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**Abstract**

This paper performs a long-run time series analysis of the behaviour of the income velocity of money in Portugal 1891-1998, and assesses the importance of both macroeconomic and institutional factors in shaping its path. We look for particularities of the Portuguese case in the international context. By means of a cointegrated vector autoregression, we find that institutional variables matter. Moreover, regression analysis shows that the general U-shaped pattern is displayed with the inflection point located in 1973, in line with the Spanish case.

**Key words**: Velocity of money, Portugal, Cointegration, Institutional determinants

**JEL classification** : E41, N10, N13, N14

# Plan

## 1. Introduction

A significant amount of research undertaken over nearly three decades has produced several case studies and comparative analyses on the behaviour of the income velocity of money from a long-term perspective, gathering data and empirical evidence from a large and significant sample, which includes many of the industrialized economies (Bordo and Jonung 1981; Bordo et al. 1997; Bordo and Jonung 2006; Siklos 1993). More recently, the Spanish case, which shows some particularities, was added to the sample (Carreras et al. 2006).

Briefly, in line with Wicksell's monetary theory on income velocity and according to Jonung's seminal study inspired by the Swedish case (Jonung 1978), these studies suggest the importance of taking institutional changes into consideration when seeking to explain the secular behaviour of the income velocity of money beyond its traditional determinants, namely real per capita income and the nominal interest rate[1]. They empirically demonstrate that the common developments of the financial and economic modernization process, such as monetization, the spread of commercial banks, financial sophistication and economic stability, are relevant determinants – in some cases, *the* most relevant (Bordo and Jonung 2006) – in explaining what seems to be a common, open, U-shaped pattern of the long-run behaviour of the income velocity of money across the developed economies. The first two developments explain the decreasing part of the trend of velocity, while financial sophistication and economic stability explain the subsequent increasing part. Note that the U-shaped pattern seems to be particularly appealing when a relatively broad definition of money is considered, namely $M_2$ as a consequence of the prevalence of the long-run perspective[2]. On the other hand, the empirical evidence, covering a relatively large number of case studies, shows that the turning point of the U-curve lies in the aftermath of WWII, for the majority of the developed economies. However, some precocious cases, such as Scandinavian countries and France,

1 A rather comprehensive summary of the classical theories on the determinants of the long-run behaviour of velocity is presented in Bordo and Jonung (2006):12-21.

2 However, we believe that the study of V1 and V0 may also be relevant, especially for pre-industrialized and early-industrialized epochs.

experienced the inflection point earlier, in the 1920s and 1930s, while, in the Spanish case, 1973 seems to be the corresponding point (Carreras et al. 2006).

As the main contribution of this paper, we add a new case study on this matter. We discuss where the Portuguese case stands in terms of the relative importance of the classical and institutional determinants of the income velocity of money. As a second contribution, we analyse whether the Portuguese income velocity of money displays the U-shaped pattern, which is apparent in most case studies. We find apparent similarities between the Portuguese case and the Spanish case, which may be explained as a consequence of the relative economic and institutional backwardness of the Iberian economies in historical terms.

The choice of the period under consideration may be justified by both institutional breaks and data constraints. In 1891, the starting year, a severe financial crisis led to the suspension of the gold standard, which would never again be restored for all practical purposes (Esteves 2003; Flandreau and Zumer 2004; Mata 1987; Valério 2006)[3]. 1998 is the year when the transition from the *escudo* to the *euro* took place and the European monetary union took off as a further decisive step in the European integration process according to the Maastricht Treaty. Moreover, although data that are suitable for computing an annual velocity series are available from 1865 on, other relevant data, namely those required to model the econometric analysis, are not.

The rest of this paper is organized as follows: Section 2 surveys the relevant time series to estimate the Portuguese income velocity as well as the empirical measurements to compute its determinants, to be used in the econometric approach; Section 3 presents the econometric approach and the empirical analysis; Section 4 looks at the long-run behaviour of the velocity series, stressing the role of macroeconomic and institutional developments, with some short and medium-run fluctuations of the income velocity series in Portugal also being examined in some detail; finally, the conclusions are presented in Section 5.

## 2. Portuguese empirical evidence

During the last three decades, Portuguese modern economic growth and Portuguese monetary and financial history have been the target of important research and debate. Analytical and general studies on these subjects have been published, while quantitative groundwork has been produced, including different estimates of historical series of the relevant aggregate variables for our present

3 Portugal was an early comer and an early leaver of the gold standard. It was adopted through the Law of July 29, 1854, and suspended (never to be restored for all practical purposes) by the Decree of July 9, 1891 (Reis 1996; Santos 1996). See Reis (1996) and Mendonça (1996) for a discussion of the reasons for adopting this monetary regime, and Duarte and Andrade (2003) for an analysis of its functioning.

task. As the income velocity of money is generally defined as a measure of nominal income divided by a measure of money stock, we will first concentrate on the available long-run estimates of nominal gross domestic product (GDP), real GDP (and per capita GDP) and price indices as potential deflators, on the one hand, and of money supply, on the other. Most of this quantitative groundwork was compiled in Valério (ed.) (2001): Ch. 2, 6, 7 and 8, a two-volume work of Portuguese historical statistics. Some statistical appendices including these variables can also be found in overall studies, where these time series were revised and updated (Lains 2003; Mata and Valério 2003).

### 2.1. Gross Domestic Product

We are using here the revised and updated series of GDP, per capita GDP and GDP deflator that were presented in Valério (2008)[4]. A critical and detailed presentation of the sources and methodology used to compute these series, a comparison with figures from Lains (2003) and Angus Maddison's estimates for the Portuguese economy (Maddison 1995; Maddison 2001; Maddison 2003; Maddison 2007) are also available in Valério (1998), which updates a seminal work on Portuguese economic growth and retrospective national accounts from a very long-run perspective that used a similar methodology (Nunes et al. 1989). Using macroeconomic proxy variables, this methodology took into account the latest revised series of the Portuguese national accounts produced by *the Portuguese National Statistical Office* (INE) and by the *Portuguese Central Bank* (BP), namely Pinheiro (ed.) (1997) for the period 1953-1993 and Baptista et al. (1997) for the period 1910-1958.[5]

Figures 1 and 2 below show the real per capita GDP and inflation series.

4 As an alternative to real per capita GDP, we tested the most often used combination of real per capita permanent GDP plus the cycle in our velocity function in Section 3. The statistical results proved to be uninteresting.

