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Management in Portugal under
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AN “ART”, NOT A “SCIENCE”? CENTRAL BANK MANAGEMENT IN PORTUGAL UNDER THE GOLD STANDARD, 1854-1891¹

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‘The management of an international standard is an art and not a science and no one would suggest that it is possible to draw up a formal code of actions admitting of no exceptions and qualifications, adherence to which is obligatory, on peril of wrecking the whole structure’ (the Macmillan Committee Report, 1931).

ABSTRACT

As long as Portugal was on the gold standard, the Bank of Portugal, sought to stabilize the currency at the exchange rate to which the country was committed. Because it was subject to political and other constraints, the Bank carried out discount rate interventions excessively sparingly, although in accordance with what could be termed the contemporary ‘science’ of central banking. Consequently, it had to intervene constantly in the currency markets, usually in covert fashion, repeatedly infringing the gold standard’s ‘rules of the game’, in order to conciliate the needs of convertibility with a frequently unorthodox stance towards the gold standard.

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I.

During the 1920s and 1930s, the attempts to recreate the pre-war gold standard system led to a certain idealisation of its past and to a reconstruction of its history. The account which emerged from these efforts – the ‘textbook abstract’, as Triffin (1964) called it – proved to be long lasting and highly resistant to historical critique but in recent years it has finally begun at last to give way (crumble). Among the myths it perpetrated, the central one was that of the gold standard as an automatic, self-adjusting monetary regime in which central banks played a major, beneficent adjusting role (Dam, 1982).

A large part of this retrospective fantasy concerned the nature and operations of these financial institutions. Central banks were essential because they complemented the action of market forces and thereby helped to hasten the adjustment of the system to shocks. They did so in two ways. On the one hand, they used the discount rate ‘whenever’ their reserves were being depleted (Cunliffe, 1918 report as cited in Eichengreen and Flandreau, 1997). On the other, they abstained fully from the deleterious inter-war practice of neutralizing the effect of gold flows on money and credit (Macmillan, 1931 report as cited in Eichengreen and Flandreau, 1997). Central banks were thus far from passive but they were never discretionary, and from this point of view this constituted an important part of the explanation for why they had been so successful in maintaining monetary stability. One element in this was that they were independent of governments and of each other, and subject neither to selfish urges, such as profit taking, nor to political pressures. Another was that their actions were closely guided by a clearly

defined set of rules – the oft-invoked ‘rules of the game’². The significance of this was two-fold. It meant that their interventions were rarely unpredictable, which enhanced the smooth working of the gold standard by removing the element of uncertainty for the participants in the market. And it guaranteed that their decisions on the whole were the right ones since these rules were founded on the precepts of economic science and on the practical wisdom accumulated by generations of bankers.

These ideas have since been subjected to close examination, particularly as regards their central bank component, and have been considerably revised. Part of the thrust for these changes came from the desire to understand past experiences in order to better the design of future monetary regimes and mechanisms (McKinnon, 1993). The need to justify major policy shifts was also an influence, as for example, in Britain during the 1950s and 1960s. ‘Discretion’, as opposed to ‘rules’, was and had always been at the heart of central banking, according to Sayers, and this was the reason why ‘we have central banks’, that is to say, independent central banks such as he depicted in a major study in banking history.³ Lastly, the growing popularity of monetary economics, as a subject, drew attention to its historical dimensions, given the significance of its path dependence, and encouraged scholars to compare the myth with the record.

Intense revisionism has upset several items of the conventional wisdom regarding the pre-1914 gold standard. The pre- and post-World War I systems were quite similar after all in various aspects, the holding of large foreign exchange reserves, rather than just gold being a case in point (Lindert, 1969; Dam, 1982). The system was not founded on an

² A designation that is usually attributed originally to Keynes but for which Dam (1982) finds no justification.

³ Sayers speaking before the 1959 Radcliffe Committee, in Collins and Baker (1999: 16).

international consciousness of national monetary authorities but on the addition of national orthodoxies as practised by central banks whose concern was simply to maintain the value of the respective currency with respect to gold (Gallarotti, 1995). Most famously, however, was the fact that, practically to a man, central banks violated the ‘rules of the game’, persistently and on the same vast scale. In spite of this common trait, central banks were less alike than one might have supposed, and diverged considerably from each other in their conduct of these operations (Bloomfield, 1959; Capie, Goodhart, Fischer and Schnadt, 1994). Their behaviour also varied over time, as happened with the Bank of England’s observance of the ‘rules of the game’, which was slight in normal times, but serious during critical periods (Jeanne, 1995). One explanation for this could be that in fact what they did made little difference. According to McCloskey and Zecher (1976), provided there was rigorous adherence to the principles governing the gold standard, such institutions and sectional interests were no match for blind market forces. A second reason is the much greater complexity of central banks’ motivations than used to be supposed. Quantitative tests revealed that rather than having simply one overriding target – convertibility – in reality, they combined this with fairly intensive profit seeking and with a politically grounded concern (‘tenderness’) for the market’s well being, which is more than understandable on the part of such large monopolies (Goodhart, 1972; Dutton, 1984; Davutyan and Parke, 1995). Even personalities could shape significantly the pattern of operations, as has been shown by Ogden (1991), with regard to the influence of the governors of the Bank of England before 1914. The hardly surprising result of the interaction of all these factors was that the gold standard was ‘...not a single monetary rule but ... a wide assortment of rules...’ (Flanders, 1993: 218).

The ample disregard of central banks for the 'rules of the game', sometimes over quite long time spans (several months or a year) has come to be accepted as a fact of life of the classical gold standard. At the same time, it has posed troubling questions about how it seemed so easy nevertheless to avoid crisis and enjoy uninterrupted convertibility. Bloomfield (1959), in his path breaking study, found the co-existence of these two situations before 1914 perplexing and admitted he 'had no ready answers' for this (p. 50). And all the subsequent research has more or less come to the unsatisfying conclusion that it was possible, in the short run, to deviate from the basic tenets of the classic gold standard, so long as they were observed in the long run, a view with a somewhat tautological flavour (e.g. Dutton, 1984; McGouldrick, 1984; Jonung, 1984; Giovannini, 1986; Jeanne, 1995).

Most recently, the resolution of this paradox has been sought in a re-conceptualization of the gold standard system, which brings its reputational aspects to the fore and stresses its nature as a 'contingent rule' (Bordo and Kydland, 1995). According to this approach, it mattered little which short run monetary policies were followed, providing that over the long run a country had a full commitment to this regime and that, based on past performance, the financial community believed in it.⁴ For the commitment mechanism to generate the desired responses on the part of economic agents, two conditions had to be satisfied, however. One was a readiness, on the part of governments and central banks together, to do anything in order to restore the monetary system to convertibility at par in the event of being forced off it by extraordinary circumstances, such as war. Under

⁴ Some of the literature has argued that besides this commitment, the smooth working of the gold standard also required a dose of international cooperation in order to ride out financial storms. This view has been questioned by Bloomfield (1959), and lately by Gallarotti, 1995) and Flandreau (1997).

normal circumstances, this also meant that countries were expected to keep their exchange rates within the target bands defined by the gold export and import points (Bordo and MacDonald, 1997). The second condition was to follow a line of orthodoxy in all relevant economic policies. This entailed fiscal responsibility and monetary restraint, ensuring that factor and product markets operated freely enough to make prices flexible, and allowing full freedom of factor movements and of trade (Bayoumi and Eichengreen, 1995). The rigorous acceptance of these conditions was not simply a matter of ideology but also of self-interest. It has been noted that the policy sacrifices required to be on the gold standard were not just a question of ideology but can also be accounted for by their reward in the shape of an easier access to international capital markets and more favourable borrowing terms (Bordo and Rockoff, 1996).

Whatever the degree of commitment, in the short run, however, central bankers still had to face the daily, weekly or monthly problems of managing the gold standard. In particular, when they deviated frequently from the 'rules of the game', they had to make sure that their institutions nevertheless remained solvent - that convertibility never failed - and this not just in the long term. They had to deal with a real world in which shocks were more common than equilibria, and the scarcity of information on the state of monetary affairs was greater than any certainties about how the system operated. Moreover, though the countries on the gold standard might bask in the glow of international credibility, some were more respectable than others. It was against this backdrop that constant decisions had to be taken without which, despite favourable long run conditions, it would not be possible to remain on the gold standard.

The story told in this article fits well with the revisionist perspectives outlined above but poses some questions in turn. Between the early 1860s, when it began to have an active monetary policy, and the end of convertibility, in 1891, the Bank of Portugal frequently violated the ‘rules of the game’ and yet the country was able to remain steadily on the gold standard.⁵ One of the issues this raises is how this long run monetary stability was possible notwithstanding the fact that the country’s commitment to the standard was weak, as will be shown below. A second area that calls for clarification has to do with the duration of the time spans during which the system was able to tolerate departures from what should be the proper course of monetary policy under a fixed parity regime. While the current literature makes much of the analytic distinction between the short and the long run, that is flexibility versus commitment, it has hardly ever specified how long they actually were.⁶ For how long and by how much could the Bank of Portugal deviate from the rules and how was its convertibility assured in the interim? Finally, there is the question of defining in detail what shaped the Bank’s monetary policy, whether its determinants were the appropriate ones and, most important of all, whether its use of the essential tools of monetary policy was guided by a set of rules or by discretion. The former would presumably give a stronger guarantee of commitment to gold than the latter.

