

**Convertibility and Stability 1834-1994:
Portuguese Currency Experience Revisited**

Jorge Braga de Macedo

Faculdade de Economia, Universidade Nova de Lisboa

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PORTUGUESE CURRENCY EXPERIENCE REVISITED ***

Jorge Braga de Macedo

Faculty of Economics

Nova University

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ABSTRACT

In this paper, the period since 1834 is divided according to the monetary and exchange rate regime prevailing in Portugal. Stability is associated with convergence to the European average in terms of both growth and inflation whereas the effect of instability is visible on growth divergence and higher inflation, together with much higher deficits and greater government turnover. The effect of convertibility is to allow higher deficits and debt, at least when stability prevails. As the combination of inconvertibility and stability was recorded during about one half of the period, the tolerance towards inconvertibility was almost as strong as the preference for stability, four fifths of the time. The reason for the peculiar combination of stability and convertibility observed in Portugal may also reflect the fact that convertibility was a risky option for an authoritarian political regime.

The three regime changes towards convertibility were gradual; they proved a necessary but not sufficient condition for stability. In 1931 and in 1992, the system itself was in turmoil shortly after the regime change. The regime change criterion is related to the ability to maintain a stable exchange rate and low inflation over several years and this requires more than budgetary consolidation. In effect it requires a reputation for financial stability which Portugal acquired in 1992, the year in which inflation fell to single digits and the currency became fully convertible.

The rule of exchange rate stability does not necessarily follow from membership in the European Monetary System: fiscal discipline must be domestically generated. The best international financial markets can do is help making the regime changes known. Revisiting the Portuguese currency experience 140 years after joining the gold standard and 70 years after Alvaro de Castro stabilized the escudo shows that the neglect of policy issues such as convertibility throughout the post-war period hindered the understanding of national economic development.

1. INTRODUCTION

As the historical process of national capacity building has been admirably illustrated in the research and teaching of Professor Francisco Pereira de Moura, it may be of interest to him how international monetary standards fit in the Portuguese growth experience over the last 160 years. The Portuguese government expressed its commitment to currency convertibility and exchange rate stability in 1992. There were two precedents, the decision to join the gold standard, in 1854, and the stabilization of the escudo, in 1924 <1>. All three changes took a number of years to mature. The picture remains controversial among economic historians and the series used are very rough estimates.

The restauration of full currency convertibility on December 16, 1992 was a measure of public policy which provided Portuguese citizens with a liberty they had lost one century earlier: that of exchanging freely their domestic currency for foreign assets. In this regard, it is natural to recall that civil war followed the introduction of constitutional rule in the 1820s. The idea that parliamentary democracy was incompatible with economic progress because it induced political instability and social strife may have originated then. It was of course basic to the ideology of Salazar, who ruled with the support of the military from 1926 to 1968.

Nevertheless, after Portugal joined the gold standard in 1854, almost 30 years of economic development ensued and the stabilization of the 1920s kept the currency stable for half a century. Then, currency depreciation returned for 15 years, until the economic regime began to change for the better in 1989, after the fall of the Berlin wall.

2. LONG CYCLES OF DIVERGENCE AND CONVERGENCE

The series for real gross domestic product and its deflator presented in the Data Appendix begin in 1834 but the estimates are quite controversial especially for the 1890s and both World Wars. According to this data, Portuguese per capita output was about 40% of the industrial countries average both in the 1830s and in the 1990s: it fell to 20% in the 1920s and then recovered to the earlier level <2>. Over the entire period, gross Portuguese product grew at the same rate as that of the current

members of the European Union (EU), 2.3% per annum, but the pattern was one of divergence during the 19th century <3>.

In spite of the controversy surrounding data during the First World War, it seems that the process of long term divergence ended with the monetary stabilization of 1923-24 due to Álvaro de Castro. Real divergence therefore precedes both decisions to join the gold standard, in 1854 and 1931, whereas convergence follows. In the first instance, convergence lasts until the decision to leave the gold standard, taken in 1891. In the second case, convergence was briefly interrupted after World War II, but it was otherwise sustained until the early 1970s, when per capita output reached again about 40% of the group average. Since then, convergence proceeded, especially after Portugal joined the European Community in 1986.

The average annual rate of growth of real gross domestic product in Portugal since 1834 equals that in the 15 states of the EU (Austria, Ireland and Luxemburg excluded due to lack of data). The ten-year moving average, a more appropriate measure of real convergence than the year-to-year difference in growth rates, is presented in Chart 1. The rate of real divergence before 1924 and the rate of real convergence thereafter are roughly the same 1% in absolute value. The Portuguese annual growth rate goes from 1% to 4% between the two long cycles. The union average is of course less variable: it goes from 2% to 3%.

It has been shown that the price deflator and the nominal income series are almost certainly overestimated for the period before 1947, even if the real output series for 1834-1990 remains roughly unchanged. An alternative series has been estimated for the period 1867-1946. In the Data Appendix, it has been linked to the existing series and updated using OECD and European Commission Winter 1994 forecasts to 1996. The ten-year moving average of nominal convergence since the 1924 stabilization is presented in Chart 2.

Public finance data begins in 1851, even though there are budget deficit estimates for 1836-46, as shown in Chart 3. Using the alternative series increases the debt output ratio from below 70% to over 100% for the period before 1924 and by 20 percentage points for the sample average. It suggests that the alternative series may underestimate nominal income, even though such high public debt ratio matches the perceptions of the period.

An exchange rate series can be built after 1854; earlier values are quite uncertain. As a rough measure of exchange rate stability, the annual devaluation against sterling (labeled XR) is reported in Charts 4 and 5. The average depreciation relative to the pound sterling since the Bank of Portugal was established in 1846 amounts to 4%. The average growth of narrow money since 1854 is 9%, ignoring several changes in definition and serious disagreements on how to treat foreign currency between 1891 and 1914, given that the valuation of foreign currency varied in the market after the currency ceased to be convertible into gold <4>.

