4

Aspects of the Brazilian Experience with the Gold Standard

Winston Fritsch and Gustavo H. B. Franco

1. Introduction

This chapter reviews the Brazilian experience during the years of the international gold standard. For the more than sixty years of gold convertibility of key currencies as the basis of the international monetary system, Brazil was only actually under a fully fledged gold standard regime for less than fifteen years and only on two occasions: during 1906-1914 and 1926-30[1]. It was thus, as many other independent developing countries in Latin America, much more frequently under a 'paper money' floating exchange rate regime.

Analysing the Brazilian experience can, however, shed light on two crucial aspects of the ongoing debate about the operation of the gold standard. One is the domestic impact of the adoption of the gold standard in a country of the periphery, that is, the implications of this particular monetary and exchange rate regime for the macroeconomic behaviour of a typical primary producing, capital import dependent economy. The other is the broader question of the transmission mechanisms underlying the relations between 'core' and peripheral economies

which has occupied a prominent place in the debate on the stability of the gold standard as an international monetary system.

This paper addresses these two distinct but interrelated issues. In Section 2, after a brief background discussion of some structural and institutional characteristics of the Brazilian economy at the turn of the century, its behaviour during the two distinct but extremely similar gold standard episodes is analysed in some detail. In Section 3, we use evidence from the Brazilian economy to try and shed light on the discussion related to the existence of systemic asymmetries in the international adjustment mechanism under this standard. Section 4 closes the paper with a summary of its main conclusions.

2. Brazil and the gold standard

Brazil's insertion in the world economy as a specialised coffee exporting economy during the Pax Britannica began in the 1830s, when plantations spread from Rio de Janeiro into the nearby Paraiba River Valley. During the years of the Empire (1822-1889) yearly coffee exports increased to an average of over 5 million bags in 1881-90, representing 63 per cent of all Brazilian exports. Available estimates of Brazilian per capita income growth during the second half of the nineteenth century range between -0.4 per cent and 1.0 per cent, but all authors agree on marked cross regional differences, which roughly express differences in the dynamism of the various sectors[2]. While the Northeast, having approximately half of the Brazilian population, may have had its per capita income decreasing by some 1 per cent yearly, the Southern and Central regions, roughly identifiable with the coffee economy, were growing by some 2 per cent to 3 per cent annually.

Although Brazil became an export economy during the second half of the 19th century, it was by no means an open economy at the end of the period. The export to GDP

ratio in 1870 was 15.4 per cent, reaching 18.6 per cent in 1900 and returning to 14.8 per cent in 1914[3]. The value of exports per capita experienced a slight increase from 1872 to 1913, especially during the rubber boom after 1900, from US $11.7 to US $12.9, which was close to the ones for the more densely populated 'tropical' periphery (Philippines, US $5.4, Egypt, US $12.9, Peru, US $10.0, Indonesia US $5.6 and Colombia US $7.3) but much lower than the values for the temperate regions of recent settlement (Argentina, US $66.9, Chile, US $41.4, Uruguay, US $19.7, Australia US $79.8 and Canada US $58.4)[4]. It seems clear that Brazil had a booming export economy inside a vast economically backward region with a large subsistence sector, especially in the Northeast.

The failure of industrialisation during the second half of the 19th century, or the failure of the export boom in triggering a self sustained growth process, should be sought in the elements of backwardness present in the export economy, amongst which the late prevalence of slave labour, the underdeveloped state of banks and financial institutions and the state inability to serve as a mechanism to overcome backwardness. These elements interacted to compose a picture of an economy based on autonomous units with a very low level of exchange and low monetization and thus with a very reduced role for markets in co-ordinating economic activity. Only after the abolition of slavery in 1888, and the final liquidation of old plantations in the Paraiba Valley and their replacement by fazendas in São Paulo, was the foundation laid for a higher productivity agriculture creating a substantial domestic market for manufactures[5].

The years following Abolition would also be a watershed in the country's monetary history, marked by a succession of monetary and banking reforms, leading to large and lasting exchange rate depreciation with important impact on the real sector. The quest for monetary reform was not new. Progressive dissemination of free labour in the countryside, even before Abolition, represented a drastic increase in the economy's monetization and posed a challenge to monetary policy and institutions. For many years the monetary policy was

deadlocked between the metalistas' perennial quest for reducing the money supply in order to appreciate the currency and adhere to the gold standard; and the papelistas' desire for credit expansion, along the lines of the 'real bills' doctrine, in a liquidity starved economy. Controversies like this, broadly replicating the classic British currency controversies, have taken place in many countries and under a variety of denominations, as indeed noted by many authors[6]. By and large, the major issue involved was the transition from metallic to fiduciary money, or the role and control of banks[7]. In peripheral countries, apart from the constant reference to names such as Ricardo, Thorthon, Ovestone and Tooke, a further theme was the exchange rate regime, or the convenience of adopting the gold standard.