In the next part of this paper, I try to establish to what degree the Bank of Portugal observed the ‘rules of the game’. The commitment this reveals is not high. The following

⁵ The precise period considered here goes from 1863, the year preceding the first use of the Bank’s discount rate as a policy instrument; and 1887, the last year before a new legal statute for the Bank was brought into effect and changed materially several of the parameters of its relationship with the state.

⁶ A rare case of specification is Eichengreen (1996: 17), who states: ‘Although it was possible to find repeated violations of rules over periods as short as a year, over longer intervals central banks’ domestic and foreign assets moved together’.

section looks at the use of ‘gold devices’, the alternative for a proto-central bank, if it did not wish to be mindful of these ‘rules’ but still wanted to satisfy its statutory obligations of convertibility. A considerable amount of deviation is revealed and an explanation is provided of how the problem was circumvented so that it was possible to maintain stability over the long run. Given that the discount rate was the ‘classic’ instrument of intervention, in the third part of the paper, an ordered logit procedure is employed to model its use by the Bank of Portugal, in order to find out whether it acted in a systematic way, in other words, according to a body of rules. The rules implicit in this model are derived from the views expressed internally by the Board of directors and publicly by financial experts. The aim is to establish whether there are grounds to consider that some kind of ‘science of central banking’ was present in monetary policy in this case. The extent to which discount rate manipulations cannot be accounted for by this stable body of rules constitutes the ‘art’ of central banking, as opposed to its ‘science’.

II.

Portugal’s experience with the gold standard during the second half of the 19th century commends itself to our attention for several reasons.⁷ To begin with, it offers a significant contrast with the group of three cases – Britain, France and Germany – that are the mainstay on which generalizations regarding this international system nearly always rest. Although small, backward and poor, it was the first country in Europe, after Britain, to join this monetary regime, in 1854, an adherence that lasted for almost 40 years.⁸ It had a

⁷ In other words, we disagree with Dornbusch’s statement about the study of the late 19th century gold standard when he states that ‘the periphery just does not matter; the issue is what the big players do’ (R. Dornbusch in Flandreau, Le Cacheux and Zumer, 1998).

⁸ This background account is entirely based on Reis (2000).

'full', not a 'limping' gold standard, with most of the monetary circulation made up of gold coin, and a low money multiplier owing to a weak demand for notes and deposits. Despite its lengthy and unwavering membership, Portugal was not a well-behaved member of this 'club'. Throughout the period it suffered from persistent deficits both on its budget and on its balance of trade. The first problem was solved mainly by long term borrowing in the market, both at home and abroad, not by monetising it, with the result that the long term debt relative to GDP almost doubled between 1863 and 1887.⁹ The resolution of the second relied on capital inflows and an increasingly important stream of remittances to the homeland by emigrants residing in Brazil. As a result, the growth of the money supply was far from excessive and inflation was very slight. Altogether, this enabled the country to enjoy the gold standard's international 'seal of approval' whilst deviating significantly from the basic norms followed by the majority of countries that were able to earn such a distinction (Bordo and Rockoff, 1996). Portugal seemed to be, as Peter Lindert (1969: 74) has put it, a case of 'deficit without tears'.¹⁰

In a comparative perspective, the case of the Bank of Portugal is not devoid of interest either. By contemporary standards, in some respects it enjoyed an unusual degree of autonomy. Its management was entrusted to a board entirely elected by shareholders and which acted without any formal interference from the government. Moreover, there were no limits on its note issue, whether in absolute terms or in terms of the volume of reserves required to back them. Its statutes merely enjoined that it be prudent in this matter. On the

⁹ At around 80 % in the late 1880s, this ratio places Portugal, along with Spain, Greece and Italy but also France and the Netherlands, among the larger relative debtors of Europe. Flandreau and Le Cacheux (1997).

¹⁰ This came to an end in 1891, with a declaration of inconvertibility, when long term capital became hard to obtain and emigrant remittances declined drastically.

other hand, it enjoyed little freedom in its use of the discount rate, which had a ceiling of 5% that could only be breached by means of a decree. Finally, it should be noted that owing to its size, its behavior could have nothing but the slightest effect on international markets or other central banks, unlike the much larger central banks of the core countries, the study of which is often bedeviled by problems of ‘feedback’ from their own actions.

To evaluate the degree of orthodoxy of central bank management under the gold standard the normal procedure consists in quantifying the observance by these institutions of the ‘rules of the game’. As with all popular and much used concepts, definitions of what constituted these vary a lot and we consider here only what appear to be the four most important ones. The oldest and simplest is the Bloomfield-Nurkse criterion, which states that a central bank was in observance of these rules when it behaved in ways that would hasten adjustment to a shock, specifically by not sterilizing gold flows. In practice, reserves (non-earning international assets) should vary inversely with domestic income-generating assets and therefore a simple indicator of observance is given by multiplying the first differences of these two variables. A negative result tells us that there is a breach; a positive result tells us that there was ‘good behaviour’.

The result obtained from the Portuguese data is summarized in Table 1 and is in line with the generality of other cases.¹¹ Whatever the measurement used, it is clear that between 1863 and 1887 the Bank of Portugal not only deviated frequently from the ‘rules’ but also

¹¹ Some uncertainty exists regarding what constitutes ‘reserves’. Bloomfield’s (1959) recommendation to follow the definition employed by each bank has been adopted here. Reserves include gold and silver coin and bars but not ‘external reserves’. The statutes and the by-laws of the Bank of Portugal are ambiguous as to the precise nature of the cover for obligations on sight (Banco de Portugal, 1946a and 1946b). They allow ‘external reserves’ to count as part of ‘reserves’ but on the other hand the obligations covered by them include short term paper and promissory notes. On the other hand, in the published monthly balance sheet ‘reserves’ comprised only gold and silver and short obligations to be met included only deposits and notes in the hands of the public.

did so often on a considerable scale. Between one tenth and one fifth of the time, these breaches were substantial – variations of more than 20 % in both variables combined – and between one third and a fourth of the time, they were significant - variations of more than 10 % in both variables combined. If we add minor violations of the rule to this, then the time of infraction comes to around one half or more of the period considered.¹² Several authors have claimed that Bloomfield's (1959) demonstration of 'bad' central bank behaviour was negatively biased by his use of yearly figures, it being supposed that with monthly data the picture would not be so negative (Dutton, 1984; Pippenger, 1984; Davutyan and Parke, 1995) It is especially interesting therefore to note that, with Portugal, the conclusion is roughly the same whether we use monthly or yearly data, and, in the case of monthly figures, whether we use contemporaneous observations or 6 or 12 month averages of monthly observations.

¹² Bloomfield (1959) did not establish types of violation according to their magnitude, as we have done here, and his criterion has been considered by Dam (1982) as relatively undemanding, as a result.

Table 1

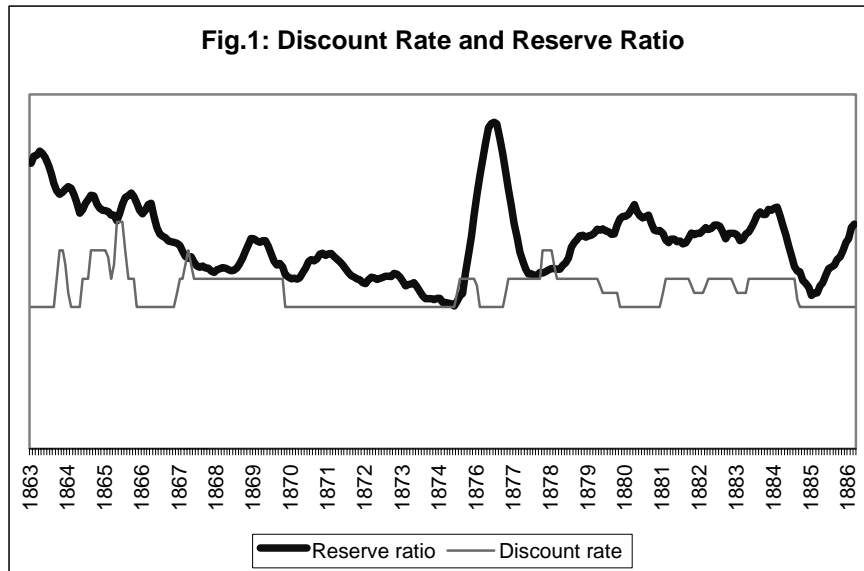
**BREACHES OF THE 'RULES OF THE GAME', 1863-87:
NURKSE-BLOOMFIELD CRITERION**

	N° breaches	Relative n° breaches (%)	
<i>1. Contemporaneous monthly data: RG1</i>			N = 300
a) Serious	34	11	
b) Moderate	94	31	
c) All	164	55	
<i>2) Six-month average monthly data: RG6</i>			N = 295
a) Serious	26	9	
b) Moderate	84	28	
c) All	178	60	
<i>3) Twelve-month average monthly data: RG12</i>			N = 289
a) Serious	22	8	
b) Moderate	75	26	
c) All	175	61	
<i>4) Yearly averages: RGY</i>			N = 25
a) Serious	4	16	
b) Moderate	8	32	
c) All	12	48	
<i>5) End-of-year data: RGY*</i>			N = 25
a)	7	28	
b)	11	44	
c)	13	52	

Source: Monthly balance sheets of the Bank of Portugal published in *Diário do Governo*.