As a measure of political stability, the average number of government changes per year, including those with the same Prime Minister (labeled GV) is shown in Chart 6. It is to be recalled that political participation was minimal between the 1926 and the 1974 military revolts: GV is one in 1934, after the approval of the Constitution which established civilian rule under Salazar, and again in 1968, when Salazar was replaced due to illness. It is zero in-between.

	1834-1993	1834-1924	1925-93
Number of government changes (GV)	0.9	1.2	0.5
Exchange rate against sterling (XR)	4	7	1

Source: Updated from Neves (1994).

	1834-1996	1834-1924	1925-96
GDP deflator growth(P % p.a.)	6	5	7
Budget deficit as % output(DEF)	2.5	2.1	2.9
Public debt as % output (DEBT)	73	103	41

Source: Data Appendix.

The conventional series reveals a lower average inflation during the cycle of real divergence. Using the conventional series for nominal income, the ratio of public debt to output reached 54% and the average deficit was 2.2% of gross domestic product. However, taking into account the overvaluation of output prices brings down nominal income until the early 1940s. The convergence criteria set out in the Treaty on European Union, as conditions to move to a single currency were DEF=3% and DEBT=60%, one was met by Portugal over the long haul, but the other was not (except if the overvalued series for nominal income is used). The average rates of real growth and of increase of the output deflator in Portugal relative to the European average are also labeled as convergence or divergence below.

	1870-1914	1915-24	1926-73	1974-89	1990-96
	GROWTH				
PORTUGAL	1.4	-2	4.2	3.0	2.0
EU	1.8	1.2	3.2	2.3	1.9
CONV/DIV	-3	-1.4	1.0	.7	.1

Source: Data Appendix.

	INFLATION				
PORTUGAL	0.8	37.4	2.7	19.1	8.7
EU	-0.8	3.5	1.7	7.3	3.6
CONV/DIV	1.4	34.0	1.0	11.8	5.1

Source: Data Appendix.

During the entire period 1870-1996, growth convergence proceeds at .3% per annum, whilst inflation divergence is close to 6% per annum. This unsatisfactory nominal performance reflects the absence of stability and convertibility together, since it reduces the gold standard period - when there was real convergence of 1% per annum - to two thirds of its length.

3. THREE GRADUAL REGIME CHANGES TOWARDS CONVERTIBILITY

The experience of Portugal from the 1830s to the 1990s includes three decisions to join the convertibility and stability club. The timing of these decisions differs from the other small European nations. The 1854 decision was early and the 1931 and 1992 decisions were late. To divide the period since 1834 according to the prevailing monetary and exchange rate regime, the distinction is first made between a convertible and an inconvertible currency regime. The notion of specie convertibility is taken to be equivalent to the absence of exchange controls according to the articles of agreement of the International Monetary Fund: a currency which is only convertible for current account transactions is therefore deemed inconvertible. Second, an exchange rate rule specifying a currency peg is taken to be equivalent to exchange rate stability: third country volatility is therefore deemed compatible with exchange rate stability but a passive crawling peg is not.

Aside from the 8 year period intervening between the establishment of the Bank of Portugal and the decision to join the gold standard, there were reversions into instability from 1915 to 1924 and from 1974 to 1989. While the three regime changes could be dated at the beginning of the period of stability, the notion of a

gradual regime change is more appropriate to describe the 1854 and the 1992 decisions. Moreover, a regime change is a necessary but not sufficient condition for stability. In 1931 and in 1992, the system itself was in turmoil shortly after the regime change.

When the change in regime is itself gradual, policy credibility may not be established in as clear a way as otherwise. This particular example reinforces the importance of political decisions on the face of historical contingencies. It also points out to the effects of global disturbances on individual country decisions. But, even though the rationalization of the choice of stability is more difficult when the environment is unstable, the implication is the same.

Between the first two subperiods of major instability (in 1834-54 and in 1915-24) and between 1975 and 1989), the two subperiods after leaving the gold standard were somewhat more stable. Except for the aftermath of the 1974 revolution, therefore, all subperiods of instability occur before the regime change of 1925-31. Conversely, the only subperiods of stability during this century taking place in a democratic regime begin in 1989.

Grouping regimes which are convertible and stable and contrasting them to regimes which are not brings out the same features. The gold standard and the shadow sterling standard follow the initial turmoil of 1834-54 and are followed by the 1914-24 hyperinflation. After Alvaro de Castro's successful stabilization, the sterling and dollar standards lasted until after the 1974 revolution. They were followed by the IMF standard, during which Portugal was twice subject to conditional balance of payments lending, and by a new transition towards convertibility. Made possible by the 1989 constitutional amendment allowing the revolutionary nationalizations to be reversed, the restoration of convertibility was complicated by the 1990-91 wage explosion and the resilience of financial protection.

Threats to convertibility and stability originated above all from political and social instability. Political and social instability slowed the pace of economic development. Instances of civil strife abound during the period. A bitter civil war followed the introduction of constitutional rule by the middle classes after the Napoleonic wars. The civil war ended in 1834 but political stability still had to wait another 20 years. Similarly, during the 20th century there were four victorious revolutions in Portugal: 1910, 1917, 1926 and 1974.

Salazar's regime was committed to financial stability and fiscal discipline but did not encourage international trade in goods, services and assets. Against a successful industrial export promotion in the framework of EFTA, colonial preferences lasted until the military themselves turned against the regime in the aftermath of the 1973 oil crisis.

The duration of the 7 regimes, together with the transitions between regimes, is reported as percentage of the total (labeled T). It is followed by the measures of government and exchange rate stability.