5 However, this methodology has remained under debate (Lains and Reis 1991; Nunes et al. 1991; Esteves 1993; Marques; Esteves 1994). Meanwhile, retrospective estimates of GDP at constant prices and the GDP deflator were computed from sector output values from 1850 to 1913 (Reis 1986; Lains 1990, Lains 1995; Lains and Sousa, 1998), in line with the series produced by the Bank of Portugal research teams, namely those computed in Baptista et alii (1997) for the period 1910-1958. Unfortunately, these alternative time series, which were linked in Lains (2003), cannot be tied to the related series produced in Pinheiro (ed.) (1997), for the period 1953-1992, as is acknowledged by the author himself (Lains 2003: 248, 256).

**Figure 1 – Real per capita GDP (Y)**

*(1914 prices, 1000 escudos, in logarithms)*

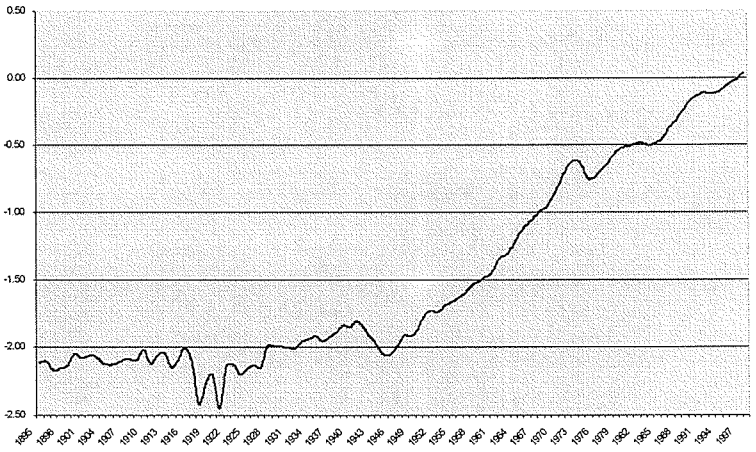
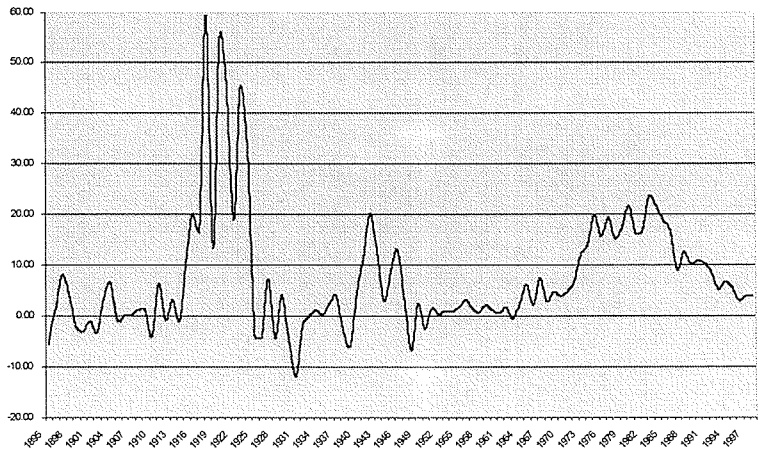



**Figure 2 – Inflation rate (P)**

(change in logged GDP deflator)

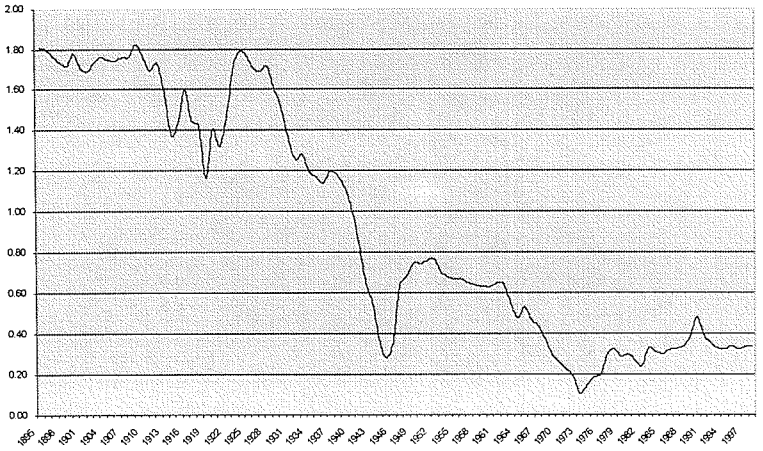


### 2.2. Money supply

In relation to estimates of the money supply, Valério (ed.) (2001: Ch. 7) and Mata and Valério (2003) include all the relevant data. In the former, a detailed presentation is to be found of the sources and methodologies used to compute the time series available on the Portuguese money supply. We are using here the series of $M_2$ in Mata and Valério (2003: 257-270)[6]. Figure 3 shows the income velocity of money series.

**Figure 3 – Income velocity of money (V)**

*(in logarithms)*




*

In order to discuss the determinants of velocity through an income velocity function according to the institutional approach, we must first compute the exogenous variables in the model.

### 2.3. Interest rates

Relatively consistent interest rate series are only available from 1890 onwards. From 1890 to 1934, we used the average monthly values of the yield of Portuguese 3% consols (from February 1, 1892, yielding a nominal rate of 2.1%)[7]. These values were obtained from Espregueira (1908) until

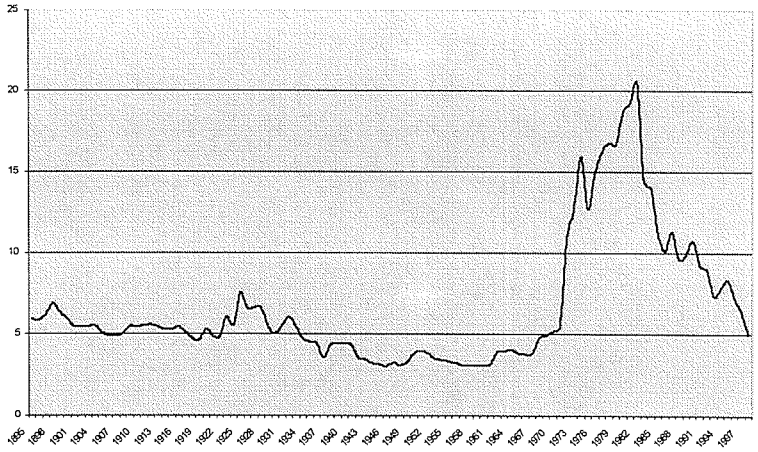
6 Both the methodology and the empirical evidence it produced have also remained under debate (Reis 1990; Valério 1991).