A second criterion, also suggested by Bloomfield, requires that the discount rate of central banks, their principal instrument of intervention in the market, vary inversely with their reserve ratio (reserves divided by sight liabilities, that is, notes plus deposits). In the case of the Bank of Portugal, this did not happen either during the period under consideration. The coefficient of correlation between the two variables was 0.167, not only very small but with the wrong sign. This strongly suggests that the Bank did not

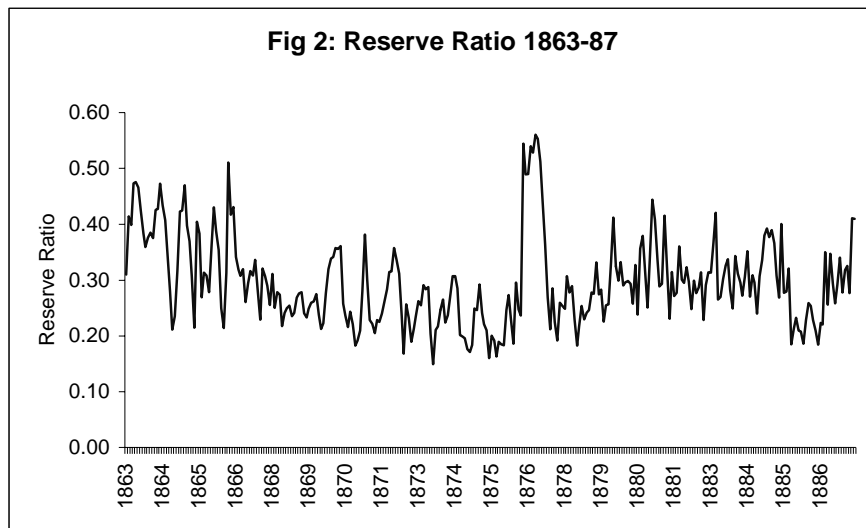
respond systematically to losses of reserves by raising its discount rate and conversely, an inappropriate behaviour for a central bank that is confirmed visually by inspection of figure 1.



A third version of the ‘rules of the game’ stipulated that metallic reserves must be kept at a ‘safe’ level at all times (Bordo and Eschweiler, 1993). Obviously a central bank that failed to do so was not only running risks in terms of inconvertibility but also giving a ‘wrong’ sign to the market that made it hard to believe in its commitment to the monetary standard. This would make subsequent adjustment to shocks more difficult and adherence to the gold standard more problematic. What constituted ‘safety’ for contemporaries is open to interpretation, but it could never be less than the one third specified by the famous Palmer rule (Fetter, 1978).¹³ Looking at the performance of the Bank of Portugal in this respect, it is noticeable once again how frequently this widely respected rule went

¹³ Officially, the Bank did not have to follow any clear rule on reserve ratios during the first four decades of its existence. When a quantitative rule was finally specified, in 1888, by law, the figure was gold reserves equal to one third of notes outstanding and deposits.

unobserved. Figure 2 provides an overall impression of the situation that reveals not only numerous points on the graph where the reserve ratio was below the appropriate level but also quite a number that were clearly in a 'danger zone'. In fact, in three quarters of the months considered (74 %) the Palmer rule was infringed, but much more striking is the fact that this indicator fell below the 25 % mark for almost one third of the time (28 %) and, still worse, it came below a perilous 20% proportion in one month out of every twelve.



Our final approach to this problem is based on the argument that the situation of the reserve ratio can only be properly evaluated if the discount rate policy of the central bank in question is also borne in mind (Capie, Goodhart, Fischer and Schnadt, 1994; Contamin and Denise, 1999).

Central banks holding proportionately higher reserves enjoyed a larger cushion of reserves against adverse movements, and this enabled them to use their discount rate more sparingly. Others, for whom this cushion was thin, were obliged to protect their

reserves by means of a far more active discount policy. At one extreme of the spectrum was the Bank of England, with very low reserves and frequent changes in its rate to ensure that, despite gold drains, they were always sufficient. At the other was the Banque de France with very large reserves and an immobile discount rate. Table 2 puts some relevant data together and lends credence to this view, at least for the period 1870-1890. It also shows that the Bank of Portugal was rather an outlier since it had a low reserve ratio - 30 % on average for 1862-87 - by international standards, and yet was an infrequent user of its discount rate as a means of protecting its reserves. In fact, according to these data, the Bank of Portugal was 'English' in terms of its reserve position and 'French' in terms of its discount rate behaviour, a contradiction that, in our perspective, configures yet another breach of the 'rules of the game'.

Table 2

AVERAGE YEARLY INTEREST RATE CHANGES AND RESERVE RATIOS: 1870-1890

	Discount Rate Changes	Reserve Ratio, 1870	Reserve Ratio, 1890
Bank of England	8.8	41 %	36 %
Bank of Denmark	3.6	42 %	62 %
Reichsbank	3.6	56 %**	60 %
Bank of Norway	1.9	na	69 %
Banque de France	1.4	99 %*	80%*
Bank of Portugal	1.3	28 %	39 %
Bank of Sweden	1.0	28 %	34 %

Sources: Henriksen and Kærgård (1995); Ford (1989); Bank of Portugal Historical Archive (hereafter AHBP): Actas da Direcção, BP.Dir-2.

The persistent rigidity of the Bank's discount rate policy, under these circumstances, which was so clearly at odds with a suitably prudent conduct of its operations, is intriguing and deserves further enquiry. The first thing to note is that it was not a question of any lack of appreciation concerning its usefulness or of how this instrument could be used that accounts for this. Certainly by 1864, when it had to face a serious loss of reserves caused by adverse international conditions, the Bank of Portugal showed full awareness of the theory and practice of this policy tool and of the success with which it was being used by central banks abroad (*Parecer*, 1865). It was able by then to articulate a model of its effectiveness in a monetary crisis, and its superiority over the available alternatives. It observed that this was because its main function was to attract short-term foreign capital in order to counteract a gold outflow. It also stressed that it was the least harmful to trade and industry because, for businesses, 'it is better to obtain some credit with an additional sacrifice than no credit at all' (p. 20). On the other hand, there is no question of the Bank's capacity to impose its rate changes on the domestic financial market, which is not surprising as 'central banks had, of course, relatively little difficulty in making their rates effective in the market when their discounts and advances constituted a substantial proportion of the total credit operations of the banking system as a whole' (Bloomfield, 1959: 44). There was no doubt, in the Bank's view, that it had become 'the regulator of the price of capital in Portugal' (p. 8), a fact that was amply corroborated by events. On the twenty eight occasions, during these years, when we have been able to track the market and the Bank rate after a change, we have found that it was the commercial banks who followed in every case and this within one or two days of the event.¹⁴

¹⁴ This contrasts with the 15 % of occasions in which the Bank of England led the market in the course of

Probably, the most important motive for the rigidity of the discount rate was political. Governments opposed any increases first and foremost because this immediately raised the cost at which they could finance the Floating Debt, an important consideration in a political system which was prone to budget deficits. They also worried about the effect on the long run Debt in cases where new operations were in the course of being launched. In 1884, for example, the authorities were hostile to a higher discount rate because it would depress the launch price of a planned loan. In addition, higher interest rates were unpopular because they were likely to depress business, reduce trade and production and provoke urban unemployment and possibly unrest. These were worries which stimulated a politically inspired so-called ‘tenderness’ towards the market that could not be ignored by an institution, which depended to such a large extent on political goodwill for the renewal of its privileges.¹⁵

A third and more practical circumstance emerges from the archive of the Board as a deterrent to taking speedy action in consonance with the ‘rules of the game’. This is the fact that it was not always easy to discern, day-by-day, whether the economy was enduring a small, passing shock that would soon be dispelled without any need for corrective action; or whether it was something more serious. Only time could tell and this could mean several months, during which the directors would debate the gravity of the situation, whether it was opportune to ask the government for a decree raising the

discount rate turning points (Gallarotti, 1995: 120). For the Portuguese experience, we have used the reports of the *Comércio de Portugal* newspaper, a specialist financial fortnightly that survived during almost the entire period. A time series for commercial banking rates does not exist but the patchy information available indicates that it was one or two points higher than the Bank of Portugal’s rate, depending on the bank and the quality of its paper. For an example, see *Diário do Governo*, 6th February, 1866.

¹⁵ Sayers (1976) and Eichengreen (1996) provide evidence for the universality of these problems among central banks.

discount rate, whether there were alternatives and if not, how strong a measure should be adopted. In 1881, for instance, the topic came up in May, and was discussed subsequently at thirteen different Board meetings before a letter was sent to the government, asking to raise the discount rate. The request was finally authorized in April 1882, after a further letter and five more meetings.¹⁶ Often Boards could not agree or lacked a sufficiently clear majority over the issue at hand, then the situation might improve – due to the arrival from Brazil of a ship with remittances, for example – only to get worse again. For the actors in this drama, it was not obvious whether a shock was structural or not, and with the rudimentary statistics available, it was even hard to tell how large it might be. In the meantime, while this was discussed and decided upon, the ‘rules of the game’ were infringed.

III.