The Brazilian edition of these controversies had several phases, the first in the 1850s and 1860s in the wake of two important banking crisis (1857 and 1864), the causes of which may be linked to excesses committed within too liberal a legislation on private banks of issue. In the 1870s, the developmental role of banks was the key issue brought up by the famous Viscount Mauá, a banker and entrepreneur who eventually went bankrupt as the state refused to support his bank of issue. The third major currency controversy was in the late 1880s, as the smooth transition to free labour in the countryside was shifting money demand upwards and producing liquidity crises of growing intensity at the time of the harvest[8]. Yet, the exchange rate was below its formal 1847 parity level - 27 pence per milreis - and while the papelistas argued for an increase in the money supply to accommodate these pressures, the metalistas sustained that the existence of a premium on gold was a sign of currency 'overabundance', so that a reduction in the money supply should be sought in order to appreciate the currency towards the parity level. No compromise was actually possible between the two, at least while there was a 'premium on gold' relative to the mythical 27 pence milreis.

Interestingly, however, in the late 1880s, the buoyant state of the balance of payments, particularly on capital account, made possible what years of deflationist efforts had

failed to do: to bring the exchange rate to 27 pence per milreis, in October 1888, and to allow the long sought adhesion to the gold standard with no deflation effort at all. Interestingly, in these conditions a compromise between the two currents of thought was finally possible, since the metalistas did not object to money increases so long as they were fully backed by gold. Thus, the continuation of the buoyant state of the balance of payments after the parity rate of 27 pence per milreis was reached could allow the expansion of the money supply, under the gold standard, in a fashion that would raise no objection from the metalistas. This windfall permitted an otherwise impossible compromise with the papelistas over the gold standard. In early 1889, Parliament authorised the establishment of a bank of issue (Banco Nacional do Brasil) associated with the Banque de Paris et des Pays Bas, which was authorised to expand the existing money supply more than three times.

As Table 4.1 illustrates, the basis of the balance of payments bonanza was, on the one hand, a strong boom of capital inflows in the wake of a boom in South American floatation in London led by Argentine issues and, on the other, a significant increase in exports. With the reversal of these conditions, which would take place in a matter of months as far as capital inflows were concerned, the experiment would last very little. The Republican revolution occurred in November 1889, when South American securities were already facing difficulties in London by virtue of the early signs of the Baring Crisis. Soon after, the first Republican finance minister, Rui Barbosa, a wholehearted papelista, would pass a profound banking and monetary reform, early in 1890, creating a system of regional banks of issue inspired in the US national banks, while making no secret of his unwillingness to sustain the exchange rate at the parity level[9]. In fact, the Banco Nacional do Brasil and the gold standard were very clearly identified with the Monarchy. A very important monetary experiment under papelista guidance was starting.

Table 4.1 British portfolio investment in South America and Argentina, and Brazilian capital and trade accounts, 1885 - 1892 (£ million)

year	Floatations in London to		Brazil		
	South America	Argentina	capital account	exports	imports
1885	7.1	5.0	3.8	17.3	15.3
1886	19.3	11.2	4.3	17.8	15.2
1887	18.4	14.2	3.8	16.1	13.0
1888	40.3	21.8	13.7	21.7	19.7
1889	40.2	23.2	12.4	28.6	24.0
1890	23.3	16.7	5.4	26.4	24.0
1891	9.4	5.8	0.6	27.1	25.6
1892	5.4	2.8	2.8	30.8	26.3

Source: Figures for South America and Argentina are British portfolio investments from Stone (1972, p.543). Brazilian capital account figures from Franco (1991, pp. 58-9) and trade figures from IBGE (1987).

The new banks of issue had thus considerable powers to increase the money supply. Operating now, as they did, in the context of an unusual boom and of a wild burst of stock exchange speculation[2], they produced a near doubling of high powered money, between 1890 and 1891. The exchange rate experienced a sharp nominal fall and since inflation followed this with only a short lag, a substantial real depreciation rapidly ensued, as is shown in Table 4.2.

Table 4.2 Money supply and exchange rates

year	money base*	exchange rate**	real exchange rate#
1888	203	27.1	27.1
1889	207	25.8	27.3
1890	298	21.9	23.2
1891	511	12.1	16.1
1892	561	13.4	24.9
1893	632	10.2	22.8
1894	712	10.7	29.4
1895	678	9.2	21.2
1896	712	8.7	22.5
1897	755	7.1	19.2
1898	780	7.8	20.9
1899	734	7.0	18.9

* millions of milreis ** pence per milreis # nominal exchange rates adjusted with Haddad GDP deflator and British wholesale price index.

Sources: Franco (1991, pp. 58-9), IBGE (1987) and Mitchell (1978).