7 The decrease in the yield was the result of a 30% income tax.

1907, from Costa (1913) for 1908 to 1911, from the official government legislation in which Lisboa stock exchange yields were published for 1912 and 1913, and from Valério (1994) for 1914 to 1934[8]. From 1935 to 1970, the values are a weighted average computed from the domestic public debt published again in Valério (1994) until 1947, and from the yields of different Portuguese consols (nominal consols varying from 3% to 4.5%) published in *Estatísticas Financeiras* and *Estatísticas Monetárias e Financeiras* for the period 1948-1970. From 1971 to 1992, the interest rate is the weighted average of five-year private and public bonds, while, from 1993 to 1998, we took the 10-year public bonds interest rate, both of which are published by *Eurostat*. Figure 4 shows the interest rate series.

**Figure 4 – Interest rate (I)**

*(in percentage points)*




### 2.4. Monetization

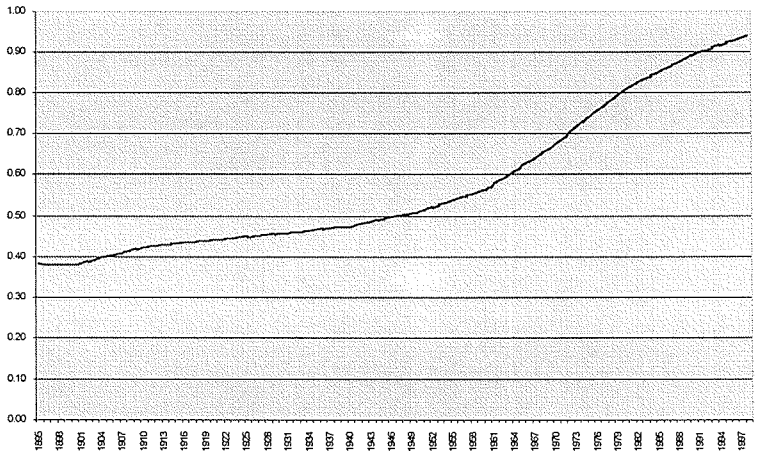
As a proxy for the monetization process, we used the share of the labour force working in non-agricultural activities[9]. This was computed in Nunes (2001) for the period 1890-1998, where detailed methodological aspects are presented. For the period 1981-2001, we used a similar, but somewhat simplified methodology as we did not have to estimate annual values for the resident population. In INE (2004), definitive annual inter-census estimates of the resident population are available. Figure 5 shows the series for the share of the labour force working in non-agricultural activities.

8 From 1908 to 1913, we took the yields for July 1. These are the only values available for 1912 and 1913 and one of the three values available for 1908-1911.

9 As an alternative proxy for monetization, the urbanization rates (Nunes 1996) were tested. However, they proved to be statistically much less consistent.

**Figure 5 – Monetization proxy (NAAP)**

*(share of labour force working in non-agricultural activities in percentage terms)*

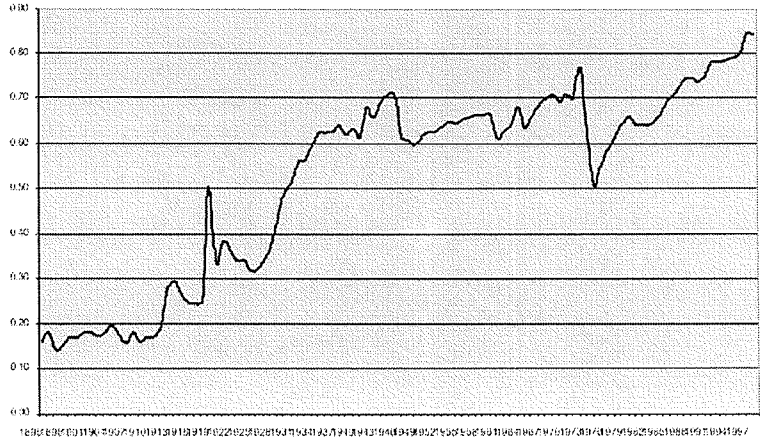



### 2.6. Financial sophistication

We used the $M_2$/L ratio as the proxy for financial sophistication. To compute this ratio, we took the money supply and liquidity series in Mata and Valério (2003), referred to above. Figure 6 shows the $M_2$/L ratio series.

**Figure 6 – Financial sophistication proxy (SOPH)**

*($M_2/L$)*



## 3. Econometric approach

### 3.1. Unit root tests

Table 1 summarises the unit root tests for the variables to be included in our empirical model. Money velocity, real per capita income and the price level were logged. A 'dX' denotes the first difference in the variable X. The table includes the t-statistic of the Augmented Dickey Fuller (ADF) test, the related one-sided probability, and information about the sample actually used in the ADF regression[10].

10 All results in this paper were obtained using the econometrics software E-Views. The number of lags in the ADF procedure was selected automatically, based on the Schwarz information criterion. More detailed tables are available upon request.

**Table 1 – Unit root tests**

| | t-stat | prob. | Sample |
|---|---|---|---|
| log(V) | -0.803459 | 0.8146 | 1866-1998 |
| dlog(V) | -11.59076 | 0.000 | 1868-1998 |
| I | -1.562622 | 0.4982 | 1891-1998 |
| dI | -5.509535 | 0.0000 | 1993-1998 |
| SOPH | -0.580355 | 0.8702 | 1856-1998 |
| dSOPH | -14.66787 | 0.0000 | 1856-1998 |
| NAAP | -0.519304 | 0.8821 | 1892-1998 |
| dNAAP | -1.606189 | 0.4759 | 1892-1998 |
| ddNAAP | -10.37096 | 0.0000 | 1893-1998 |
| log(Y) | 1.434139 | 0.9991 | 1869-1998 |
| dlog(Y) | -6.211887 | 0.0000 | 1869-1998 |
| log(P) | -3.210724 | 0.0869 | 1869-1998 |
| dlog(P) | -2.897473 | 0.0484 | 1869-1998 |

All variables in the levels are non-stationary. When we consider the first difference, we reject the non-stationarity null hypothesis for all series, except for dNAAP. We have to take the second difference of NAAP in order to achieve stationarity. Therefore, we classify log(V), I, SOPH, log(Y), log(P) and dNAAP as I(1) variables, NAAP being an I(2) variable.

### 3.2. Cointegration relationships and the importance of institutional variables

We tested for the existence of at least one cointegration relationship between the following I(1) variables: log(V), I, log(Y), log(P), dNAAP, and SOPH. The interest rate, real per capita income and the price level are the variables that are usually considered when equations for money velocity or money demand are estimated. It should be recalled that dNAAP and SOPH are the institutional variables that reflect the growing share of the labour force working in industry and services, and financial sophistication, respectively. We will present empirical evidence to show that these institutional variables are as important as the classical ones for modelling money velocity.