		T	GV	XR
1. 1834-50	Financial turmoil	11	1.2	2
2. 1851-54	Gradual regime change	26	0.5	0
2a. 1855-91	Gold standard	26	0.6	0
3. 1892-94	Inconvertibility crisis	15	1.0	7
3a. 1895-14	Shadow sterling standard	15	1.1	0
4. 1915-24	Hyperinflation	6	3.9	45
5. 1925-31	Gradual regime change	31	1.6	0
5a. 1932-49	Sterling standard	31	0.2	-1
5b. 1950-74	Dollar standard	31	0.2	-2
6. 1975-89	IMF standard	9	0.9	11
7. 1990-92	Gradual regime change	3	0.3	-3
7a. 1993	EMS turbulence	3	0	2

The subperiods are grouped according to the combination between exchange rate stability and currency convertibility, and we compute the averages for the measure of political stability (GV), the two fiscal convergence criteria (DEF and DEBT) and the two convergence indicators reported above (P for INFLATION and Y for GROWTH). The effect of convertibility in an unstable environment is difficult to ascertain since it only occurred at the very beginning and end of the

sample period, during 3% of the time. Similarly, the combination of inconvertibility and instability, which occurs 28% of the time, includes the subperiod preceding the gradual regime change towards gold convertibility, a total of 17 years. The almost complete lack of fiscal data and the unreliability of the price and output data suggests that this subperiod, together with the exceptional combination of convertibility and instability be left out of the summary tabulation. This implies expressing the percentages of time spent on each combination from 1854 to 1992. The new variable is labeled T'.

	CONV/DIV					
	T'	GV	DEF	DEBT	P	Y
Inconvertible and unstable	20	2.0	7	72	19	-1
Inconvertible and stable	53	.6	1	61	2	1
Convertible and stable	27	.6	2	100	2	1

It is seen that stability is associated with convergence in terms of both growth and inflation and that adding convertibility seems to bring higher deficit and higher debt. The effect of instability is visible on growth divergence and higher inflation, together with much higher deficits and greater government turnover. These results suggest that the effect of convertibility is to allow higher deficits and debt, at least when stability prevails. As inconvertibility and stability was recorded during about one half of the period, the tolerance towards inconvertibility was almost as strong as the preference for stability, four fifths of the time.

In Portugal, even though the suspension of convertibility in 1891 was costly in terms of greater fiscal tightness and lower growth, convertibility did not turn out to be a necessary condition for stability. A commitment to restoring convertibility in the medium term sufficed. The commitment was restated in 1931, when the Portuguese escudo was the last currency to join the classical sterling standard. The reason for the peculiar combination of stability and convertibility observed in Portugal may also reflect the fact that convertibility was a risky option for an authoritarian political regime.

Portugal joined the IMF in 1960 and availed itself of the transitory status of inconvertibility. The return to borrowing by the Republic on international

financial markets which began in 1963 was followed by the signature of the OECD Code on International Capital Movements Liberalization in 1964. This could have been followed by full currency convertibility, given the very strong balance of payments position which lasted until the oil crisis of late 1973.

Due to fears that the protracted colonial wars might induce excessive capital outflows, however, capital account convertibility remained subject to administrative restrictions. The financial system remained protected and the threat of external competition, which would have been associated with a convertible currency, was strong enough to prevent the move from being associated with the substantial trade liberalization which took place in the framework of the EFTA.

This long heritage of stability without convertibility delayed the modernization of the operating procedures of the central bank. The successive nationalization of the central bank and of the domestic banking system in 1974-75 reinforced this effect. For the ten years during which the exchange rate accommodated inflation differentials with the union, the financial system was state-owned and probably even less competitive than in the 1960s.

The residual fear of capital flight, which existed during both the colonial and the revolutionary regimes, albeit for opposite reasons, made it more difficult for the Bank of Portugal to accept the restoration of full currency convertibility <5>. Even entry into the EMS in April 1992 met with bureaucratic resistance. There are reasons for this. The beginning of the third regime change towards exchange rate stability involved the reversal of a constitutional freeze on the nationalizations of 1975, which may not have been seen by social partners as a measure of financial liberalization.

Moreover, the strong disinflation of 1986-88 was then reversed, so that the implications for price stability and sound public finances were even less apparent. Nevertheless, the drive towards privatization attracted foreign investment. In response, capital controls were tightened so as to discourage excessive inflows, while domestic financial liberalization allowed interest rates for public debt to rise. The move sought to prepare banks for the increased competition that was expected from the single market in financial services. It also helped prevent inflationary pressures from accelerating.

Given the very low level of unemployment, however, there was a strong upward pressure on wages, which the government fueled with a reform of the public sector wage grid. An exchange rate policy of shadowing of the Deutsche-mark and a medium term budgetary consolidation program were discreetly introduced but the financial system remained protected and inflation was still in double digits when the incumbent government won the October 1991 elections. The regime change was so gradual it was difficult for the market participants to believe it was actually taking place.

The Convergence Programme presented by the new government in November stressed the leadership role of the public sector in wage negotiations, but the signals of wage moderation in the February 1992 price and incomes agreement were still weak. The resistance to wage moderation on the part of trade unions and to rental moderation on the part of banks was not surprising since the rate of unemployment was low and competition in the financial system weak. The recent memory of the inflation reversal also explains these corporatist resistances.

In the first months of 1993, there was no difficulty in defending the new parity given the extraordinarily high level of reserves. Nevertheless, perceived disagreements between the government and the central bank on matters of banking competition and financial supervision, together with the failure to agree on an incomes policy for 1993 increased the vulnerability of the national economy to the European recession.

Similarly the change in tax collection procedures due to the single market and the greater mobility of the tax base substantially lowered tax receipts. Both events led to expectations of an output cost of disinflation well above official predictions and to pressures for an explicit policy reversion. Even though the nominal expenditure ceiling in the Convergence Program was met, a supplementary budget was necessary. Due to several revisions of deficit and output figures, the ratio turned out to be close to the figure for 1991. The gradual convergence path was retained in the Revised Convergence Program approved with the 1994 Budget.

The regime change criterion is related to the ability to maintain a stable exchange rate and low inflation over several years and this requires more than budgetary consolidation. In effect it requires a reputation for financial stability which

Portugal acquired in 1992, the year in which inflation fell to single digits and the currency became fully convertible.