The picture drawn so far is hardly that of a central bank that was seriously intent on ensuring convertibility at all times and that sought to inspire confidence on the part of the public. Reserves were often sharply depleted, sometimes to inadmissibly low levels, proper defensive measures were delayed for long periods, or not taken at all, and credit operations failed to reflect movements in the reserve. Yet Portugal remained on the gold standard without interruption for decades and the Bank of Portugal was able to withstand all shocks without imminent threat to its convertibility. The explanation lies in an intensive use of ‘gold devices’, the name given to the mostly covert measures then used to solve reserve problems, when it was found undesirable to use the proper instruments of

¹⁶ This information is drawn from the minutes of the Board, which are very detailed. See AHBP: Actas da Direcção, BP.Dir-2.

monetary control that the situation required. Essentially, their object was to raise the transactions cost to customers of redeeming notes or deposits for gold and, more generally, to drive the gold export point below its legal level (Scammell, 1985; Dam, 1982). They were employed by all central banks on the gold standard and have been described at length in the literature, although the precise extent of their use, their impact and the reasons for preferring one technique to another have hardly been studied. A favourite with the core country central banks was manipulating the price of gold by altering the rules for redemption or by imposing geographic barriers to its acquisition. They would also encourage imports of gold with hidden subsidies and deter its export by covertly penalizing those engaged in this activity. The Reichsbank used mostly 'suasion', a mixture of moral pressure and threats to elicit the desired response from its clients. In Gallarotti's (1995: 49) view, these 'generated regime outcomes that were more stable than the mythical gold standard'. At the Banque de France, the inclination was towards using the 'prime d'or', i.e. imposing a premium on gold withdrawals whenever they took the form of foreign gold coin or bar (Contamin and Denise, 1999).

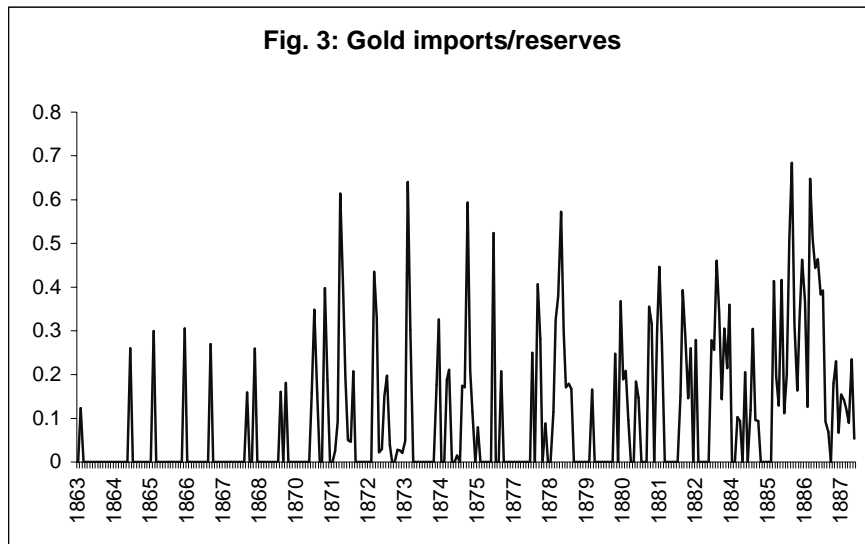
At the Bank of Portugal, several 'gold devices' were in use. Rationing credit was one of them. It limited economic activity and thus helped improve the country's external position and reduce the demand for gold. On other occasions, the Bank paid out notes in copper and silver instead of gold, which was illegal and therefore could not be kept up for long. A third measure was to refuse credit to customers who were believed to be speculating in the exchanges, when the rate for bills on London began to get close or even to fall below the 'gold export point'. None of these was used on any scale, however, principally because they were difficult to hide, ineffective and politically unpopular. On

the other hand and perhaps for the same reason, there is no evidence of attempts to manipulate directly the buying or selling price of gold in the market that was described above for core countries.

The Bank's preference went to two other 'devices'. The first simply consisted in replenishing its coffers with gold from abroad, when the reserve got too low. Most commonly, it was done by directly importing English sovereigns, which were legal tender in Portugal, and were acquired in London, on credit or were paid for from the earning assets that the Bank held there at its bankers. Partly, the objective was simply to have enough gold to face the current drain while it lasted, and, partly, it served the aim of 'window dressing', to impress the public and assuage fears of imminent inconvertibility.

The number of such operations, which relied for their success on the speed and frequency of the Southampton steamer, was large, as was the amount involved, which came to a total of £10.6 million over the twenty-four years in question. Relative to average reserves, this was not an enormous sum – slightly less than 10% - but if we consider only the months in which these imports were needed, the true importance of this gold device emerges in a rather different light. Figure 3 reveals not only how common these episodes were – gold shipments arrived in 41 % of the months considered - but also the extent to which they helped 'improve' the appearance of the reserves. One measure of this is that in altogether seven months gold imports raised reserves by more than 50 %, and in another nine months, by more than 40 %. Another is to see what would have happened to the reserve ratio shown in figure 2 if the amount of gold imported deducted from it, month by month. The result of undoing this cosmetic treatment is that the months in which the reserve ratio was less than 30 % increases from 170 to 193, those that were

below the 25 % mark goes from 83 to 123 and those below the 20% ceiling rise from 26 to 62. To this must be added the novelty of 9 months in which the ratio would have been as low as 10 % if external gold had not been made available.



The preceding ‘gold device’ was particularly suitable for facing internal drains, when the public sought to increase its gold holdings either due to a loss of confidence, or because of a shift in its preference for coin over other monetary instruments.¹⁷ A different kind of pressure arose when the exchange rate for bills on London reached or neared the gold export point and it became cheaper, for payments, to export this metal than to remit bills. In such situations, which were caused by an imbalance on the external account, the holders of claims on the Bank would try to exchange their notes or liquidate their deposits in return for gold, to send out of the country or to speculate. To dissuade this reaction, the Bank of Portugal had another ‘device’, in effect an intervention to

¹⁷ For an example of an internal drain of the second type, in the late 1880s, see Reis (2000).

manipulate the exchange rate. It would offer to sell paper on London at a rate above the gold export point, thus making the export of gold less tempting and causing the exchange rate for bills to move away from the gold point.¹⁸ Either it would offer commercial bills that it already held in its own portfolio for business purposes, or, if these were scarce, it would sell three-month drafts on its correspondents in London. Usually these operations carried a loss, since the bills had been acquired at a better price, while the drafts had to be covered subsequently by remittances that had to be bought in the local market at a probably higher price.¹⁹

Properly organized data on the scope of these operations are available only for the 1880s. Table 3 gives us the remarkable magnitude of these flows, bearing in mind that during this decade metallic reserves came to just over 2,000 *contos* on average.²⁰ It also shows that, of these two possibilities, providing the market with commercial paper on London was preferred. Two explanations can be found for this. The first is that it was a more discrete form of intervention since only the Bank directors, a few employees and the Bank's bankers in London knew about these operations. Sometimes, these devices were implemented with the connivance of the Treasury 's Agency in London, and this made them even harder for the public to detect. In the second place, it was better for the profit and loss account, since importing sovereigns involved unavoidable expenses such as

¹⁸ While Esteves and Ferramosca (2000) estimate the gold export point at 52.5 between 1854 and 1886, in the early 1880s the Bankeg was beginning to intervene when the market rate reached between 52.94 and 53.06 for a parity of 53.33.

¹⁹ Already in September 1864, Knowles and Foster, one of the Bank of Portugal's London bankers was advising it to follow this course of action in order to stem its gold drain. See AHBP: Correspondência Recebida do Estrangeiro Externa, BP.Est-1. It is worth noting that, according to Sayers (1976), the Bank of England developed gold devices particularly in the 1880s, that is, twenty years later.

²⁰ The Portuguese currency unit was the *real* (plural *reis*), of which 1 million = 1 *conto*. A *conto* was roughly equivalent to £ 222. The data in table 3 does not always coincide with the yearly totals we calculated, independently, from the records for individual gold shipments in the Bank's archive (AHBP: Mestre Auxiliar, Contas Interinas, BP.CG-7).

packaging, insurance and freight that bills did not incur in, while both had the same cost in terms of covering, in London, any temporary debit that might arise there.

Table 3

BANK OF PORTUGAL: GOLD IMPORTS AND BILLS DRAWN ON LONDON, 1878-87
(*contos*)

	Gold Imports	Bills Drawn	Profits/losses on Foreign Operations
1878	3,240	675	na
1879	na	na	na
1880	3,015	2,890	19.3
1881	2,925	5,377	-14.5
1882	3,150	13,085	-62.3
1883	4,500	12,647	-79.0
1884	2,250	21,269	-57.1
1885	4,185	35,336	-134.8
1886	8,280	21,066	-38.9
1887	4,410	12,881	-44.6

Source: Annual Report of the Bank of Portugal (1893).