There is one cointegration relationship between these variables when there is a linear combination of these variables that is I(0).

The equation:

$$\mu_i = \beta(i,1).\log(V) + \beta(i,2).\log(Y) + \beta(i,3).I + \beta(i,4).\log(P) + \beta(i,5).SOPH + \beta(i,6).DNAAP$$

defines the i-th cointegration relationship. $\mu_i$ is a stationary variable, obtained as a linear combination of I(1) variables. We interpret the existence of at least one of these relationships as evidence in favour of a long-term connection between money velocity (*V*) and all other variables. $\beta(i,j)$ is the parameter in cointegration equation *i* related to variable *j*. In what follows, we will denote the econometric estimate of $\beta(i,j)$ as *b(i,j)*.

Firstly, we estimated an autoregressive vector using all available data from 1895 to 1998. The VAR order, 4, was chosen using the AIC and Schwarz criteria, while at the same time avoiding residual autocorrelation. A linear trend was included. Performing the Johansen (1988) trace and maximum eigenvalue cointegration tests gave rise to the results included in Table 2:

## Table 2 – Cointegration tests (1895-1998)

| Unrestricted Cointegration Rank Test (Trace) | | | | |
|---|---|---|---|---|
| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob. |
| None | 0.380292 | 137.8397 | 117.7082 | 0.0015 |
| At most 1 | 0.344026 | 88.55343 | 88.80380 | 0.0521 |
| At most 2 | 0.173333 | 45.12504 | 63.87610 | 0.6413 |
| At most 3 | 0.116803 | 25.51870 | 42.91525 | 0.7631 |
| At most 4 | 0.063225 | 12.72539 | 25.87211 | 0.7593 |
| At most 5 | 0.056572 | 5.998191 | 12.51798 | 0.4605 |
| **Unrestricted Cointegration Rank Test (Maximum Eigenvalue)** | | | | |
| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob. |
| None | 0.380292 | 49.28626 | 44.49720 | 0.0140 |
| At most 1 | 0.344026 | 43.42839 | 38.33101 | 0.0119 |
| At most 2 | 0.173333 | 19.60634 | 32.11832 | 0.6830 |
| At most 3 | 0.116803 | 12.79331 | 25.82321 | 0.8191 |
| At most 4 | 0.063225 | 6.727194 | 19.38704 | 0.9183 |
| At most 5 | 0.056572 | 5.998191 | 12.51798 | 0.4605 |

The trace test leads to the consideration of two cointegration vectors (CVs) at a 5.21% level. The maximum eigenvalue test leads to this same conclusion at a lower level (1.19%). We estimated two CVs, with the results being presented in Table 3:

## Table 3 - Estimated cointegration equations (1895-1998)

| Variable | | First cointegration equation | Second cointegration equation |
|---|---|---|---|
| log(V) | parameter | b(1,1) = 1 | b(2,1) = 0 |
| | | | |
| log(Y) | parameter | b(1,2) = 0 | b(2,2) = 1 |
| | | | |
| I | parameter | b(1,3) = 0.113982 | b(2,3) = 0.017495 |
| | standard error | (0.02391) | (0.02740) |
| | t-stat | [ 4.76764] | [ 0.63855] |
| | | | |
| log(P) | parameter | b(1,4) = -1.099092 | b(2,4) = -0.834619 |
| | standard error | (0.16808) | (0.19261) |
| | t-stat | [-6.53915] | [-4.33310] |
| | | | |
| SOPH | parameter | b(1,5) = 2.464715 | b(2,5) = 5.935742 |
| | standard error | (0.86808) | (0.99480) |
| | t-stat | [ 2.83927] | [ 5.96675] |
| | | | |
| dNAAP | parameter | b(1,6) = -241.1955 | b(2,6) =-50.37673 |
| | standard error | | |
| | t-stat | | |
| | | | |
| Trend | parameter | 0.096761 | 0.003713 |
| | standard error | (0.01556) | (0.01783) |
| | t-stat | [ 6.21801] | [ 0.20819] |
| | | | |
| Constant | parameter | -7.066567 | 0.970359 |

Considering these two CVs, we further tested whether the exclusion of each variable from both vectors cannot be rejected. We also considered the simultaneous exclusion of both institutional variables. The results from these tests are presented in Table 4:

## Table 4 - Restriction tests associated with the variables (1895-1998)

| Restriction | Probability |
|---|---|
| $\beta(1,1) = \beta(2,1) = 0$ (velocity) | 0.081588 |
| $\beta(1,2) = \beta(2,2) = 0$ (real GDP per head) | 0.003630 |
| $\beta(1,3) = \beta(2,3) = 0$ (interest rate) | 0.000148 |
| $\beta(1,4) = \beta(2,4) = 0$ (price level) | 0.000023 |
| $\beta(1,5) = \beta(2,5) = 0$ (sophistication proxy) | 0.002865 |
| $\beta(1,6) = \beta(2,6) = 0$ (monetization proxy) | 0.000004 |
| $\beta(1,5) = \beta(2,5) = \beta(1,6) = \beta(2,6) = 0$ (both institutional variables) | 0.000001 |

All probabilities were considerably below the usual critical levels, except for velocity with a score of 8.16%. We therefore repeated the tests with the sample restricted to the period from 1928 onwards, as it must be acknowledged that data quality improves in a significant way from the late 1920s onwards.

When the sample is restricted to the period from 1928 onwards, the cointegration evidence is stronger (see Table 5). Now the trace test points towards four cointegration vectors, considering a probability level of below 5%, while the maximum eigenvalue test indicates two vectors at a 7.96% level. The estimation results are presented in Table 6, assuming conservatively that there are two cointegrating vectors.