The rule of exchange rate stability does not necessarily follow from membership in the EMS as, under the very wide bands in effect since August 1993, discipline must be domestically generated. Still, the ability to stabilize a convertible currency is the best single indicator of sustained regime change. Portugal managed to acquire a reputation for financial stability in less than ten years and survived the test of an uncertain environment in 1992-93. So far, its experience in the union provides a case of successful interaction between national and union policies for cohesion.

4. CONCLUSION

Currency convertibility is not just a feature of the monetary and exchange rate regime but also a financial right of the citizen, which signals the government's commitment not to inflate the currency through exchange controls. This is why an authoritarian regime may be reluctant to make the currency convertible even when the economic and financial conditions seem to allow. The government's decision will be all the more understandable if the geographical location of the territory is such that, together with the underlying mobility of the population, fears of capital flight may be warranted.

Nevertheless, the costs of inconvertibility appear greater than the benefits even for a small European nation to the extent that currency inconvertibility is a form of financial protectionism. Portuguese currency experience over the last 160 years does show that the positive effects of monetary and exchange rate stability are wasted in an environment of real or financial protection.

On the other hand, pegging to a stable European and Atlantic currency was at least an objective throughout the period but the benefits of convertibility and stability were not independent of domestic support for stability. This is why Portugal managed to reap the benefit of exchange rate stability even when the currency was inconvertible and political fears on the part of an authoritarian regime prevented an evolution more in line with that of other small European nations. This heritage of stability may also explain why Portugal was able to maintain the medium term credibility of policy in spite of two realignments of the peseta which were partly followed by the escudo in 1992-93.

Portugal's specific timing to join the stability and convertibility club reinforces the idea that external credibility may be necessary for medium term policy credibility of any nation-state but that it is never sufficient. The best international financial markets can do is help making the regime changes known. This was true of 1851-54 and 1989-92, and even of the 1925-31 regime change, in spite of the failure to restaure convertibility.

In an earlier essay on the Portuguese currency experience, I stressed that "the episodes of external disequilibrium can be traced back to disequilibria in the accounts of the public sector. It is therefore no wonder that the theory and practice of monetary and exchange rate policy in Portugal should have owed so much to public finance specialists" <6>. Similarly, in my comment on Professor Moura's assessment of the 50th anniversary of The General Theory of Employment, Interest and Money I emphasized the open economy perspective of Nova, relative to the tradition of his own Institute <7>.

Revisiting the Portuguese currency experience 140 years after joining the gold standard and 70 years after Alvaro de Castro stabilized the escudo convinced me that the neglect of policy issues such as currency convertibility throughout the post-war period hindered the understanding of national economic development. Portugal may have been a "good student" in the last few years but it was a late starter.

It will not shock Professor Moura that I take a detached view on issues I was involved in as policy-maker: when we met in the late 1960s, he was struggling for the restauration of democracy with the same enthusiasm as I struggled for the restauration of convertibility twenty years later.

ENDNOTES

<1> In the Summer of 1993, as Minister of Finance, I asked Barry Eichengreen and Jaime Reis to help me organize a conference to celebrate the 140th anniversary of Portugal joining the gold standard. My successor at the Ministry followed up on the project. The preparation of the conference volume is in progress. See Reis (1994) and Santos (1994), respectively, on the two precedents mentioned in the text.

<2> The group of industrial countries used by Bordo and Schwartz (1994) and Maddison (1994) corresponds to the IMF Group of Ten (which includes Switzerland). It differs from the current IMF definition.

<3> Bairoch (1976, p.286) writes: "Portugal which was probably one of the five richest countries in 1800 was among the three or four poorest in 1913".

<4> In Macedo (1980) a real exchange rate against sterling was computed from 1854 to 1914. Some values for 1846-54 are mentioned in Reis (1994). The definition of the money stock is discussed in the Appendix to Mata and Valerio (1994), where references can be found.

<5>The story is told in greater detail in Macedo (1994).

<6> Macedo (1980, p.343).

<7> Macedo (1986)

DATA APPENDIX

The nominal and real output series found in Neves (1994), which follow Mata and Valerio (1994), were interpolated using the series for 1867 to 1946 from Marques and Esteves (1994). Breaks are starred (*).

The nominal output series from 1960 is from the Ministry of Finance data bank; it is close to the series published every year in European Economy but incorporates the upward revision due to a change of base in 1986. The debt and deficit data as a percentage of nominal income have been adjusted accordingly.

EU inflation and growth series are taken from the 21-country Bordo and Schwartz (1994) data set from 1881 to 1990, updated using OECD Economic Outlook December 1994 data. The inflation data from 1870 to 1881 refers to the cost of living indices from Maddison (1994). Breaks are double-starred (**).

Both averages, using 1970 dollar GDP weights exclude Austria and Ireland, Maddison's also excludes Greece, Portugal and Spain. The growth series is linked to the estimates of Western Europe output from 1830 to 1880 in Bairoch (1976).

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Santos, Fernando (1994), *Last to Join the Gold Standard, 1931*, Jorge Braga de Macedo, Barry Eichengreen and Jaime Reis, editors, Currency Convertibility: The Gold Standard and Beyond (in progress).