‘Gold devices’ of both types were clearly suitable for neutralizing short and not very intense shocks but they had their limits. Obviously a reserve problem could only be countered in one of the manners described to the extent that liquid foreign assets were available to meet the debits arising. If it were selling bills from its portfolio, the size of the latter defined how far the Bank could go. If it were selling drafts on London bankers it could do so only to the extent of its net external reserves, which consisted of easily negotiable shares and bonds of high reputation, bills of exchange receivable there (whether drawn from Brazil or from Lisbon and endorsed by good Lisbon or Oporto names), and balances held at foreign bankers. In the short run and until the gold drain

ceased, it was thanks to these additional, external reserves that the Bank was able pay for the gold imports and the debits it incurred for its London drafts in order to stem an adverse tide. And the longer this short run became, the more such reserves were needed to maintain confidence and convertibility without having to resort to sterner measures, such as a discount rate hike or the curtailment of domestic credits. Pragmatically, the length of the short run was measured by the size of these reserves, or by the time it took to run them down.²¹

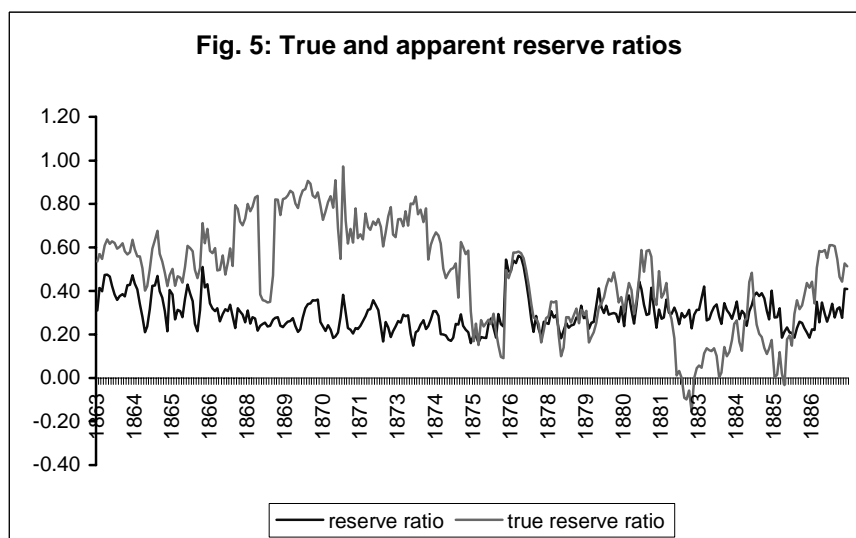
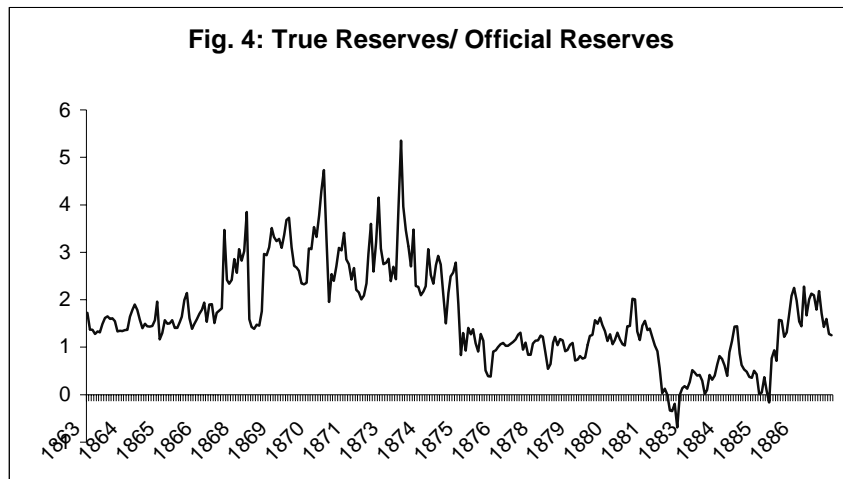
In this light, it may be useful to reconsider the definition of reserves that we have been until now. Obviously what mattered in this context was the sum of ‘official’ metallic and net external reserves, not just the former, particularly in view of the interchangeability of these two types of assets. This being so, it seems even probable that the Board targeted this broader definition in formulating its monetary policy, instead of the narrower one. It is also reasonable to expect that these ‘true’ reserves would normally be larger than the ‘official’ ones.

The holding of non-metallic reserves by central banks in the late 19th century was nothing unusual and among central banks of peripheral countries it tended to represent a substantial share of the whole (Lindert, 1969; Panić, 1992; Conant, 1910). The Bank of Portugal’s specific problem was that it could not include them as official reserves but it got round this by means of ‘gold devices’. It could thus enjoy the extra income from holding ‘external reserves’ and the convenience for its lucrative foreign operations of having them, yet could transform them rapidly into ‘official’ reserves whenever the need

²¹ This device ‘has to come to an end as soon as the Bank’s credits abroad or its portfolio of paper on foreign places are exhausted’. Letter to government of 25 July 1877 in AHBP: Registo de Papeis Oficiais, N° 17, BP.CG-48.

arose. In reality, however, the situation was far more complex than this appearance and on occasions involved behaviour, which, for central bankers, was anything but prudent.²²

Figures 4 and 5, which show, respectively, the ‘true’ reserves to official reserves ratio and the ‘true’ and ‘apparent’ (or official) reserve ratios, help to clarify this.



During the sub period from 1863 to the end of 1876, ‘external’ reserves did indeed act as a cushion to the ‘official’ ones, since the ratio of ‘true’ to ‘official’ reserves was

²² Gallarotti (1995) makes a distinction between gold and external reserves in terms of a first and second ‘line of defence’, which seems artificial, since they could be converted into one another so easily. What really mattered was the income earning capacity difference and the fact that gold was needed by law and for ‘window dressing’ and external reserves were not.

consistently greater than one, and this at times by an enormous margin. The poor impression given earlier by figure 2, of a declining and often dangerously low reserve ratio, is thus dispelled in favour of a far rosier picture. This allows us to make much better sense out of the puzzle encountered above regarding the Bank's passive use of the discount rate when its 'apparent' reserve ratio was so exiguous. With a 'true' reserve ratio that was often in excess of 60 %, the Bank of Portugal emerges during the first part of our period after all as 'French', both in its reserve and its discount policies. In contrast, from Jan 1877 until the end of 1887, a major sea change appears to have taken place. Over fairly long periods, the cushion of 'external' reserves was reduced to insignificance and on many occasions – 67 out of a total of 132 months - was actually negative, that is the ratio displayed in figure 4 was below unity. In other words, part of the metallic reserves held by the Bank, that had been bought in London for 'window dressing', was not paid for and was owed to foreign bankers.²³ More remarkable still is the fact that during a total of ten months spread out over 1882, 1883 and 1885, this indicator was either negative or nil, the implication being that the entire official reserve of the Bank was financed by short term credit from abroad. In the meantime, the Bank of Portugal outwardly displayed a stable though hardly impressive reserve ratio of around 25 %, when otherwise it would either have had to reveal a catastrophic situation and implement very severe measures indeed.²⁴

²³ With a total of about 7 years of negative external reserves, Portugal thus emerges as a remarkable outlier relative to most other countries, which had consistently positive and increasing external reserves. See Bordo and Eichengreen (1998).

²⁴ The Portuguese case contradicts Gallarotti's (1995) claim that central banks would rather raise the discount rate, use gold devices or control capital movements before they would borrow from a bank in order to replenish reserves. For the Bank of Portugal, the last thing was raising the discount rate, while borrowing gold from other banks was the same as using gold devices.

The next question is how this could be practiced in such a consistent form over so long a period? There are several aspects to this. One is that over the years the Bank built up a network of banking relationships in the main financial centers of Europe - London and Paris, in particular - in the first instance for the purpose of transacting in the bills of exchange that it acquired in the Portuguese and Brazilian markets. As these operations expanded, so too did these relations and with them the lines of credit that were normal in this business. By the late 1870s, the Bank of Portugal had managed to obtain from two or three merchant and non-merchant banks (Knowles and Foster, City and Country Bank and *Crédit Lyonnais*) secured, but also unsecured credits, which totaled between £100,000 and £700,000 sterling and could be drawn on freely for periods of up to six months.²⁵ In good periods it would accumulate external liquidity in various forms, while in difficult times, of internal or external drain, it could run up a deficit abroad for months and use this to sustain convertibility and public confidence without resorting to more extreme measures.

In the recent literature, doubts have been cast on the degree of regular international co-operation between central banks, although it is recognized that on the occasion of severe international crises such co-operation was important. (Flandreau, 1997). On the other hand, its absence in the case of small, peripheral central banks has been claimed to have contributed to the greater instability of the gold standard in these countries (Eichengreen, 1996). What the example of the Bank of Portugal shows for the years after 1876 is that assistance of this kind from abroad for a small central bank could be frequent, substantial

²⁵ On rare but significant occasions, the Bank borrowed from the government who placed at its disposal large sums in London or in Lisbon. See the exchange of letter in February 1882 in AHBP: Registo de Papeis Officiais N°..., BP.CG-48.

and decisive for the achievement of its objectives. In this case, it did not come from other central banks – there were practically no relations with any of them – but from ordinary financial institutions that were motivated entirely by profit considerations, not by any thoughts concerning the stability of the international gold standard. The evidence presented further suggests that thanks to foreign credit convertibility could be sustained in a manner quite contrary to the ‘rules of the game’, over periods of many months and without serious repercussions.²⁶

Three circumstances are helpful in accounting for how this was possible. One of them was that Portugal and the Bank of Portugal were small enough that the credit demands they placed on the international market were minuscule, passed unobserved and generated no effects for other players. In the second place, the Bank was most likely thought of as being closely supported by the Portuguese government, who would never let it fail. This enhanced its credit worthiness. In this instance, the market probably remembered that during the Portuguese 1876 banking crisis, the government had provided £1 million in cash to the Bank of Portugal, when the latter lacked the funds to bail out the troubled banking system and itself. In the third place, the Bank must have been seen as a good risk on its own merits. It was by far the largest bank in Portugal and clearly the most solid one; its capital represented a considerable proportion of total assets and its sight liabilities apparently not a particularly heavy burden. It had an excellent record of punctuality in its payments, a strong international side to its business and good

²⁶ The subject of foreign borrowing by central banks in trouble is mentioned by several authors but the details are scant. See Bloomfield (1959); Gallaroti (1995); Bayoumi and Eichengreen (1995). The countries in question include Belgium, Norway and Sweden. Ford (1989: 201) states that gold for replenishing reserves came either from ‘other monetary authorities or from the mines’ and therefore completely ignores the possibility that private bankers might have provided this service.

access to bills of exchange coming from the important Brazilian market. Most important of all, up until the mid 1870s, it had followed a policy that was quite the opposite from the one we are now seeking to explain. For many years, it had consistently kept large balances of liquid assets with its bankers abroad and its 'true' reserves had regularly exceeded by a wide margin its official, metallic reserves. With this, we may suppose that it had built a strong reputation and one off which it was able to live despite the changes conditions through the late 1870 and the 1880s.