## Table 5 – Cointegration tests (1928-1998)

**Unrestricted Cointegration Rank Test (Trace)**

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob. |
|---|---|---|---|---|
| None | 0.524486 | 159.9383 | 117.7082 | 0.0000 |
| At most 1 | 0.402072 | 107.1598 | 88.80380 | 0.0013 |
| At most 2 | 0.293303 | 70.64560 | 63.87610 | 0.0121 |
| At most 3 | 0.269563 | 45.99768 | 42.91525 | 0.0238 |
| At most 4 | 0.163846 | 23.69571 | 25.87211 | 0.0911 |
| At most 5 | 0.143413 | 10.99079 | 12.51798 | 0.0888 |

**Unrestricted Cointegration Rank Test (Maximum Eigenvalue)**

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob. |
|---|---|---|---|---|
| None | 0.524486 | 52.77849 | 44.49720 | 0.0051 |
| At most 1 | 0.402072 | 36.51425 | 38.33101 | 0.0796 |
| At most 2 | 0.293303 | 24.64792 | 32.11832 | 0.3074 |
| At most 3 | 0.269563 | 22.30197 | 25.82321 | 0.1364 |
| At most 4 | 0.163846 | 12.70492 | 19.38704 | 0.3524 |
| At most 5 | 0.143413 | 10.99079 | 12.51798 | 0.0888 |

## Table 6 – Estimated cointegration equations (1928-1998)

| Variable | | First cointegration equation | Second cointegration equation |
|---|---|---|---|
| log(V) | parameter | b(1,1) = 1 | b(2,1) = 0 |
| | | | |
| log(Y) | parameter | b(1,2) = 0 | b(2,2) = 1 |
| | | | |
| I | parameter | b(1,3) = -0.079818 | b(2,3) =-0.073636 |
| | standard error | (0.01445) | (0.01630) |
| | t-stat | [-5.52412] | [-4.51869] |
| | | | |
| log(P) | parameter | b(1,4) = -0.199218 | b(2,4) = -0.753179 |
| | standard error | (0.11967) | (0.13496) |
| | t-stat | [-1.66475] | [-5.58057] |
| | | | |
| SOPH | parameter | b(1,5) = -1.139716 | b(2,5) =-4.603305 |
| | standard error | (0.70331) | (0.79321) |
| | t-stat | [-1.62050] | [-5.80340] |
| | | | |
| dNAAP | parameter | b(1,6) = -33.01589 | b(2,6) = -199.5500 |
| | standard error | (29.1509) | (32.8770) |
| | t-stat | [-1.13258] | [-6.06959] |
| | | | |
| trend | parameter | 0.033325 | 0.052272 |
| | standard error | (0.01227) | (0.01384) |
| | t-stat | [ 2.71563] | [ 3.77684] |
| | | | |
| Constant | parameter | -1.828397 | 3.743096 |

As before, we tested the restriction that variables do not appear in the cointegration relationships. The results from the likelihood ratio tests related with these restrictions are presented in Table 7:

**Table 7 - Restriction tests associated with the variables (1928-1998)**

| Restriction | Probability |
|---|---|
| $\beta(1,1) = \beta(2,1) = 0$ (velocity) | 0.017515 |
| $\beta(1,2) = \beta(2,2) = 0$ (real GDP per head) | 0.009669 |
| $\beta(1,3) = \beta(2,3) = 0$ (interest rate) | 0.001529 |
| $\beta(1,4) = \beta(2,4) = 0$ (price level) | 0.000150 |
| $\beta(1,5) = \beta(2,5) = 0$ (sophistication proxy) | 0.005210 |
| $\beta(1,6) = \beta(2,6) = 0$ (monetization proxy) | 0.000208 |
| $\beta(1,5) = \beta(2,5) = \beta(1,6) = \beta(2,6) = 0$ (both institutional variables) | 0.000642 |

The restriction that velocity does not matter for the cointegration relationship is now easily dismissed at the 1.75% level. Also, the non-participation of each variable in both CVs is strongly rejected, with probabilities always being lower than 1%. Moreover, the joint restriction that both SOPH and dNAAP, the two institutional variables, do not matter in both cointegration relationships is rejected at a very low level (0.0642%), i. e with a very high level of confidence.

Any linear combination of the two CVs is also a CV. It is possible to derive a CV from the two CVs presented in Table 6 that is a meaningful equation for the income velocity of money. The following equation is one of several possible meaningful relationships, and it was obtained by subtracting 0.2 X (equation 2) from equation 1:

$$\log(V) = 2.577\text{-}0.0229\text{Trend} + 0.2.\log(Y) + 0.065I + 0.049\log(P) + 0.219SOPH - 6.894DNAAP\,,$$

where velocity is seen to increase with financial sophistication and to decrease with the increment in the population share of non-agricultural activities.

### 3.3. Is there a U-turn in 1973?

The inspection of the graphs and historical knowledge give rise to the hypothesis that money velocity stopped decreasing in 1973, with a gentle upward trend beginning in that very same period. To test this hypothesis, we specified a linear regression in which the dependent variable is the log change in velocity, dlog(V), the regressions all being factors that we have considered as affecting velocity – dlog(Y), dI, dlog(P), dSOPH and ddNAAP. Note that all these variables were taken in first differences (second differences for NAAP) in order to have stationary variables. Moreover, a dummy variable, D1973, equal to 1 from 1973 onwards and equal to zero before that year, was included. The full regression included present and lagged regressors, and yielded results estimated with OLS from 1953 to 1998, which are presented in Table 8.

The reasons for restricting our sample are twofold: firstly, the 1950s is the decade when Portugal became an industrialized economy and a rapid sustained increase was apparent in the average standard of living (see Section 4)[11]. Secondly, data improved even further from the early 1950s onwards.

11 Historical and empirical analyses on this topic have focused on industrialized economies.

# Table 8 – 1973 U-turn test

| Dependent Variable: dlog(V) | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | -0.016283 | 0.016834 | -0.967252 | 0.3431 |
| dlog(Y) | 0.636321 | 0.245479 | 2.592161 | 0.0160 |
| dlog(Y(-1)) | -0.264349 | 0.230826 | -1.145229 | 0.2634 |
| dlog(Y (-2)) | -0.216845 | 0.236926 | -0.915243 | 0.3692 |
| dlog(Y(-3)) | -0.259502 | 0.197792 | -1.311999 | 0.2019 |
| dI | -0.001701 | 0.003840 | -0.443088 | 0.6617 |
| dI(-1) | -0.003057 | 0.004141 | -0.738315 | 0.4675 |
| dI(-2) | -0.004303 | 0.004608 | -0.933779 | 0.3597 |
| dI(-3) | 0.000813 | 0.004327 | 0.187861 | 0.8526 |
| dlog(P) | 0.483643 | 0.222196 | 2.176650 | 0.0396 |
| dlog(P(-1)) | -0.393995 | 0.240026 | -1.641467 | 0.1137 |
| dlog(P(-2)) | -0.226065 | 0.246346 | -0.917671 | 0.3679 |
| dlog(P(-3)) | 0.090394 | 0.229844 | 0.393283 | 0.6976 |
| dSOPH | -0.830279 | 0.215534 | -3.852190 | 0.0008 |
| dSOPH(-1) | -0.190455 | 0.216021 | -0.881649 | 0.3867 |
| dSOPH(-2) | -0.177581 | 0.193978 | -0.915468 | 0.3691 |
| dSOPH(-3) | -0.080163 | 0.194746 | -0.411627 | 0.6843 |
| ddNAAP | 0.476647 | 5.416062 | 0.088006 | 0.9306 |
| ddNAAP (-1) | -4.188805 | 6.282415 | -0.666751 | 0.5113 |
| ddNAAP (-2) | -7.802701 | 5.040729 | -1.547931 | 0.1347 |
| ddNAAP (-3) | -0.028803 | 4.837563 | -0.005954 | 0.9953 |
| D1973 | 0.038510 | 0.016905 | 2.278055 | 0.0319 |
| | | | | |
| R-squared | 0.765686 | S.E. of regression | | 0.030068 |
| Adjusted R-squared | 0.560661 | Sum of squared residuals | | 0.021698 |

