.9	165.00	72.729
1929.	108.25	2272.4	161.00	73.838
1930.	108.25	2218.9	155.00	74.890
1931.	109.37	2008.2	147.00	70.736
1932.	110.06	1960.2	143.00	70.531
1933.	109.10	2001.5	138.00	75.281
1934.	110.45	2007.4	141.00	72.993
1935.	110.36	2007.4	143.00	72.031
1936.	110.38	2055.2	146.00	72.222
1937.	110.38	2126.9	155.00	70.403
1938.	110.38	2055.2	156.00	67.587
1939.	110.27	1935.7	158.00	62.917
1940.	102.73	2031.3	184.00	60.859
1941.	100.20	2294.2	199.00	65.156
1942.	100.20	2796.0	200.00	79.011
1943.	100.20	3154.5	199.00	89.589
1944.	100.20	3250.1	201.00	91.386
1945.	100.20	3512.9	203.00	97.902
1946.	100.20	4038.7	203.50	112.16
1947.	100.20	4158.2	203.00	115.77
1948.	100.20	3919.2	223.30	99.194
1949.	94.790	4041.1	225.33	107.14
1950.	80.650	4081.9	231.42	123.85

	ESAE	POPIN	USPIN	PPIE	REXIE
1929.	22.280	100.00	100.00	80.505	93.610
1930.	22.280	95.000	97.466	82.598	91.241
1931.	22.280	84.000	88.889	90.568	88.461
1932.	29.350	82.000	79.727	76.652	73.086
1933.	30.940	82.000	75.634	76.648	73.083
1934.	21.490	84.000	78.168	106.78	104.29
1935.	21.970	84.000	80.117	101.90	99.531
1936.	22.460	86.000	80.897	100.00	100.00
1937.	22.090	87.940	84.069	97.839	100.05
1938.	23.670	88.586	82.483	93.064	95.863
1939.	27.650	90.526	81.848	80.286	84.511
1940.	25.010	98.932	82.483	88.078	101.32
1941.	25.090	108.63	85.972	84.233	106.40
1942.	25.050	123.50	95.172	76.212	109.45
1943.	25.050	137.73	101.20	71.673	114.78
1944.	25.050	154.54	102.79	70.567	126.81
1945.	24.940	168.12	105.32	69.170	135.22
1946.	24.940	184.29	113.89	63.958	137.07
1947.	24.070	188.17	130.70	57.754	126.36
1948.	25.070	192.99	140.54	51.570	109.73
1949.	28.900	188.17	143.71	43.748	95.719
1950.	28.900	186.87	141.81	44.335	96.337
1951.	28.900	184.29	153.23	41.031	87.923
1952.	28.900	183.64	156.40	40.198	85.837
1953.	28.900	184.93	157.67	39.875	85.746
1954.	28.900	186.87	158.30	39.715	86.298
1955.	28.900	186.87	157.99	39.795	86.471
1956.	28.900	192.69	160.21	39.243	87.928
1957.	28.750	195.92	165.92	38.090	86.777
1958.	28.750	198.51	170.36	37.097	85.630
1959.	28.880	201.10	171.94	36.589	85.559
1960.	28.830	206.92	174.48	36.120	86.904
1961.	28.800	210.15	176.39	35.767	87.401
1962.	28.850	215.97	178.29	35.324	88.708
1963.	28.890	219.85	180.51	34.841	89.067
1964.	28.950	228.26	182.73	34.346	91.160
1965.	28.830	236.01	185.90	33.901	93.036
1966.	28.980	247.65	191.61	32.720	94.224
1967.	28.860	261.23	196.69	32.008	97.229
1968.	28.770	276.75	204.94	30.816	99.168
1969.	28.650	301.32	216.04	29.355	102.85
1970.	28.750	320.72	228.73	27.630	103.04
1971.	27.560	358.87	238.57	27.635	115.32
1972.	27.000	397.02	246.50	27.300	126.03
1973.	25.840	448.10	262.04	26.834	139.82
1974.	24.600	561.26	290.59	25.417	165.88
1975.	27.470	646.62	317.24	20.849	156.76
1976.	31.550	783.05	335.64	17.158	156.23
1977.	39.850	973.16	357.53	12.753	144.31
1978.	46.010	1105.1	384.49	10.271	131.97

	NNFABP	RNFABP	GREXIE	RBNMT
1935.	1.5000	1.5285	-4.5646	.
1936.	1.6000	1.6000	.47113	.71478E-01
1937.	1.6000	1.5654	.45166E-01	-.34583E-01
1938.	1.6000	1.4890	-4.1809	-.76400E-01
1939.	1.7000	1.3649	-11.842	-.12417
1940.	2.6000	2.2900	19.892	.92516
1941.	6.1000	5.1382	5.0108	2.8482
1942.	10.600	8.0785	2.8646	2.9403
1943.	13.500	9.6758	4.8763	1.5974
1944.	16.100	11.361	10.475	1.6854
1945.	18.100	12.520	6.6334	1.1585
1946.	18.700	11.962	1.3712	-.55781
1947.	15.900	9.1828	-7.8138	-2.7791
1948.	12.706	6.5524	-13.162	-2.6304
1949.	12.450	5.4466	-12.770	-1.1058
1950.	13.528	5.9976	.64588	.55104
1951.	15.955	6.5464	-8.7343	.54879
1952.	16.197	6.5109	-2.3722	-.35516E-01
1953.	17.670	7.0459	-.10629	.53495
1954.	18.830	7.4783	.64394	.43246
1955.	19.270	7.6684	.20077	.19011
1956.	19.910	7.8133	1.6850	.14486
1957.	19.710	7.5076	-1.3095	-.30573
1958.	20.340	7.5455	-1.3214	.37979E-01
1959.	20.710	7.5777	-.83324E-01	.32129E-01
1960.	20.640	7.4551	1.5730	-.12256
1961.	18.500	6.6169	.57122	-.83818
1962.	22.840	8.0680	1.4959	1.4511
1963.	23.890	8.3235	.40488	.25554
1964.	27.220	9.3491	2.3493	1.0255
1965.	29.230	9.9092	2.0580	.56012
1966.	33.020	10.804	1.2775	.89502
1967.	36.640	11.728	3.1882	.92367
1968.	39.770	12.256	1.9948	.52772
1969.	40.980	12.030	3.7154	-.22598
1970.	42.330	11.696	.18291	-.33392
1971.	52.420	14.486	11.915	2.7904
1972.	62.330	17.016	9.2918	2.5301
1973.	70.330	18.872	10.937	1.8558
1974.	54.660	13.893	18.639	-4.9792
1975.	31.860	6.6426	-5.4956	-7.2502
1976.	3.5100	.60225	-.34084	-6.0404
1977.	-12.540	-1.5992	-7.6313	-2.2014
1978.	-3.1900	-.32763	-8.5449	1.2715

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