There has been considerable debate on the causes of exchange rate depreciation or, more specifically on the relative importance of domestic factors, particularly monetary expansion, *versus* the influence of the Baring crisis on capital inflows[10]. By contrast, there have been less doubts on its consequences. On the one hand, it increased coffee planters' profitability to such an extent that new planting is said to have nearly tripled during the 1890s, with far reaching consequences in the years after this. On the other, it produced a marked deterioration in public finance and a problem of internal transfer that the government unsuccessfully sought to evade by seeking financial accommodation in London[11]. Because of this, the Brazilian balance of payments entered a critical state for the rest of the decade and the real exchange rate depreciated further. The price eventually paid to obtain foreign financial

accommodation, to help stabilise the economy, was a swing in domestic policies towards an extremely orthodox orientation, imposed by Rotschilds, the Brazilian government London bankers, as a condition for a large funding loan. A combination of contractionary fiscal and, especially, monetary policies led eventually to a severe deflation, an unprecedented banking crisis and a recession around the turn of the century[12].

2.1. The first experiment, 1906-14

The first few years of the new century witnessed a sharp change in Brazil's balance of payments performance. Exports rose rapidly under the influence of expanding rubber exports from the Amazon, induced by the diffusion of the use of rubber tires, while coffee prices were able to stay roughly stable, thanks to stockpiling by roasters, in spite of a clear trend towards overproduction stemming from the extraordinary expansion of coffee planting in Brazil during the 1890s[13]. At the saame time, the successful implementation of the adjustment programme resulted in Brazil progressively regaining access to international financial markets at the onset of the huge pre-war international lending boom. Indeed, Brazil's participation in world financial markets reached an unprecedented extent: the central government’s external debt rose from £ 42 million in 1900 to £ 144 million in 1913, and direct investment rose from £ 105 million in 1902 to £ 295 million in 1913, making Brazil's share of international investment flows at least five times as big as its share in world international trade, which was slightly inferior to 1 per cent[14]. The exchange rate began to suffer renewed pressures for appreciation, which the authorities, pledged to no longer resorting to paper issues, had no power to offset. After having reached an all time low of less than 7 pence per milreis, in 1898, the exchange rate peaked at 17.5 pence in August 1905. As a result domestic producers of exportables and of import substitutes began to lobby both for exchange rate stabilisation and the end of dear money.

In 1906, the onset of a bumper coffee crop led to the adoption of a coffee price 'defence' policy, through the external financing of coffee stock-piling[15]. Fears of further appreciation with the purchase of the latest large crop led to the adoption of the gold standard, with the creation of a Conversion Office to issue convertible notes at a newly established parity. The delicate political economy issue - involving a compromise between the still influential orthodox policy-makers responsible for the turn of the century stabilisation and domestic producers interested in monetary expansion - was how far should appreciation go before a new parity was set. The latter wanted the exchange rate to be fixed as soon as possible in order to avoid further appreciation, while the former wanted a continued appreciation towards the old 1847 parity of 27 pence per milreis - that is, a near 100 per cent appreciation relative to the going rate. The compromise, around a new parity of 15 pence per milreis, was helped by a limit set on the note issue of the Conversion Office. This limit was explicitly demanded by deflationists based on the presumption that if the balance of payments bonanza continued the limit would be reached and the exchange rate would have to be revised upwards.

Two interesting features of the Brazilian pre-war gold standard should be noticed. The first was that it was a gold standard 'at the margin', this meaning that only the notes of the Conversion Office were officially backed by gold reserves. The other was that, although the Conversion Office had a purely passive role, the arrangement preserved the Banco do Brasil, exactly as recreated in 1901, as a large state bank which accumulated the functions both of a commercial bank and of government banker, thus with a potentially important role in monetary management. This possibility seemed a late vindication of the papelistas' project of a great national bank with central bank characteristics and a developmental role. However, although the Banco do Brasil could, through its foreign exchange operations, try and keep exchange rates within the gold points, by preventing unnecessary fluctuations in the monetary base, it did not have the necessary amount of liquid domestic assets to counteract the effect on the exchange rate

of large external surpluses and thus, the effects of gold flows on the monetary base. Indeed, still reflecting the anti-inflationary bias of contemporary opinion in economic policy, there was no enthusiasm for the advantages of sterilising the monetary expansion induced by gold inflows. To this lack of enthusiasm was often added the idea that fluctuations in the foreign exchange market were too large to allow meaningful 'lean against the wind' actions. This was reinforced by growing budget deficits and the small size of domestic capital markets, which actually prevented the use of either fiscal policies or open market operations to sterilise gold movements[16].

The adoption of this 'clean' gold standard, within which gold movements tended to have their full effect on domestic credit conditions, would considerably enhance the cyclical fluctuations of the external sector. In times of balance of payments surpluses, pressures for exchange rate appreciation could be offset, but only at the cost of expanding the monetary base. This would lead to wide fluctuations in domestic activity. In the absence of sustained export growth, growth of domestic activity could only last as long as capital inflows continued. If the latter weakened after imports had responded to the activity boom, reserve losses were likely to be heavy and equally rapid, provoking very substantial contractions in the money base and sharp recessions, as the trade balance response to suddenly changed credit conditions is not rapid. If the gold losses were heavy enough, they could lead to the eventual abandonment of the gold standard. These stylised facts may be clearly seen in Table 3 below.