The least significant variables were withdrawn one by one, and the final retained regression is presented in Table 9:

**Table 9 – 1973 U-turn test, final regression**

| Dependent Variable: DLV2 | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | -0.014555 | 0.011239 | -1.295068 | 0.2031 |
| dlog(Y) | 0.350920 | 0.129740 | 2.704798 | 0.0102 |
| dlog(Y(-2)) | -0.574027 | 0.117449 | -4.887437 | 0.0000 |
| dlog(P) | 0.360074 | 0.141407 | 2.546366 | 0.0151 |
| dlog(P(-1)) | -0.358439 | 0.145441 | -2.464492 | 0.0184 |
| dSOPH | -0.583592 | 0.130898 | -4.458360 | 0.0001 |
| ddNAAP(-1) | -9.965992 | 3.734468 | -2.668651 | 0.0111 |
| D1973 | 0.030439 | 0.013002 | 2.341150 | 0.0246 |
| | | | | |
| R-squared | 0.690707 | S.E. of regression | | 0.027454 |
| Adjusted R-squared | 0.633733 | Sum of squared residuals | | 0.028641 |

Note that the dummy variable is highly significant, with a p-value equal to 2.46%. As expected, the associated coefficient is positive, which is evidence of the upward trend that started in 1973.

### 4. Long-run behaviour of the income velocity of money

The time has come to check the empirical analysis against the historical economic evidence, namely to take into consideration Portuguese economic growth, institutional changes and turbulent periods. As a preliminary general remark, it is worth noting the apparently different behaviour displayed by the velocity series path until the middle of 20th century when compared with the period after the Second World War (WWII). Its high level, decreasing rhythm and turbulence are much more acute during the first phase. Added to the external shocks (wars and crises), much of this behaviour reflects the fact that Portugal remained a relatively backward economy until WWII. In spite of having experienced periods of economic growth and some institutional changes conditional

upon growth, it failed to perform in line with the normal levels of modern economic growth until the 1950s, in terms of both aggregate and structural aspects (Mata and Valério 2003). Anyway, the secular period under analysis may be broken down into eight meaningful periods: 1891-1914, 1914-1919; 1919-1924; 1924-1938, 1938-1945; 1945-1952; 1952-1973; 1973-1998.

### 4.1. 1891-1914

Between 1891 and 1913, V fell from a rather high starting point (V = 7) to a still quite high level (V = 4.9). The high levels of V may be attributed to the unconvertible banknote regime implemented after the financial crisis that hit the country in 1891 and led to the suspension of the gold standard in May of that year (Esteves 2003; Mata 1988; Valério 2006)[12]. Economic agents were less willing to hold paper money than the precious metal coins that they were accustomed to and which were still in circulation at the core of the international economy. As a matter of fact, they presumably hoarded most of the previous circulating medium. The decreasing trend is in line with what might be expected given the positive real interest rate and the gentle rise in the share of non-agricultural activities. The slow pace of the decrease reflects the backwardness and poor performance of the Portuguese economy during this period, where there were financial difficulties impeding the spread of commercial banks, and where some 60% of the labour force were still working in agricultural activities.

### 4.2. 1914-1919

The First World War triggered an inflationary process, because of failing supplies of vital commodities from abroad (such as cereals and fuels), and increased public spending financed by the issues of banknotes from the central bank. In spite of negative real interest rates, resulting from the inflationary process, V kept falling until the end of the conflict (reaching a trough of V = 3.215 in 1919). It is hard to explain such behaviour just using the institutional variables. The most fitting explanation for such a slow reaction of economic agents to inflation is that they believed it was a transitory war phenomenon. Moreover, the depreciation of the Portuguese currency during this period was relatively gentle (approximately 50%).

12 The 1891 crisis was caused by exceptional balance of payments deficits due to the reduction in emigrants' remittances from Brazil, which were experiencing a rather turbulent period, punctuated by the abolition of slavery (1888), the fall of the monarchy (1889) and prolonged political instability until 1891. Of course, these difficulties were deepened by the international Baring crisis (the more worrying for Portugal, as Baring Brothers was the bank traditionally used by the Portuguese Treasury in London).

### 4.3. 1919-1924

The end of the war brought some normalization of foreign supplies, but no relief to public deficits, which continued to be financed by banknote issues. Moreover, uncertainties over the future of Portuguese external payments (the war debt to be paid to Great Britain amounted to 20 million pounds, roughly the value of three years of exports at the usual rate, and the compensation of 49.5 million pounds from German reparations seemed far from guaranteed) triggered a wave of speculation against the Portuguese currency, which began to depreciate quickly, further fuelling the inflationary process. As real interest rates remained steadily negative, institutional variables were unable to compensate for the powerful short-term effect of such speculation, and, when it became clear that inflation was not a transitory war phenomenon, economic agents reacted by fleeing from money. Thus, V rebounded until it again reached a fairly high level (V = 6) in 1924. Of course, such a sharp rise in velocity once again fuelled inflation.

The stabilization process was begun in 1922, with a fiscal reform that paved the way for public deficits to fall from their peak of 10% of GDP to a much more manageable level of 3%. In 1924, skilful intervention in the exchange market, financed by the sale of demonetized silver coin in the London bullion market, succeeded in stemming the tide of depreciation, and inflation stopped almost instantaneously. This quickly reversed the trend in velocity.

### 4.4. 1924-1938

The consolidation of this financial stabilization allowed velocity to gradually return to its pre-WWI levels, a situation that would be accomplished by the late 1930s. Besides positive real interest rates, this downward trend was also propelled by some banking modernization, although the share of the labour force working in agricultural activities, which was still above 50%, indicates that a backward economic structure remained. The increased spread of bank branches and a wider use of cheque deposits as a means of payment (although monetary authorities did not count sight deposits as part of the money supply until the post-WWII years) may be pointed out as signs of this banking modernization (Santos 1994). The legal confirmation of the status of the Bank of Portugal as a central bank in 1931 is another institutional modification denoting further steps towards banking modernization (Mata, Valério, 1982; Valério, 1996).