Chart 1

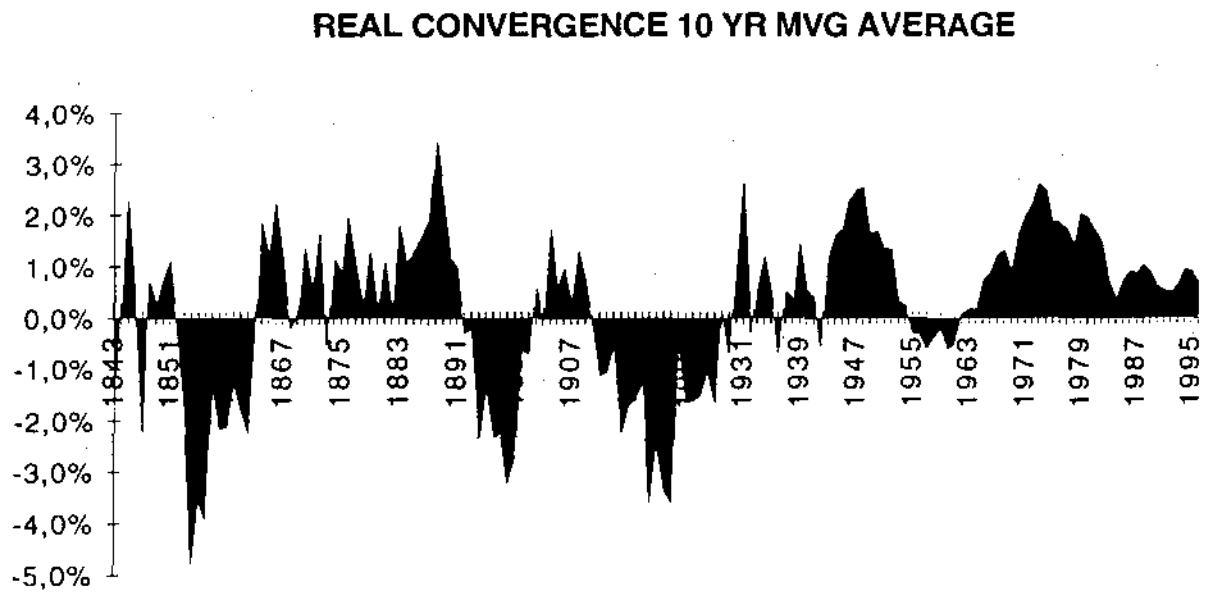


Chart 2

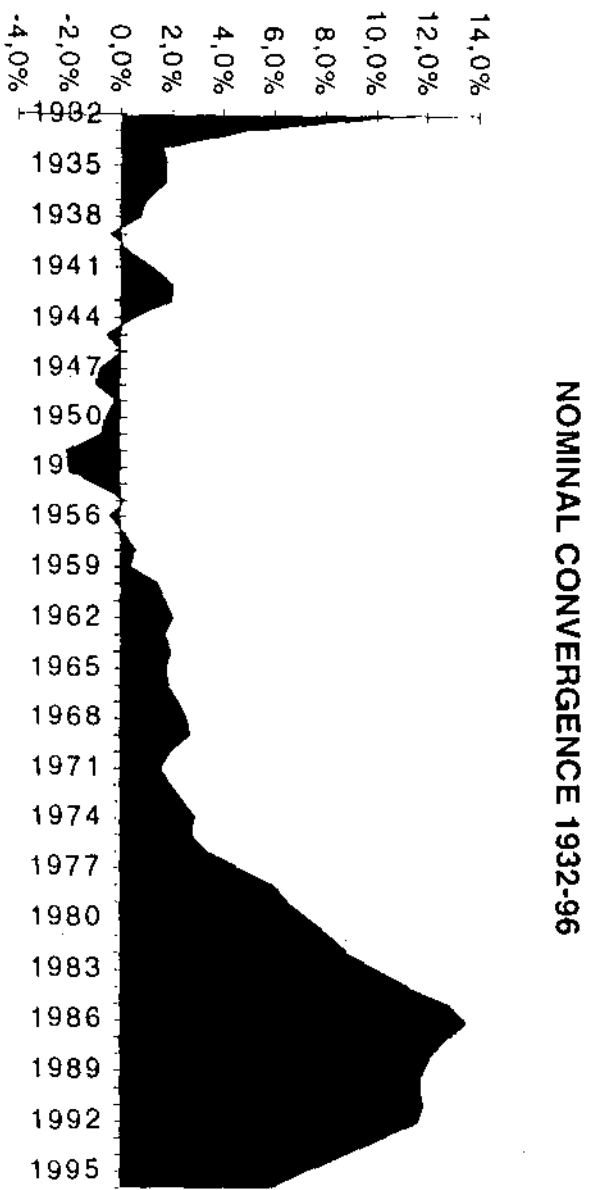


Chart 3

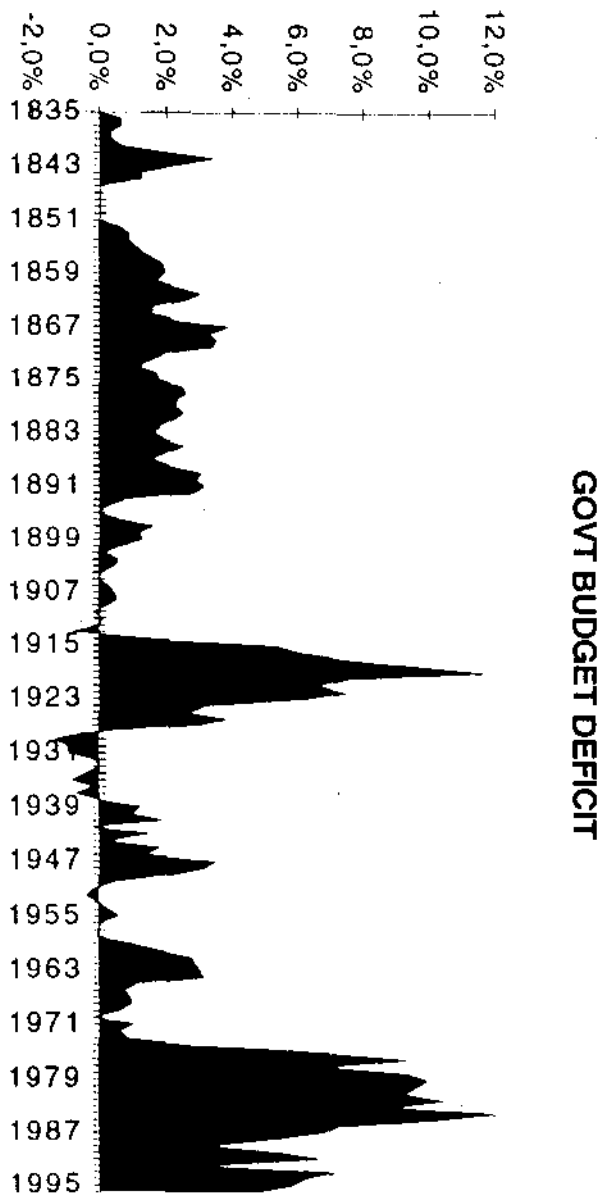