Table 4.3 Real exchange rates, base money and activity indicators, 1903-17

Year	Real exchange rate	Monetary base: Treasury notes	Monetary base: Conversion Office notes	Monetary base: Total	Industrial output	Invest.
1903	78.5	675		675	96.4	61.8
1904	93.8	673		673	96.4	67.7
1905	110.0	669		669	97.0	103.5
1906	100.0	665	38	703	100.0	100.0
1907	94.3	643	100	743	118.3	150.6
1908	105.0	535	89	624	109.6	158.7
1909	102.4	628	225	853	109.9	164.6
1910	107.4	621	304	925	114.7	189.9
1911	113.4	612	378	990	110.2	245.8
1912	107.5	607	406	1013	118.3	328.5
1913	100.7	601	295	896	123.4	244.1
1914	75.4	822	158	980	124.6	140.3
1915	50.5	982	95	1077	129.7	53.3
1916	44.8	1122	95	1217	126.1	68.8
1917	53.8	1389	95	1484	141.1	74.6

Real exchange rates are computed using the domestic GDP implicit deflator and British prices. Investment indicator figures are capital goods imports. The year of adoption of the gold standard equals 100, i.e. 1906. Monetary figures are in million milreis. Sources are Goldsmith (1986), Mitchell (1978), IBGE (1987) and Fritsch (1988, pp.172-5).

Following the adoption of the gold standard in 1906, after some years of exchange rate appreciation, the long phase of external surpluses fuelled by growing rubber exports, until 1910, and, especially, by a buoyant capital account through to 1912 - only briefly interrupted by the negative effects on international lending of the 1907-8 Knickerbocker crisis - clearly translated itself into fast monetary expansion. The strong pro-cyclical behaviour of monetary conditions

stimulated the boom, amplifying the expansionary effects of the rise in net exports and public and private investment expenditures based on foreign loans. By the same token when, in 1913, falling rubber and coffee prices and the shrinkage of international capital flows following the Balkan Wars led to a sudden reversal of the external position, the loss in reserves was translated into a protracted contraction of the monetary base. The ensuing slump lasted until the outbreak of the World War I, when convertibility was abandoned to preserve as a war chest what was left of the deposits at the Conversion Office.

2.2. The return to gold, 1926-30

The events leading to the return to gold in the 1920s followed a strikingly similar pattern to those of the pre-war experiment. The post-war slump of 1920-21 had a devastating effect on coffee prices which, in the absence of foreign capital inflows, caused a sharp exchange rate devaluation and, as in the 1890s, fiscal disequilibrium and inflation. Just as happened at the turn of the century, a strong adjustment program was followed during 1925-26, which succeed in achieving fiscal balance at the time that the new wave of international lending of the second half of the twenties was getting into full swing and a new coffee support programme was being launched with the support of British loans. Again, the conjunction of tight money and exchange rate appreciation brought mounting protests from domestic producers and the Stabilisation Office, an institution patterned exactly on the lines of the pre-war Conversion Office, was founded in late 1926. The conversion rate was fixed at close to 6 pence per milreis, that is, 40 per cent of the pre-war parity but still around 30 per cent above the lowest level reached during the aftermath of the post-war slump, in 1924.

Table 4.4 Real exchange rates, base money and activity indicators, 1919-30

Year	Real exchange rate	Monetary base: Treasury notes	Monetary base: Stabilisation Office notes	Monetary base: Total	Industrial output	Invest.
1919	154.9	1748		1748	76.6	41.2
1920	94.6	1848		1848	91.1	65.7
1921	65.0	2044		2044	94.9	51.3
1922	71.7	2213		2213	95.4	43.1
1923	80.9	2457		2457	99.1	56.5
1924	101.4	2947		2947	100.2	80.0
1925	143.6	2666		2666	96.9	118.1
1926	100.0	2659		2659	100.0	100.0
1927	101.3	2568	437	3005	110.8	84.5
1928	114.4	2544	835	3379	131.1	103.8
1929	110.6	2543	851	3394	131.4	121.6
1930	112.2	2560	129	2689	133.0	47.0

Real exchange rates are computed using the domestic GDP implicit deflator, and British prices. Investment indicator figures are capital goods imports. The year of adoption of the gold standard equals 100, i.e. 1926. Monetary figures are in million milreis. Sources are Goldsmith (1986), Mitchell (1978), IBGE (1987) and Fritsch (1988, pp. 172-5).