Informational asymmetry is a salient and recently much studied feature of financial systems. The situation we have just depicted is a striking example of this issue. During many years Portugal's central bank was able to hold an apparently adequate gold reserve and thereby presented itself to the world with a credible commitment to the gold standard, which the true facts belied. It is not clear to what extent the market was deceived by appearances though it seems unlikely that it can have ignored all the signs.²⁷ Reassuringly, however, the Bank of Portugal did intervene with its strongest weapon to strengthen convertibility. Although this was perhaps too infrequent and inflexible, the net result was a discount rate that was certainly not low by international standards. On average it was 6 % for 1863-87 and during half this period it was above the 5 % 'normal' level. The remaining question that arises is: was it properly used? In the following section we try to answer this by analyzing the determinants of discount rate interventions by

²⁷ The evidence is mixed. The *Crédit Lyonnais* rated countries in the 1890s as 'third order' international debtors that had a ratio of debt service to normal revenues above 40 % (Flandreau, 1998). By this standard Portugal would have been third order, the average of this indicator being 56 % during 1881-7 (Mata, 1993). The price in London of Portuguese bonds gradually fell from 1880 to 1885 and then gradually rose to 1887 but was never impressive.

quantifying the importance of these factors and the extent to which these actions can be interpreted as the fruit of the application of proper banking rules.

IV.

The previous section attempted to show the extent to which the central bank of a small, peripheral gold standard country could elude the rules of conduct that defined its commitment to this regime with impunity. It further showed that the main limit to how far this could be taken was the stock of international reserves to which the central bank had access in one way or another. When these limits were approached, there was no option but to turn to the discount rate, the only universally recognized remedy for such monetary troubles, and this the Bank of Portugal did too, even if less frequently than it would have, if its posture had been more orthodox. In view of its history of weak adherence to ‘rules’, the question that inevitably arises is, when it did vary its discount rate, whether it did so in the same discretionary manner. To answer this, two steps must be taken. The first is to establish, on the basis of both public and private discussion, the latter at Board meetings, which were the factors that the Bank and the specialized public deemed to be the proper ones for shaping such a policy. The Bank claimed from early on that its actions in such matters were closely governed by ‘experience’ and ‘good authority’ (*Parecer*, 1865: 28). The second part of this exercise aims therefore at determining whether these factors had in fact their presumed role and this is done by estimating its reaction function with respect to the discount rate.

Several exercises of this kind have been carried out previously with regard to different countries mainly Britain and Germany, and the literature on the subject is plentiful.²⁸ Like these, we assume here that the Bank did not optimize a target but followed a rule of thumb and possibly aimed at several targets at the same time.²⁹ Given that the dependent variable is ordinal, that is it is both categorical and ordered – it only assumed percentage values of 5, 5.5, 6, 6.5 points and so on – it is not advisable to employ ordinary linear regression for the estimation. The correct procedure is ordered probit, which takes this fact into consideration.³⁰ In the case of both the dependent and the independent variables, we study levels rather than their first differences, contrary to what several authors have done, and this for two reasons. One is that, from observation, our variables are stationary (with one exception, which is differenced). The other is that our qualitative sources indicate that contemporaries monitored the level of these variables, not their variations, and worried about their policy efforts shifting levels only, rather than influencing variations.

In designing the model, instantaneous reaction to the explanatory variables was ruled out as a starting point owing to the fact that historically this seemed unrealistic. Owing to delays in the flow of information available to the historic actors and to the time required for a decision at Board level, it was found better to transform these variables into moving averages calculated over different time spans. These were then tried out to see which gave the best result. Ordinary lags were thought to be unrealistic as they imply

²⁸ For numerous references, see Bordo and Schwartz (1984) and Bordo and MacDonald (1997)

²⁹ This is the most common approach in the literature. A rare exception is by Giovannini (1986) who attempts to estimate the target variable for the Bank of England and the Reichsbank and conducts his evaluation of adherence to the ‘rules of the game’ from there.

³⁰ This procedure has not been followed in the majority of studies but a comparable one – dynamic probit – was originally proposed for a similar problem by Eichengreen et al. (1985) and has recently been attempted again with success by Davutyan and Parke (1995).

disregarding all the information that arises during the months between the current and the lagged period. Based on our reading of the Bank's archival material, this seemed to come closer to reflecting the slow, careful and often vacillating decisional process.

The most important of the independent variables is the reserve ratio, either in its official version (metallic reserves/notes and deposits), or, alternatively, the 'true' reserve rate (metallic + net external reserves/ notes + deposits). The expected sign is negative, in accordance with the 'rules of the game'. Much use has been made, in the other studies, of related targets, such as gold inflows and outflows, as well as the level of gold reserves at the Bank (e.g. Jeanne, 1995; Davutyan and Parke, 1995). The last of these does not seem apposite since it only makes banking sense when compared to the obligations that it was supposed to guarantee. The former cannot be used here because the relevant information on a monthly basis is lacking. In any case, although the directors of the Bank were naturally concerned about the balance of payments and its components, the reserve ratio was the crucial indicator for the chances of convertibility. Moreover, in a country where hoarding of gold was significant (Reis, 2000), gold movements by themselves could be deceptive in assessing their impact on the internal situation at the Bank.

The highly integrated nature of the international gold standard has generally focused attention, in these estimations, on the impact on a given central bank's reaction function of the actions of its major counterparts. Not surprisingly, this received much attention from the press and the directors of the Bank. The latter considered that 'owing to the mobility of circulating capital, by a natural impulse, the rate of interest tends to find the same level in all markets which entertain easy commercial relations, a tendency which

has been compared to that of a liquid in a system of communicating vases' (*Parecer*, 1865). In the case of Portugal, with its strong and longstanding commercial and financial links with Britain, the obvious choice was this country's discount rate, that of the Bank of England having been preferred as it is the one the Bank of Portugal directors tended to mention. The expected sign for this coefficient is positive.

The consequences of international integration present themselves in two other forms besides. The Brazilian exchange rate is one of them. This Portuguese specificity arose from the already noted importance of emigrant remittances in the Portuguese balance of payments. It was well known at this time that if the Brazilian exchange weakened (i.e. the number of pence to the Brazilian milreis fell) these remittances would fall and since this was bound to pressure the Portuguese exchange rate, this should normally encourage defensive action by the Bank of Portugal (Salazar, 1916, 1997). The sign of the coefficient should therefore be negative. A similar link and therefore the same expected sign may be hypothesized for the price of the Portuguese foreign debt, which was denominated and payable in gold and quoted on the London stock exchange. The reasoning here is that it reflected the government's international credibility and the market's expectations regarding its solvability. Implicitly, the stability of the country's monetary standard was involved too and therefore a lower price could lead to pressure to raise the Bank's discount rate, and conversely. Bond prices being inversely related to the long run interest rate, a concurrent interpretation might be that the latter acted as an exogenous influence on the Bank's rate, in itself a short-term variable. The assumption that there was a close relation between the long and the short rates still needs to be verified, however. Finally, Bank directors noted that higher bond prices encouraged the

public to sell them and repay their loans from the banks, which replenished reserves and was another reason for keeping the discount rate low.

In addition, the model has been rendered more realistic by introducing non-financial, non-monetary variables. To test whether the Bank's discount rate policy was governed by concerns for the level of activity in the economy - the much-vaunted 'tenderness' for the market - we resort to a proxy based on railway traffic receipts, in emulation of earlier studies of the kind (Goodhart, 1972; Dutton, 1984). Internal discussion suggests that such worries indeed existed but it is not certain that this proxy picks them up. One reason is that railway receipts reflected mainly agricultural activity, certainly an important dimension of the Portuguese economy but one that was not closely integrated with the formal financial system, but relied mostly instead on local, informal, usurious credit. The other is that this indicator is sensitive to both volumes and prices of goods and would require a deflation, which, for lack of data, we are unable to carry out. A non-significant result would imply that the Bank did not respond to market conditions, a significant positive coefficient would indicate that it acted counter-cyclically, in contravention of the 'rules of the game' (Dutton, 1984).

Since a role for politics seems plausible, we have used a dummy that reflects the predominant political colour of the governments of the time. Under the late 19th century party system known as Rotativismo, there was an alternation in power of the Regenerador and Progressista parties (Bonifácio, 2002). Although lacking strongly distinct programmatic personalities, it has been suggested that the Regeneradores were fiscally more responsible and enjoyed a better financial reputation abroad, while the Progressistas

may have been inclined to laxer attitudes and therefore had to be more flexible regarding Bank requests to raise the discount rate.³¹ If true, this would imply a negative coefficient for this variable. Seasonality in the economy is another possible influence on discount rate policy and is proxied in the habitual way. Lastly, the likelihood that there may have been a permanent change in the Bank's understanding of how the money market worked and in its conception of its role in the financial system, as a result of the accumulation of experience, must be taken into account. A dummy divides the period into two, at the December 1876 mark. This also takes into account the likely long-term repercussion of the banking crisis of that year and the intense debate about the future shape of the Portuguese financial system that followed.