Chart 4

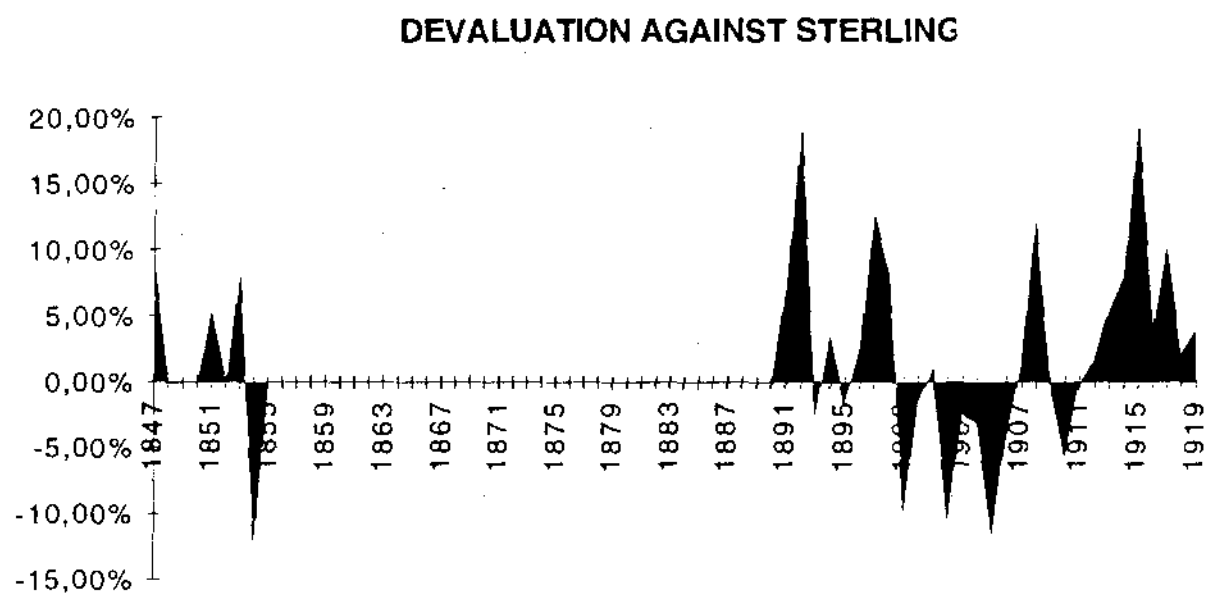


Chart 5

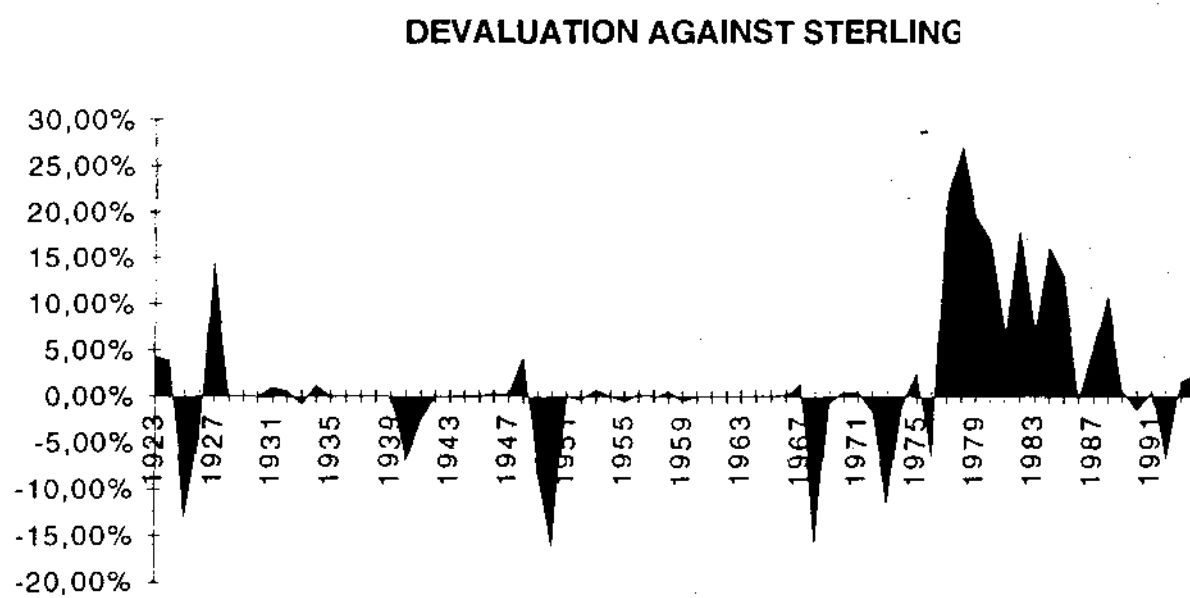
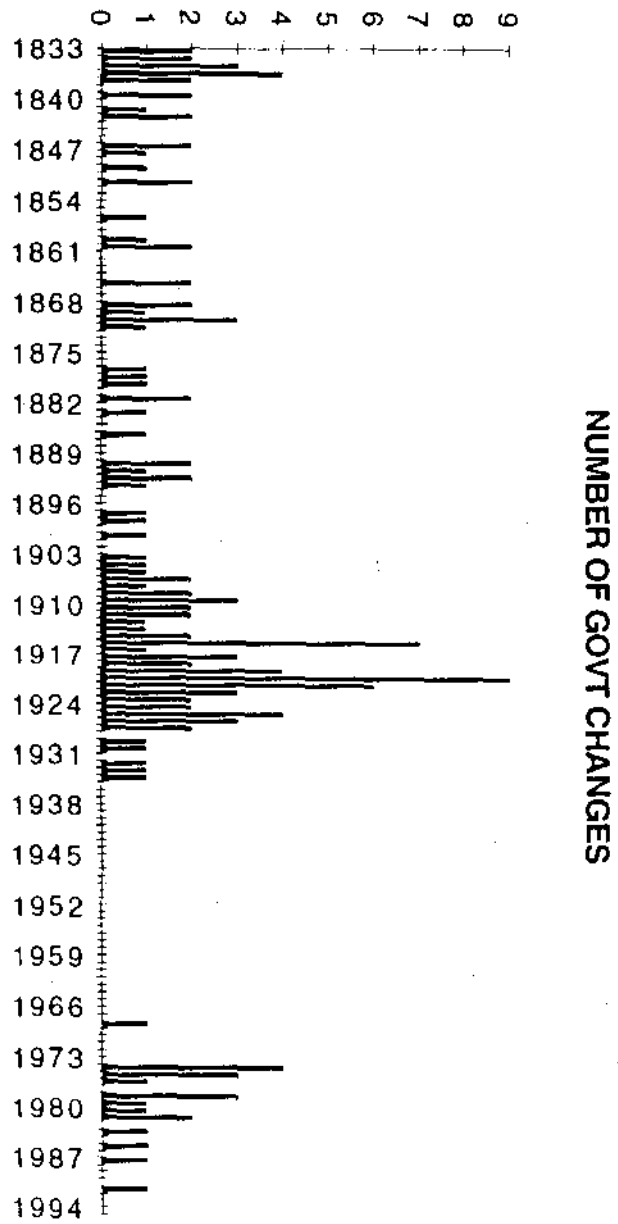