As can be seen in Table 4.4, as far as the relation between the balance of payments and monetary, output and investment aggregates are concerned, the operation of the post-war gold standard was an almost exact reproduction of the pre-war experience. An initial phase of balance of payments surpluses, with imports growing from still depressed levels, high coffee prices and buoyant capital flows, led to monetary expansion and strong activity and

investment growth which lasted until 1928. From 1929, however, the collapse of coffee prices and the contraction in capital inflows which accompanied the onset of the world depression reversed the monetary base and credit expansion. This sudden shock, caused by the continuous loss of gold reserves from the Stabilisation Office, ushered in a recession which would last until the abandonment of convertibility after the almost complete loss of reserves in late 1930.

2.3. The political rationale and the economics of the Brazilian gold standard

On the basis of the sketches presented in the two preceding sections, let us now attempt to address the crucial questions regarding both the motivations for the adoption as well as the impacts of the standard on the functioning of the economy.

Consider first the question of the political rationale for adhering to the gold standard. One should recall that the two episodes were preceded by large macroeconomic disequilibria, stemming from the external shocks and ensuing exchange rate collapses of the 1890s and early 1920s. These exchange rate collapses tended to restore some measure of external balance, though on a fragile basis given their effect on budget deficits and associated inflationary pressures. On these occasions, the anxiety over the macroeconomic situation induced policy makers to seek financial accommodation abroad, as seen in the late 1890s and again in the mid-1920s, but negotiation with international bankers resulted, on both occasions, in the very restrictive monetary and fiscal policies of the Campos Salles (1898-1902) and Artur Bernardes (1922-26) administrations. During both deflationary interludes, a substantial appreciation was consciously sought and, on both occasions, recessions were terminated by improvements in the value of exports and investments induced by the restoration of Brazil's ability to borrow abroad, reinforcing appreciation and ‘drastically altering the nature of the problem which restrictive policies had been designed to solve’[17].

Under these circumstances it is not surprising that, on both occasions, the outcome was the adoption of the gold standard. By promising to stem further disruptive appreciation after prices and incomes had adjusted to the depreciated exchange rate level, and - given the favourable balance of payments position - put an end to dear money, the gold standard could not fail to have the support of domestic business. Its adoption was also hailed by public authorities at all levels, as it enabled the restoration of creditworthiness in booming international capital markets, allowing them to obtain long term finance for public work programmes or to reschedule old debts. Orthodox policy-makers and rentiers tried to resist the abandonment of the ongoing austere monetary policies but did not oppose the adoption of the gold standard. Their key objections were concentrated solely on two issues. One was the of the standard 'automaticity', that is the non-discretionary character of monetary management which decisively influenced the design of both the Conversion and Stabilisation Offices as one-to-one, passive, issuing bodies, as opposed to a fractional reserve issuing authority. The other was the level at which to stabilise the exchange rate.

It is also interesting to note in this connection that, once adhered to, the standard had a tremendous political value and its abandonment represented a loss. This explains why, in both gold standard episodes, after the favourable external conditions had been reversed, the government strived to maintain an overvalued parity to the very last minutes, even at the cost of very large monetary contractions and related output losses.

The questions relating to the macroeconomic behaviour of the Brazilian economy under the standard have two interesting further implications. The first relates to the twin dynamics of balance of payments adjustment and the behaviour of real aggregates such as output and employment. The second has to do with the relation between the gold standard and inflation.

Regarding the first, the Brazilian experience tended to replicate, with some local specific features related to the instability of the staple export, the pattern suggested by Ford's (1962) pioneering study on Argentina, with balance of payments dynamics being to a large extent dominated by the behaviour of the capital account. As one of the present authors emphasised elsewhere[18]:

> ... the adoption of the gold standard happened at times when Brazil's participation in international lending booms coincided with export price recovery leading to balance of payments surpluses and upward pressures on the exchanges. Given the passive role of the monetary authority after the switch to gold, being unable to sterilise the gold inflows because of the narrowness of domestic capital markets, the (external) surplus leads to credit expansion fuelling the upswing launched by increased net exports and domestic investments financed by foreign borrowing.
>
> In such situations, as long as the underlying causes of the upswing persist, current account adjustment proceeds basically through income induced increases in imports. Thus, the overall payments equilibrium, upon which monetary stability depends becomes ever more dependent on the maintenance of foreign investors' propensity to lend and of favourable prices of the staple export and, given the swiftness with which these can change, increasingly vulnerable. If foreign lending or export prices collapse and fail to recover after the process of import growth has gathered momentum and substantially eroded the trade

surplus, the ensuing sharp monetary contraction can be extremely painful, as witnessed by the 1913-4 and 1929-0 experiences.

Finally, there is the issue of the relation between inflation and the monetary and exchange rate regime since, especially in the contemporary debate, managed currency and floating exchange rates have been associated with inflation, while the years under the gold standard in Brazil were of remarkable price stability. It is indeed interesting to note that, under the standard, price stability obtained in spite of large increases in the monetary base during the expansionary phase of high output growth and balance of payments' surpluses, as these were years of rapidly increasing demand for money.