### 4.5. 1938-1945

The Second World War brought a fresh inflationary process. However, although restrictions imposed on foreign supplies of vital commodities played the same role as in WWI, the monetary and financial mechanisms were now completely different. Trade balance surpluses (due to the increased demand for Portuguese wolfram ore) and invisible inflows (either brought by refugees fleeing from Nazi-occupied Europe or introduced as relief aid to these refugees, supposedly originating mainly from the American Jewish community) provided a capital glut that allowed increased public spending to be financed by borrowing in the market (and thus without inflationary effects), pushing the interest rate downwards (and real interest rates to negative levels), and keeping the Portuguese currency stable. Thus, once more, inflation did not bring an immediate rise in velocity. On the contrary, V kept falling, until a trough was reached in 1945 (V = 1.3).

### 4.6. 1945-1952

Again, it was the post-war period that saw a rebound in terms of velocity, which reached a new peak level of V = 2.15 in 1952. This was a moderate rebound, in line with some balance of payments difficulties during the late 1940s, which were soon overcome by Marshall Aid. At the same time, a true modern economic growth process at last took off. The fact that the gently rising trend in velocity continued until 1952 was perhaps a consequence of the fears of economic agents that inflation might yet return as a consequence of global war (which at the time could have been heralded by the Korean conflict).

### 4.7. 1952-1973

The performance of the income velocity of money during this period was characterized by a downward trend, falling to the historical trough of V = 1.111, which was reached in 1973 and had an absolute value of close to 1 (as expected from the international comparison of inflection points). This must be understood, firstly, as a consequence of the definitive take-off of modern economic growth in Portugal, and secondly as the result of a widespread change in the attitude of the economic agents towards money.

As mentioned above, the post-WWII years marked a decisive turning point towards modern economic growth in Portugal. The sustained rising level of real per capita GDP, a rapid change of productive structures towards industrialization and an increasing level of international economic integration led Portugal to engage in an apparent catching-up process in relation to the most

developed economies. Meanwhile, institutional changes, which proved to be conditional upon Portuguese economic growth, were implemented at different levels. Some of them directly influenced the modernization of the banking, credit and financial systems, which was seen as the most relevant aspect of the theoretical model tested in Section 3 in influencing the downward path of V during the first phases of industrialization. The increase in the number of bank branches and the wider use of cheque deposits as a means of payment were reinforced in this period. In 1965, the acceptance of cheques for payments to the State would be legally enshrined as part of the monetary framework (Decree-Law 46495 of August 18, 1965). At the same time, the monetary authorities began to include time deposits as part of the money supply.

### 4.8. 1973-1998

During this period, velocity showed a gentle upward trend towards V = 1.4 in 1998. Portugal was now undergoing a second period of economic and monetary development when, as expected according to the theoretical approach under analysis, developments in financial institutions and growing stability and security helped to overcome the downward effects on the velocity of monetization[13].

Actually, after some political turmoil that proved detrimental to the financial sophistication in the very short run, close substitutes for money and various methods of economizing on money balances were introduced and rapidly spread in Portugal.[14] Such developments were certainly fuelled by the continuous stages of European economic integration that Portugal had been passing through since 1977 (Valério 1998). The inter-banking monetary market, created in 1977, and the inter-banking securities market, created in 1978, were important factors leading to greater efficiency in the management of the banking system's liquidity (Mateus 1998). Stock market activity only reached its full potential by 1988, when the introduction of an operational electronic transaction system took place. A new securities code and the new legal framework established for credit institutions and financial societies date from 1991 and 1992 respectively.

If we look at the spread of the more economical mechanisms of payments and the transfer of funds, Portugal was a newcomer, if not the pioneer, in a European context, regarding the electronic

13 As far as financial sophistication is concerned, the changes introduced after the revolution of April 1974 seem to have had an adverse effect on the anticipated sophistication: namely the nationalization of the banking system and the closure of the stock market.

14 "[...] a large number of close substitutes for money such as bonds, stocks and other financial assets [...]" as well as "[...] the development of various methods of economizing on money balances, such as the use of credit cards, transfer of funds either electronically or by phone, and modern cash management techniques, within business and industry." (Jonung 1978: 222).

transfer of funds. Again, Portugal was a relatively early and intensive user of credit cards. However the use of modern cash management techniques within business and industry, as well as the use of the telephone to transfer funds was a rather slow and somewhat belated process, the clear signs of which were only to be found in the 1990s[15].

Meanwhile, the effects of the social and economic transformation occurring shortly after April 1974 had a huge impact on the rapid and comprehensive implementation of a welfare state and on the effective implementation of stabilization policies geared towards minimizing fluctuations (Carreira 1996; Lopes 1996).

## 5. Concluding remarks

The empirical analysis produced in this paper has focused on the behaviour of the computed series of V for the Portuguese economy and its determinants, in keeping with the institutional approach. Some interesting findings should be summarized here.

In the Portuguese case, the long-term evolution of the velocity of money (V) displays the same U-shaped pattern already found in most case studies, namely in European and North-American economies since the mid-19th century.

However, in the case of Portugal, the inflection point of the U-curve was postponed to some extent (1973) when compared with most international evidence. However, Portugal seems to have shared this particularity with Spain, and presumably for the same reasons: their economic backwardness in historical terms, a fact that has been recurrently underlined.

In the Iberian cases, institutional factors also seem to play an explanatory role in the long-term evolution of velocity, a situation that is quite similar to the one that has been found in the more precocious processes of modern economic growth.

15 This aspect of slow modernization has to do with the characteristic structure of Portuguese firms, namely a large number of ill-equipped small firms with no modern management and little adherence to technological innovation, within the context of a low level of education amongst the population at large.

## References


Baptista D. et al. (1997) *New estimates for Portugal's GDP 1910-1958.* Lisboa: Banco de Portugal.

Bordo M.D.; Jonung L. (1981) "The long run behavior of the income velocity of money in five advanced countries, 1870-1975: an institutional approach". *Economic Inquire* 19(1): 96-116.

Bordo M.D.; Jonung L.; Siklos P.L. (1997) "Institutional change and the velocity of money: a century of evidence". *Economic Inquire* 35(4): 710-724.

Bordo M.D.; Jonung L. (2006) *Demand for money. An analysis of the long-run behavior of the velocity of circulation.* New Brunswick and London: Transaction Publishers (2nd ed.).