Chart 6



DATA APPENDIX

	PORTUGAL	PORTUGAL	EU	EU	PORTUGAL	PORTUGAL
	DEBT	DEFICIT	INFLATION	GROWTH	INFLATION	GROWTH
	% OUTPUT	% OUTPUT	%P.A.	%P.A.	%P.A.	%P.A.
1831				3%		
1832				8%		
1833				-9%		
1834				1%	17%	-10%
1835		0,0%		6%	21%	-17%
1836		0,6%		-1%	-8%	4%
1837		0,6%		5%	-19%	20%
1838		0,3%		3%	0%	-7%
1839		0,3%		-2%	3%	-4%
1840		0,7%		8%	10%	-7%
1841		2,0%		-4%	5%	0%
1842		3,4%		-1%	-10%	18%
1843		2,4%		7%	-5%	8%
1844		1,2%		6%	-14%	14%
1845		1,2%		1%	0%	-1%
1846				-5%	22%	-18%
1847				16%	-3%	4%
1848				-7%	-11%	12%
1849				0%	6%	-6%
1850				-1%	11%	-10%
1851	52%	0,0%		1%	-7%	8%
1852	54%	0,6%		1%	-2%	7%
1853	45%	0,9%		-4%	21%	-19%
1854	55%	0,9%		9%	18%	-15%
1855	52%	1,1%		-1%	-3%	9%
1856	50%	1,3%		6%	20%	-13%
1857	54%	1,8%		7%	-14%	23%
1858	51%	1,9%		0%	-7%	12%
1859	55%	2,0%		-4%	9%	-10%
1860	61%	1,7%		5%	-4%	3%
1861	63%	2,3%		0%	5%	2%
1862	61%	3,0%		5%	1%	7%
1863	62%	2,5%		4%	-4%	6%
1864	68%	1,6%		1%	3%	2%
1865	72%	1,6%		0%	-3%	4%
1866	75%	2,4%		3%	3%	-5%
*1867	75%	3,9%		-6%	6%	-1%
1868	88%	3,3%		7%	-5%	5%
1869	96%	3,5%		4%	1%	-1%
1870	99%	3,4%		-2%	-7%	10%
1871	123%	2,0%	4%	2%	-2%	-3%
1872	112%	1,6%	5%	0%	-1%	12%
1873	107%	1,2%	4%	3%	26%	-17%
1874	115%	1,7%	-1%	6%	-17%	25%
1875	105%	1,8%	-5%	1%	10%	3%