The results of the estimation are displayed in table 4. Given that the two sub periods are rather short, we concentrate our analysis on the entire period covered by this article. The first thing to note is that on the whole the independent variables are highly significant and have the correct signs, the estimation has a good fit but its explanatory power is not high. The implicit conclusion is, on the one hand, that the Bank's discount policy was systematically influenced by a set of rules that, in this context, spelled out sound principles of central bank management and were correct in terms of the 'rules of the

³¹ The subject has hardly been studied, but see Lains (2202) and Mata (1990). It is certainly the case that Fontes Pereira de Melo, the great leader of the Regenerador party for thirty years, was also responsible for placing Portuguese finances on a sound footing in the early 1850s, and for opening foreign stock exchanges to Portuguese bonds in 1856. The worst fiscal years never coincided with a period of Regenerador ascendancy, as can be seen in Mata (1990).

Table 4

BANK OF PORTUGAL REACTION FUNCTION: RESULTS

(ordered probit)

Dependent variable: Bank of Portugal Discount Rate [BPDR2]

	1863-87	1863-76	1877-87
<i>Independent variables:</i>			
'True' reserve ratio [TRR6]	-0.047 (-7.37)	-0.062 (-5.19)	-0.054 (-5.51)
Bank of England discount rate [BEDR6]	0.352 (6.02)	0.431 (5.82)	0.362 (2.34)
Brazilian exchange rate [BER1]	-0.192 (-4.79)	-0.276 (-5.11)	--
Brazilian exchange rate [BER3]	--	--	0.228 (2.82)
Price of Portuguese foreign bonds [BONDS1]	-0.098 (-4.57)	-0.114 (-3.30)	-0.246 (-4.52)
Political dummy [GOV]	-0.571 (-3.38)	-0.438 (-0.174)	--
Dummy for 1876 [D1876]	-0.609 (2.17)	--	--
Other variables not significant			
Pseudo R2	0.223	0.269	0.293
LR chi2	148	88.17	87.87
Log likelihood	-258	-120.4	-106.23
N	294	162	132

Note: Z statistics in brackets

game'. On the other hand, the remaining, 'other' factors together played a much larger role – more than two thirds of the variation in the dependent variable - in determining the discount rate's level. Even if we have left out other economic variables, it is difficult to imagine that they could alter the picture much and this means that the element of

'discretion' was large in the decision making process. By this light, central banking as practiced in Portugal, was not just an 'art', but the 'formal code of actions' referred to by the Macmillan Committee in 1931 as its 'science' was not the prevailing element.³² Ample confirmation is thus given to the externally imposed rigidity of the Bank's discount rate policy.

On a more detailed level, an important finding is that the 'true' reserve ratio gives a better result than its official version, which has the right sign but is not significant. This confirms the earlier suspicion that our analysis of the crucial role of 'external' reserves was correct. On the other hand, the expectation of a seasonal factor receives no support, which is striking in view of the large weight of the agricultural sector. This may simply mean, however, a lower degree of integration of the economy, compounded by a weak link between formal financial institutions and the primary sector. Equally unexpected is the irrelevance for monetary policy of the index of economic activity. Rather than implying a lack of concern for the state of the market which one might deduce from a perusal of the available qualitative evidence, the reason for this contradiction may simply reside in the nature of the proxy, an issue that ought to be researched further. The time spans used to define the different variables in order to obtain the best results were hardly the same in all cases. Surprisingly, the effects of the Brazilian exchange rate and of the bond price were felt rapidly on the discount rate, in the same month, a fact for which it is difficult to find an adequate explanation in the qualitative evidence. On the other hand, the Bank's reserve position and its sensitivity to the discount rate of the Bank of England

³² Martín Aceña (1994: 151) attributes a far less 'scientific' approach to the Bank of Spain in this respect – 'an ad hoc policy rather than a management consciously oriented to regulating the economic business cycle and the volume of credit'. The Bank of Spain was off the gold standard at this time.

clearly took a fair long time to be digested by the decision makers, which corroborates our earlier impression about the difficulties with the interpretation of these signs.

The political and institutional aspects of the question also yield interesting findings. The nature of the party in power apparently mattered. The periods when the financially ‘more respectable’ Regenerador party governed were characterized by a tendency for a lower discount rate, the contrary being true when the Progressista party or its predecessors were in charge. The precise causal mechanism behind this cannot be established merely from these data, however. Greater trust in Portuguese finances on the part of the international community might be one explanation via the effect of the ‘country risk’ factor. On the other hand, the reason could be that Regenerador governments were stronger, longer-lasting and more determined, and were therefore better able to resist the pleading of the Bank whenever the matter of raising the discount rate came up. The significance of the dummy for 1876 lends credence to the idea that something changed around the time of the banking crisis. Whether it was this crisis in itself and the consequent lessons from it for bankers, the new perception by economic agents that the state was now readier to bail out the Bank of Portugal when in trouble, or just that the Bank now felt more protected by ‘moral hazard’, it is impossible to say on the available evidence.

Analyzing and comparing the results for the two sub periods yields more surprises than it does confirmations of hypotheses. None of them is easy to explain. Most unexpected is the fact that despite the significance of the 1876 dummy in the estimation of the full period, there is little difference in the value of the R2s. Most of the signs of the respective coefficients and the values of the coefficients themselves diverge very little too. The

implication for our analysis seems to be that after all the Bank's adherence to a set of rules for monetary policy was very consistent over time, even when conditions changed as much as they did from the 1870s to the 1880s. No great lessons appear to have been learnt either from the day-to-day running of the institution or from great crises like that of 1876. The same stock of banking know-how was consistently employed throughout, despite the marked evolution in the circumstances under which it had to operate. A second puzzle has to do with the divergence between the two sub periods in the coefficient of the Brazilian exchange rate variable, which, contrary to before, appears as significant but positive in the post 1876 years. This is hard to account for because if anything, remittances were more important for the balance of payments in the 1880s than ever before, whilst the variance of the Brazilian exchange was certainly not diminishing and there is no reason why their elasticity with respect to the exchange should have changed so much. Finally, politics seem to have ceased to matter in the same sub period, which again is not easy to construe. The political party system remained the same, Fontes continued to be active at the head of the Regenerador party until his death in 1886, but was his subtle influence on the country's financial reputation waning? Political historians have not looked enough at this issue to help us on this score. One can only stress that the two sub periods in question are short and this may be responsible for the emergence of anomalies that do not readily lend themselves to convincing interpretation.

V.

The point of departure of this study is the widely accepted notion nowadays that the stability of the classic gold standard mostly relied on the steadfast long-term commitment of various countries to this regime, while allowing a measure of policy flexibility so that adjustment to shocks should be relatively painless to the community. The Bank of Portugal was the central bank of a country that hardly provided a favourable financial and political environment for the continuous adherence to this monetary system. It was able nevertheless to breach the ‘rules of the game’ on a persistent and considerable scale, as probably happened in other more solid countries, without apparently threatening convertibility. Indeed, to the casual observer its commitment must have seemed quite adequate. Not only were there no suspensions of convertibility over several decades, but the country’s record in terms of keeping its exchange rate within the gold point band was perfectly reasonable by international standards. (Esteves and Ferramosca, 2000; Bordo and MacDonald, 1997).

The reality was otherwise, however. To satisfy appearances, the Bank of Portugal had to use gold devices fairly massively, particularly during the 1880s, to a point where it had to rely quite heavily on short term credits from its bankers abroad in order to sustain sufficient liquidity for its sight obligations.³³ Whether this helped prolong Portugal’s link to gold beyond what should have been possible given the weakness of its real commitment is an issue that is not discussed here but is an obvious extension of this analysis. What is clear, however, is that two of the main reasons why these arrangements

³³ Portugal offers a strong contradiction to Dam (1982: 35)’s claim that ‘their effect [of gold devices] can easily be exaggerated’.

lasted so long were its relative international insignificance and the opportunity for profit it offered to specialist foreign bankers. The demise of the gold standard in 1891 had a lot to do with these reasons too. When the international crunch finally came, Portugal was too small to justify a bail out operation, as would have been done for core countries that were 'too large to fail'. And it had become too risky to continue attracting the short-term credit that had been the lifeblood of its central bank's gold device arrangements.

The Bank did not rely on these devices alone. For ultimate situations, like all other central banks, it also had a discount rate policy, which it employed, however, with some reluctance and difficulty. Of special interest in terms of central bank history is the fact that it used this instrument, to a not inconsiderable extent, in accordance with what would pass, at that time, for a 'scientific' set of rules. Moreover, it did so with great consistency. It tracked the Bank of England's rate at a distance, and did the same for its own reserve ratio, not the official, 'window dressed' one, but rather the 'true' one, which included all of its highly liquid assets. It paid attention, sensibly, to less orthodox indicators too, such as the Brazilian exchange rate, the price of Portuguese bonds in London and the political complexion of the government of the day. Yet, in the end, it was discretion that had the greatest weight in these decisions by far. Discretion here did not simply mean the 'art' of central banking, as extolled during the 1920s and 1930s – taking decisions on the basis of good sense, tradition and flair. In this case, it included this too no doubt, but also all the unwanted and unavoidable political and informational difficulties that surrounded any assessment by the Bank's directors leading to a discount rate change. A reading of the minutes of the Board's meetings has brought to light how many imponderables it had to face and how weighty these were. Getting a government to agree to publish the rate hike

decree could take up to three or four months and this depended on a variety of exogenous factors which were rarely the same and probably quite unpredictable. But this was only the second stage of the process. First, as we noted above, a considerable time was spent in discussing, within the Board, whether the situation was ripe for an alteration, not only in terms of ‘science’, but also of other pertinent aspects, such as the relationship with the current government. This could entail a further three to four months of holdup.