However, the standard did not function as a stabilising device, i.e., it was not the nominal anchor provided by the fixing of the exchange rate - as has been proposed in the current Latin America debate on macroeconomic policy - which brought inflation under control. In fact, inflationary outbursts, such as those preceding the adoptions of the standard, had been controlled previously by extremely severe fiscal and monetary policies. As stressed above, it was the improvement in the balance of payments position following stabilisation which generated the conditions favourable to resorting to the gold standard on the two occasions when it was adopted in Brazil.

3. Systemic asymmetries under the gold standard: the evidence from Brazil

The idea that the gold standard has contributed to enhance macroeconomic stability in the ‘core’ countries of the international economy has been fairly accepted, but the issue is much less clear as regards ‘peripheral’ participants of the international economy. In addition to Marxist authors[19], mainstream historians have also debated whether the periphery's experience

with the gold standard was a rewarding one. According to a recent survey, ‘it is no coincidence ... that the convertibility crises of the period [up to 1914] were concentrated in the periphery. From the periphery's viewpoint, the operation of the gold standard was everything but smooth’[20]. Indeed, many such countries, and Brazil is by no means an exception, experienced difficulties in a continued membership of the gold standard, and an explanation for this may perhaps be that the macroeconomic mechanisms involved in the working of the international adjustment process under the Pax Britannica might have had some systemic bias against these countries.

The discussion of the presence of North-South asymmetries in the gold standard centres on three types of considerations. The first stem from the findings of Morgenstern (1959) and Lindert (1969) on the working of international financial markets during the pre-1914 years[21]. The presence of ‘hierarchies’ of financial centres and of asymmetric in responses of exchange rates to interest rates' differentials provided a rationale for the view that the Bank of England had the power to halt reserve losses, by raising its rediscount rate and thereby attracting short term capital inflows, thus shifting the burdens of the strain mostly to the ‘extremities’ of the system, that is to the primary producing countries.

The issue has been controversial in the gold standard literature. Ford (1964, p. 26) argued that this notion of ‘burden shifting’ to the periphery cannot be sustained on an a priori basis and that ‘it is necessary to examine particular cases’ to assess the extent to which burdens may be actually redistributed. His own account of the 1907 crisis, for instance, does not lend support to the ‘shift ‘ hypothesis. Moggridge (1987, p. 11) is also sceptical on the latter point: ‘if this were the case, one would expect to find the history of the periphery littered with financial crises which had their origin in external shocks transmitted via the capital account or reserve flows. If one looks at the history of the periphery the emphasis is quite different ...’. Though this may be disputed, the counter-argument actually lies on a sufficiently large number of ‘cases’ in which ‘burdens’ were effectively shifted. The ‘cases’ explored in the recent literature of

'international transmission' of financial crises, seem to suggest that channels of propagation of financial disturbances are so varied that it is, in itself, unclear whether there was some systematic 'burden-shifting', or, if it existed at all, that it had a definite direction.

An interesting example is the series of financial crises between 1888 and 1893 involving the Baring crisis, affecting London, Buenos Aires and Rio de Janeiro, banking collapses in Italy and Berlin, the Parisian Panama crisis, and panics in Australia and New York[22]. The connection between these events is not simple, and mechanisms of 'burden-shifting' are not easy to identify. The Baring crisis, which exploded late in 1890, had its origins in a financial boom and corresponding over-indebtedness in Argentina, but its proximate determinants are related to the failure, in 1888, of a large London issue of an Argentine company which seriously affected the financial health of the House of Barings. During 1889, while a selling pressure of foreign bonds could be felt, the Bank of England took steps to strengthen its reserve, in order to face the strain, by raising Bank rate and seeking co-operation of other central banks, notably the Banque de France. This created strains elsewhere and initiated the 'international transmission' process. But it was only later, with Barings' failure in October 1890, that the financial distress turned into a crisis that provoked a lasting halt in foreign issues in London, especially for South America, with devastating consequences for Brazil, as alluded above[23].

The second line of explanation of systemic asymmetries within the gold standard derives from the different adjustment possibilities available for creditor and debtor nations in the presence of external shocks. According to Ford (1964, p. 30) 'since Britain was a lending and a creditor country, balance of payments adjustment was immediately the easier for her than a borrowing and debtor country, for it was (and is) always easier to cut a flow of lending abroad than to increase a flow of borrowing in times of difficulty'. In fact, if those 'borrowings' were not available to a debtor economy during times of strain, current account deficits had to be adjusted either the hard way, that is, through the classic, painful monetary contraction implied in

the textbook adjustment under the gold standard, or alternatively, by simply leaving the gold standard and allowing the exchange rate to float, that is, to depreciate. The incentive for the latter alternative depended, of course, on the magnitude of the balance of payment distress involved, but it could certainly be made more difficult depending on the structural characteristics of the country in question, and below we shall be discussing a number of factors that made this option attractive for Brazil in many circumstances.