DATA APPENDIX

1876	113%	2,5%	1%	-3%	-4%	-1%
1877	110%	2,6%	2%	1%	12%	-4%
1878	128%	2,4%	-4%	3%	-2%	-7%
1879	125%	2,3%	-2%	-2%	-1%	4%
1880	133%	2,5%	4%	2%	-6%	3%
**1881	124%	2,2%	0%	1%	2%	4%
1882	125%	1,9%	-1%	2%	-1%	4%
1883	133%	1,7%	-7%	4%	-3%	0%
1884	125%	2,0%	-3%	1%	-6%	12%
1885	138%	2,5%	-2%	1%	-4%	5%
1886	132%	2,0%	3%	-1%	1%	4%
1887	136%	1,6%	-8%	4%	-3%	3%
1888	129%	2,1%	1%	1%	1%	7%
1889	128%	3,1%	3%	1%	7%	-4%
1890	130%	2,9%	-3%	4%	10%	-8%
1891	140%	3,1%	-1%	0%	-2%	2%
1892	147%	2,8%	-3%	1%	5%	-9%
1893	156%	0,8%	-5%	3%	1%	0%
1894	159%	0,3%	-3%	2%	3%	-8%
1895	144%	0,0%	-2%	2%	-4%	15%
1896	144%	0,6%	-4%	4%	2%	0%
1897	152%	1,6%	4%	0%	5%	-1%
1898	143%	1,2%	-4%	5%	3%	2%
1899	132%	1,3%	1%	1%	0%	1%
1900	130%	0,7%	2%	1%	0%	11%
1901	139%	0,2%	-3%	1%	-5%	2%
1902	131%	0,6%	-1%	0%	1%	3%
1903	113%	0,5%	-3%	4%	7%	-5%
1904	115%	0,1%	-5%	3%	-9%	11%
1905	120%	0,0%	1%	2%	-3%	4%
1906	119%	0,3%	1%	3%	-1%	3%
1907	112%	0,4%	0%	3%	7%	-4%
1908	108%	0,5%	-1%	0%	-1%	6%
1909	109%	0,3%	-2%	3%	2%	-2%
1910	111%	-0,2%	4%	0%	3%	2%
1911	111%	0,1%	-2%	4%	4%	-6%
1912	103%	0,0%	-1%	4%	2%	7%
1913	101%	-0,8%	-1%	3%	4%	-2%
1914	110%	1,8%	0%	0%	-1%	-9%
1915	104%	5,4%	2%	3%	11%	10%
1916	93%	6,1%	9%	2%	17%	3%
1917	92%	7,5%	11%	0%	16%	-5%
1918	75%	9,7%	13%	-3%	71%	-19%
1919	75%	11,6%	11%	-1%	11%	4%
1920	60%	7,5%	12%	-1%	81%	-8%
1921	89%	6,6%	-3%	-2%	44%	-13%
1922	68%	7,4%	-13%	6%	29%	42%
1923	84%	6,3%	-3%	4%	60%	-13%
1924	76%	3,2%	-2%	4%	33%	-5%
1925	68%	2,7%	3%	3%	5%	11%

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1926	65%	3,8%	2%	1%	4%	7%
1927	69%	2,9%	-4%	4%	6%	-6%
1928	71%	-0,5%	-3%	4%	-5%	5%
1929	67%	-1,3%	-3%	2%	6%	-1%
1930	65%	-0,9%	0%	-2%	-6%	8%
1931	74%	-0,9%	0%	-6%	-8%	-2%
1932	75%	-0,1%	-5%	-2%	-2%	3%
1933	60%	0,0%	-6%	4%	-3%	-3%
1934	58%	-0,5%	-3%	4%	0%	1%
1935	54%	-0,8%	-4%	5%	0%	6%
1936	54%	-0,2%	0%	4%	2%	-2%
1937	49%	-0,7%	1%	6%	3%	8%
1938	49%	0,0%	2%	3%	-2%	2%
1939	46%	1,2%	-1%	2%	-4%	10%
1940	38%	1,0%	2%	1%	4%	2%
1941	36%	1,9%	8%	0%	8%	3%
1942	39%	-0,2%	7%	0%	18%	-5%
1943	34%	1,4%	9%	-1%	12%	9%
1944	36%	0,3%	20%	-6%	6%	-5%
1945	35%	1,8%	19%	-3%	10%	-1%
1946	30%	1,4%	3%	10%	11%	9%
*1947	27%	3,5%	10%	4%	3%	8%
1948	27%	3,1%	5%	1%	-1%	1%
1949	25%	2,2%	1%	2%	5%	1%
1950	25%	0,5%	0%	4%	-2%	6%
1951	24%	-0,2%	10%	4%	9%	4%
1952	24%	-0,4%	1%	5%	-2%	0%
1953	23%	0,0%	-5%	7%	-2%	7%
1954	23%	0,3%	-1%	5%	-2%	6%
1955	22%	0,6%	-3%	7%	2%	3%
1956	20%	0,0%	0%	5%	3%	4%
1957	19%	0,0%	1%	4%	0%	5%
1958	23%	0,0%	2%	3%	1%	5%
1959	22%	0,9%	-1%	5%	1%	6%
1960	22%	1,9%	-5%	9%	2%	7%
1961	22%	2,9%	0%	5%	2%	6%
1962	26%	3,0%	0%	5%	0%	6%
1963	27%	3,1%	2%	5%	2%	6%
1964	29%	3,2%	0%	6%	2%	6%
1965	28%	1,2%	1%	4%	4%	7%
1966	27%	0,8%	1%	4%	5%	5%
1967	25%	0,9%	1%	3%	4%	8%
1968	23%	1,0%	-1%	5%	1%	8%
1969	22%	0,6%	2%	6%	6%	3%
1970	21%	-0,2%	3%	5%	3%	10%
1971	21%	1,0%	6%	3%	5%	7%
1972	20%	0,6%	3%	4%	7%	8%
1973	19%	0,9%	4%	6%	9%	12%
1974	18%	2,9%	12%	2%	19%	1%
1975	26%	7,1%	14%	-1%	16%	-4%

DATA APPENDIX

1976	32%	9,8%	5%	6%	16%	6%
1977	34%	7,6%	10%	2%	27%	5%
1978	37%	10,2%	6%	4%	22%	3%
1979	26%	10,8%	8%	3%	19%	6%
1980	37%	10,4%	12%	1%	21%	5%
1981	47%	9,7%	10%	0%	18%	1%
1982	51%	10,7%	9%	1%	21%	2%
1983	57%	9,4%	7%	2%	25%	0%
1984	63%	12,5%	5%	3%	25%	-2%
1985	66%	10,5%	4%	3%	22%	3%
*1986	57%	6,3%	4%	2%	21%	4%
1987	64%	6,0%	2%	3%	11%	6%
1988	65%	4,7%	3%	4%	11%	5%
1989	64%	3,0%	5%	3%	12%	5%
*1990	60%	4,9%	5%	3%	13%	4%
1991	62%	5,9%	5%	2%	14%	2%
1992	55%	2,9%	4%	1%	13%	2%
1993	59%	6,3%	4%	0%	7%	-1%
1994	62%	5,5%	2%	3%	6%	1%
1995	63%	5,1%	2%	3%	5%	3%
1996	64%	4,2%	3%	3%	4%	3%