Had the Bank of Portugal enjoyed full instead of only partial autonomy, such delays might have been shorter and its use of the discount rate more frequent and better adjusted to market conditions. We cannot be sure about this, however. Keynes, already before the First World War, had alluded ‘to other countries of less financial strength [where] we find the dependence of their Central Banks on holdings of foreign bills and on foreign credits, their willingness to permit a premium on gold, and the inadequacy of their bank rates taken by themselves, to be increasingly marked’ (quoted by Ford, 1989). The fact was that the Bank of Portugal was not the Bank of England. It could not attract gold flows, without using its discount rate, simply by dint of its reputation and the market expectations that this engendered (Jeanne, 1995). Indeed, the question is whether using this tool more often would not have sparked off adverse selection effects and frightened away corrective capital movements, rather than attracting them. The truth is that the ‘rules’ of the gold standard for central bankers were far from universal, and this is something we only become aware of as we study these institutions in depth. Alec Ford’s (1989: 202) warning some years ago against ‘accepting too easily some of the facile stereotypes which have been applied to gold standard provisions regardless of individual circumstances’ thus continues to stand.

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Appendix

Sources and construction of the variables in table 4

Bank of England Discount Rate (BEDR)

There are two reliable sources for this: Mitchell (1988) and Capie and Webber (1995). The latter has the disadvantages of having monthly data that only begins in January 1870 and of giving the rate for the end of the month. The former, on the contrary, permits us to cover the entire period under consideration and gives us the exact date when rate changes occurred. This enables us to construct an average for each month, which is the variable used here. Both features lead us therefore to prefer this source. Ogden (1991) uses weekly data compiled from daily raw data but these figures are not available in published form. Instead of the Bank of England Rate, it would have been possible to use rates that were arguably a closer expression of the London money market's condition, such as the rate on prime bills. The justification for preferring this would be that the Bank of Portugal had no direct dealings with the Bank of England but did most of its external financing, in London, through bankers whose discounts were directly related to market rates. The Capie and Webber (1995) monthly series for the prime bill rate, however, only starts in 1870 [but a monthly series is published by Palgrave, *Bank Rate and the Money Market* (1903)]. Not using these data may be a lesser problem, however, given that we are told that 'indirectly (and conventionally) Bank Rate determined many other rates of interest', e.g. the rate applied by discount houses or the rates paid by commercial banks on time deposits and those that they charged on advances (Capie and Webber, 1995:

305).³⁴ It should be noted that, during critical periods, the Bank of England might advertise a certain Discount Rate but in fact was charging a higher figure for advances, as is revealed by Ogden (1991) with regard to the 1878 Bank of Glasgow crisis.

Brazilian Exchange Rate (BER)

This is the Rio de Janeiro exchange rate on London, which is expressed in pence sterling per *milreis*. For the most part it is taken from *The Economist*. The occasional gaps in this source were filled in from the commercial correspondence of the Bank of Portugal with its agents in Rio de Janeiro, usually the English Bank of Rio de Janeiro or the Banco Comercial do Rio de Janeiro (AHBP: Correspondência Recebida do Estrangeiro, BP.Est.1).

Gold Imports by the Bank of Portugal (Goldimp)

This series is expressed in *contos* and represents the monthly total of imports of gold sovereigns (which were legal tender in Portugal) from London by the Bank of Portugal. The Bank never acquired gold bars. On arrival, the gold coin was immediately unpacked and credited to cash reserves. Full details of each operation, including even the name of the ship used, are found in the Bank's main ledgers, in one of the two following accounts: Operações Cambiais or Contas Interinas both in AHBP: Mestre Auxiliar, BP.CG-7.

³⁴ Jeanne (1995) shows that during 1893-1914 the two rates moved closely together although the Bank Rate was less volatile.

External Reserves (ExtReserves)

This series was compiled from a variety of accounts in the Bank of Portugal's ledgers which pertained to foreign operations. It comprises holdings of foreign stocks and Portuguese Foreign Debt bonds, bills on foreign places and bills on foreign places domiciled with the Bank, foreign currency operations, drafts on foreign places, and balances of accounts at foreign bankers. In some years, the last of these were kept in special books, of General Debtors and Creditors (Devedores e Credores Gerais), and involved up to some thirty five different banking houses in London and Paris, but also in Madrid, Antwerp, Cadiz, Florence, Milan, Badajoz, Vienna, Hamburg and Brussels. (AHBP: up to 1874, Diário, BP.CG-; after 1874, Situações Periódicas, BP.CG-18).

Price of Portuguese External Debt Bonds (BONDS)

During this period, the Portuguese state issued mainly 3% perpetual debt. Part of this was issued on the domestic market and part on the London Stock Exchange. The interest on either debt instrument was payable in gold but it seems fair to suppose that the risk of default on bonds issued in London would have been lesser given the greater negative impact for the Portuguese state of such an event. *The Economist* provides weekly quotations and we have used the price at the end of each month.³⁵

Reserve Ratio (RR)

Reserve ratios were stipulated by the Bank's statute and bylaws, from its foundation in 1846, as the proportion between the precious metals held by the Bank and its liabilities in the form of notes in circulation and sight deposits representing metallic

³⁵ These data have been supplied by Dr. António Lopes Vieira, to whom I am most grateful.

coin (Banco de Portugal, 1946b). Although silver and copper notes and coins, were allowed to be counted too, the overwhelming majority – on average for the entire period, 87.5% - of these values was in gold (AHBP: Caixa de Reserva, BP.CG-28). In 1885, these rules were changed. Promissory notes and fixed term bonds were also to be included as short-term liabilities and reserves could comprise additionally any financial asset of high liquidity, bearing in mind the amortization pattern of the liabilities. Throughout the period under consideration, the Bank of Portugal was permitted to include as part of its reserves also easily realisable “metal assets”, an ambiguous expression that probably meant “external reserves” in the meaning employed in the text above. On the other hand, it should be noted that in the summary balance sheets that it was obliged to publish on a monthly basis in the official register, such assets were apparently not allowed as reserves and were put in another account. The reserve ratio series we have constructed follows the second and stricter of these interpretations, i.e. coin and bar as reserves, and notes in circulation plus sight deposits as liabilities. The source employed for this, namely the Bank’s monthly balance sheets published in the governmental *Diário do Governo*, obeyed criteria that varied from time to time, and care has been taken to eliminate inappropriate items. For example, during certain periods, notes in the till were counted as reserves and they have been deducted from “reserves in money” to obtain the correct value of “metallic reserves”.

Bank of Portugal Discount Rate (BPDR)

The Bank of Portugal 's discount rate was applied equally to discounts and lombard loans. During the period considered the posted rate was the one actually charged, there being no sign in the records of favourable rates for special customers. The rate was raised for the first time from its official 5% level in September 1864. Most of the changes thereafter came in "large increments", i.e. 1%, and only much less frequently 0.5%. It is not known whether in this the Bank was following the British 19th century doctrine according to which only large discount rate changes had an effect on gold movements (Davutyan and Parke, 1995: 1100). There is no published series for the Bank of Portugal's discount ratio and this one has been constructed from the minutes of the Board of directors (AHBP: Actas da Direcção, BP.Dir-2)

Railway Receipts (RailRec)

In the absence of anything better, monthly records of the receipts of merchandise traffic on railways have been used in various studies as a proxy for short term real fluctuations in the economy (Goodhardt, 1972; Dutton, 1984). This approach is followed here too using a monthly time series of the receipts of the "slow merchandise traffic" of the Companhia Real dos Caminhos de Ferro Portugueses. This was the largest railway enterprise in the country and was responsible for its main trunk line, between Lisbon and Oporto. The series does not include the receipts from passenger travel or the carriage of 'fast merchandise', a minor item anyway that corresponded to small package movement. The data from 1866 to 1870 is in francs and has been converted into *contos* at the parity

rate. The source is the annual reports of the Companhia Real, except for the period 1870-1874 when the data is taken from periodic reports published in the *Diário do Governo*.

Political Factor (gov)

This dummy takes a value 1 when the Regenerador party was in power and a value 0, when either the Progressista party, the earlier Histórico party or a fusion of the two parties was in power, depending on the period. The distinction between governments in this respect is not always easy to draw and it has been argued that these labels represented comparatively little in programmatic terms (Bonifácio, 2002; Sardica, 1997). On the other hand, a difference has been detected between them when it comes to financial affairs (Lains, 2002), perhaps a tradition from the early history of the Regeneradores, when they were instrumental in clearing up, during the 1850s, the mess of the Portuguese financial situation, after two decades of civil war, and gained acceptance for Portugal in international financial markets after a previous expulsion from the London Stock Exchange. The source used here is Mata (1990).

Dummy for 1876 [D1876]

Inspection of our series suggests that a change in the middle of the 1870s occurred in the management of the gold standard by the Bank of Portugal. As explained in the text, this may have been associated with the experience in handling the banking crisis in 1876 and the presumed ensuing shift in government-Bank relations. The crisis took place first in May, then again, in August of that year and the dummy is constructed to take the value 0 from January 1863 to December 1876, and 1 from January 1877 to the end of 1887.

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