For debtor countries in general, and for Brazil in particular, the only way to remain on gold in the bad times was to accumulate what was regarded as a very large stock of international reserves in good times, something which, according to Furtado (1964, p. 155), was ‘an unproductive investment, which was actually the contribution of each country to the short term financing of the international exchange mechanism’. Interestingly, this ‘investment’ need not be made by core economies. On the contrary, to remain on gold, a peripheral country had to pay seigniorage to the countries issuing the reserve currencies of which reserve holdings of peripheral countries were mostly composed[24]. Certainly, countries whose currencies had this attribute of being used as international reserve by other countries had a comfortable position regarding their balance of payments, once they were able to issue an internationally accepted reserve asset when necessary. Yet, this ‘asymmetry’, that is the attribute of being a reserve currency, is not independent of agents' perceptions as to the strength of the ‘core’ economies. It necessarily reflected also asymmetries in size and economic development, not to mention in the commitment to sound finance. What one could legitimately ask is whether the international monetary system merely reflected these differences or magnified and reinforced them.

Thirdly, asymmetries may derive from the alleged perverse cyclical pattern of the core economies' capital exports. The classic exposition, in this connection, is the one by Triffin (1968, p. 127): ‘the balance of payments of the countries of the so-called periphery would be assisted, over the long run, by large capital imports made available to them from the financial

markets of industrial Europe, but these countries would pay for this dependence through perverse fluctuations in the availability of such capital and in their terms of trade over the cycle. The exchange rate instability of most underdeveloped countries ... finds here one of its many explanations'. Though plausible, this idea of a pro-cyclical pattern of capital exports has been disputed by many authors. In fact, the accepted wisdom on the issue is quite the opposite, following the works of Cairncross (1953) and Rostow (1948), according to which, despite some puzzling periods and episodes, foreign lending was counter-cyclical, that is, negatively correlated to the terms of trade (and import demand) and thus 'benign' from the periphery's standpoint[25].

Notwithstanding, the 'perverse' cyclical pattern between foreign lending and terms of trade was wholeheartedly accepted by Furtado (1974, pp. 158-159), in his pioneering account of the Brazilian experience before 1929. For this author, it was an important part of the explanation, together with the Prebisch hypothesis of a secular downward trend in primary producers' terms of trade, of the external vulnerability' of Latin American economies. Empirical exercises on the secular decline in the terms of trade, using broad indices for primary and manufactured products, such as those performed by Spraos (1980) and Grilli & Yang (1988), do not provide support for the hypothesis. Gonçalves and Barros (1982), addressing the Prebisch hypothesis for the Brazilian case, come to conclusions in its favour using regressions of the terms of trade against a time trend. This method, however, can hardly be considered robust in testing a given hypothesis basically because no other influence on terms of trade is controlled. Cyclical factors very likely has been the dominant influence on Brazilian terms of trade and for this reason the presence of a 'secular trend' may be spuriously established by the choice of period. A more recent reassessment of the issue, using time series methodology, concluded for the statistical insignificance of the hypothesis for the 1850-1979 period, though it is observed that the evidence is favourable to the Prebisch hypothesis for 1887-1940, but unfavourable for 1850-1887 and 1940-1979[26].

More recently, thanks to the availability of statistical information on the Brazilian balance of payments for the gold standard years, we are able to confront the presumption of a perverse cyclical pattern of long-term lending with the Brazilian experience. Graph 4.1 shows the evolution of the Brazilian capital account and terms of trade in 1870-1900.

[graph 4.1 here]

graph 1: Capital inflows and terms of trade, 1870-1900.

Capital inflows are public and private floatations considering the schedule of instalments for entry accrual net of amortisation. Source: Franco (1991).

Taking the period 1870-1900 as a whole, the correlation between capital movements and terms of trade is simply not significant - the correlation coefficient is -0.02 - though it is easy to see that there are times in which the correlation is very clearly positive and others in which it is clearly negative. This same alternancy is observed in the 20th century, as shown in Graph 4.2, for which the overall correlation is much more on the positive side, with a correlation coefficient of 0.304. Interestingly, the correlation is strongly positive for the first half of the sample years, i.e. 1900-1918 - the correlation coefficient is 0.688 and significant at the 1 per cent level, but, in the 1920s, the pattern is less clear. It should be noted also that strong parallel and upward movements in terms of trade and capital movements may be observed in the few years

before 1914 and the late 1920s, and again, though in the reverse direction, after 1914 and 1929.

[graph 4.2 here]

Graph 2: Capital inflows and terms of trade, 1901-1929.

Capital inflows are public floatations considering the schedule of instalments for entry accrual net of amortisation's. Sources: Fritsch (1988) and Gonçalves and Barros (1982).