Carreira H.M. (1996) *As políticas sociais em Portugal.* Lisboa: Gradiva.

Carreras A.; Garcia-Iglesías C.; Kilponen, J. (2006) "The long run behavior of the income velocity of money in Spain. 1850-2000". *Journal of Iberian and Latin America Economic History*, 24(2): 215-249.

Costa A. (1913) *Relatório do Ministro das Finanças ao Congresso.* Lisboa: Imprensa Nacional.

Duarte A.P.; Andrade J. S. (2003) "O funcionamento do padrão-ouro em Portugal: análise de alguns aspectos macroeconómicos". *Revista de História Económica e Social*,6(2): 45-88 (2nd ed.).

Espregueira M. (1908) *Relatório do Ministro da Fazenda às Cortes.* Lisboa: Imprensa Nacional.

Esteves P. (1993) "Portuguese prices before 1947: inconsistency between the observed cost of living index and the GDP price estimation of Nunes et al. 1989". *Working Paper* 19/93, Lisboa: Banco de Portugal.

Esteves R.P. (2003) "Looking ahead from the past: the intertemporal sustainability of Portuguese finances, 1854-1910". *European Review of Economic History* 7(2): 239-266.

Flandreau M.; Zumer F (2004) *Les origines de la mondialisation financière 1880-1913.* Paris: OECD.

Johansen, S. (1988) "Statistical analysis of cointegration vectors". *Journal of Economic Dynamics and Control* 12(2-3): 231–254.

Jonung L. (1978) "The long-run demand for money — a Wicksellian approach". *Scandinavian Journal of Economics* 80(2): 216-230.

Lains P. (1990) *A evolução da agricultura e da indústria em Portugal, 1850-1913: interpretação quantitativa.* Lisboa: Banco de Portugal (Série História Económica).

Lains P. (1995) *A economia portuguesa no século XIX. Crescimento e comércio externo, 1851-1913.* Lisboa: Imprensa Nacional.

Lains P. (2003) *Os progressos do atraso. Uma nova história económica de Portugal.* Lisboa: ICS.

Lains P.; Reis J. (1991) "Portuguese economic growth: some doubts". *Journal of European Economic History* 20 (2): 441-444.

Lains P., Sousa, P.S. (1998) "Estatística e produção agrícola em Portugal". *Análise Social* 33: 935-968.

Lopes J. S. (1996) *A economia portuguesa desde 1960.* Lisboa: Gradiva.

Maddison A. (1995) *Monitoring the world economy, 1820-1992.* Paris: OECD.

Maddison A. (2001) *The world economy. A millennial perspective.* Paris: OECD.

Maddison A. (2003) *The world economy. Historical statistics.* Paris: OECD.

Maddison A. (2007) *Contours of the world economy, 1-2030 AD.* Oxford: Oxford University Press.

Marques C.; Esteves, P. (1994) "Portuguese GDP and its deflator before 1947: a revision of the data produced by Nunes et al. 1989". *Working Paper* 4/94, Lisboa: Banco de Portugal.

Mata M.E.; Valério. (1982) "O Banco de Portugal, único banco emissor, 1891-1931". *Revista de História Económica e Social* 10: 49-69.

Mata M.E. (1987), *Câmbios e política cambial na economia portuguesa 1891-1931.* In Cadernos da Revista de História Económica e Social 8.

Mata M.E., Valério N. (2003) *História Económica de Portugal: uma perspectiva global.* Lisboa: Presença.

Mateus A. (1998), *Economia portuguesa desde 1910.* Lisboa: Verbo (2nd ed.).

Mendonça A. (1996) "The introduction of the gold standard in Portugal". In Amaral, J.F. et al. (ed.) *Ensaios de homenagem a Manuel Jacinto Nunes.* Lisboa: ISEG: 73-98.

Nunes A.B. et al (1989) "Portuguese economic growth 1833-1985". *Journal of European Economic History* 18 (2): 291-330.

Nunes, A.B. et al. (1991) "Portuguese economic Growth: some comments on Pedro Lains' and Jaime Reis' doubts". *Journal of European Economic History* 20 (2): 445-447.
Nunes, A.B. (1996) "Portuguese urban system: 1891-1991". In Mata, M.E. and Pereira P.T. (eds.) *Urban dominance and labour market differentiation of a European capital city: Lisboa 1890-1990*. Boston: Kluwer Academic Publishers: 7-48.
Nunes, A.B. (2001) "Economic activity of the population". In Valério N (ed.) *Portuguese Historical Statistics*. Lisboa: INE: 149-196.
Pinheiro M. et al (ed.) (1997) *Séries longas para a economia portuguesa*. Lisboa: Banco de Portugal.
Reis J. (1986) "A produção industrial portuguesa, 1870-1914: primeira estimativa de um índice". *Análise Social*, 22: 903-928.
Reis J. (1990) *A evolução da oferta monetária Portuguesa, 1854-1912*. Lisboa: Banco de Portugal (Série de História Económica).
Reis J. (1996) "First to join the gold standard, 1854". In Macedo J.B. et al. (eds.) *Currency convertibility. The gold standard and beyond*. London and New York: Routledge: 159-181.
Santos F.T. (1994) "Stock monetário e desempenho macroeconómico durante o Estado Novo". *Análise Social* 128: 981-1003.
Santos F.T. (1996) "Last to join the gold standard, 1931". In Macedo J.B. et al. (eds.) *Currency convertibility. The gold standard and beyond*. London and New York: Routledge: 182-203.
Siklos P.L. (1993)" Income velocity and institutional change: some new time series evidence, 1870-1986". *Journal of Money and Credit Bank* 25(3): 377-392.
Valério N. (1991) "Recensão a Reis (1990)". *Estudos de Economia* 12 (1): 111-115.
Valério N. (1994) *As finanças públicas portuguesas entre as duas guerras mundiais*. Lisboa: Cosmos.
Valério N. (1996) "O Banco de Portugal, banco central privado 1931-1974". In Amaral, J.F. et al. (eds.) *Ensaios de homenagem a Manuel Jacinto Nunes*. Lisboa: ISEG: 425-455.
Valério N. (1998) "Portugal e a integração europeia" *Revista ANPEC* 3: 105-124.
Valério N. (ed.) (2001) *Portuguese Historical Statistics*. Lisboa: INE.
Valério N. (ed.) (2006) *The History of the Portuguese Banking system, 1822-1931*. Lisboa: Bank of Portugal — Eurosistema.
Valério N. (2008) "Avaliação do produto interno bruto de Portugal". *Working Paper* 34, GHES-ISEG.

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