Considering the gold standard years asone, there appears to be no clear and convincing systematic pattern of articulation between capital inflows and terms of trade, either to the perverse side, as proposed by Triffin and Furtado, or to the benign side, in accordance with the Caincross-Rostow hypothesis. This is very much in line with Ford's conclusions on the patterns exhibited by the British economy over successive boom and slumps, i.e. that 'although certain regularities emerge care must be taken not to elevate them into the pattern or model of adjustment in the British balance of payments' (1962, p. 54). The point is also made by Saul (1960, p. 133), according to whom, 'what is so very unconvincing is the attempt to fit the varied experiences of the British international economy to any regular pattern of events'. Broadly speaking, the very same is true as regards the Brazilian experience. Although specific episodes could supply evidence of the mechanisms emphasised by certain currents of thought on the nexus between Brazil and the international economy, historical experience is quite varied and cannot be

captured by any simple model. Yet, the two graphs examined above, seem to suggest that a positive correlation seems to be progressively established into the 20th century and an interesting explanation for this may be found in connection with the coffee 'valorisation' schemes of the period. Starting with the famous 1906 Taubaté Agreement, coffee planters established a 'coffee defence' mechanism which consisted in seeking external financing to acquire coffee stocks and to prevent price declines. The presumption, which proved correct, was that it was possible to place stocks at a later date given the cyclical pattern of large coffee crops. The interesting aspect of these operations, which were kept up until the last moment before the Great Depression, was that they tied the price of coffee, and thus the Brazilian terms of trade, to the availability of external financing, thus reinforcing a positive correlation between capital movements and terms of trade, during the years when valorisation operations were made. It may be said that 'valorisation operations', as far as the connection between the terms of trade and capital movements is concerned, mark a watershed in Brazilian relations with the international economy.

4. Conclusions

The present review of the Brazilian experience during the gold standard sheds light on two different but related issues in the debate about the functioning of the system in the periphery. On the one hand, the study of Brazil's two episodes under the gold standard showed that it was adopted as a stop-gap measure to prevent disruptive exchange rate appreciation created by a conjunction of good export performance and, especially, booming capital inflows in the wake of international lending cycles. Given the extremely neutral character of the operation of the standard in Brazil, the external adjustment mechanism imparted a pro-cyclical bias in the growth of the money supply, expanding credit during the boom, but severely contracting it when exports and capital inflows abated. On both occasions, the authorities' unwillingness to abandon convertibility when the weather changed in world capital markets, led to

severe contractions of the monetary base with very large costs in terms of output and employment. However, the long standing debate on the advantages and disadvantages of an 'automatic' currency cannot be settled even with the benefit of hindsight. Indeed, metalistas and papelistas would reappear in future decades in many different incarnations: desenvolvimentistas, estruturalistas, monetaristas, heterodoxos and ortodoxos. One could hardly say the issues have been solved in Brazil.

One the other hand, the analysis also sheds light on some controversial issues relating to the operation of systemic adjustment mechanisms under the standard. It was seen that there is some justification for the hypothesis that adjustment in the centre was to some extent shifted to the periphery, chiefly because of the asymmetric relation between lender and borrower countries in terms of adjustment costs due to tightening credit conditions in international capital markets. It was also suggested that the positive correlation between capital inflows and the terms of trade to be seen in the Brazilian case can be explained by the fact that coffee price support programmes were usually financed by foreign credit.

References

Andrada, A. C. R. (1923) Bancos de Emissão no Brasil (Rio de Janeiro: Imprensa Nacional).

Bordo, M. and Schwartz, A. J. (1986) Retrospective of the Classical Gold Standard (Chicago: NBER & Chicago University Press).

Caincross, A. (1953) Home and Foreign Investment, 1870-1913 (Cambridge: Cambridge University Press).

Calógeras, J. P. (1910) A Política Monetária do Brasil (São Paulo: Cia. Editora Nacional, 1960).

L. Catão (1992) 'A new wholesale price index for Brazil during the period 1870-1913',

Revista Brasileira de Economia, 46 (4).

de Cecco, M. (1974) Money and Empire, the International Gold Standard, 1890-1914 (Oxford: Basil Blackwell).

Cuddington, J. T. and Urzúa, C. M. (1989) 'Trends and cycles in the barter terms of trade; a new approach', The Economic Journal, 99 (396).

Eichengreen, B. (ed.) (1985) The Gold Standard in Theory and History (London: Methuen).

Fishlow, A. (1987) 'Lições dos 1890s para os 1980s', Pesquisa e Planejamento Econômico , 17(3).

Ford, A. G. (1964) 'Bank Rate, the British Balance of Payments, and the Burdens of Adjustment, 1870-1914', Oxford Economic Papers,16.

_____ (1962) The Gold Standard 1880-1914: Britain and Argentina (New York (Garland Publishing Co., 1983).

Franco, G. H. B. (1991) A Década Republicana: O Brasil e a Economica Internacional 1888-1900 (Rio de Janeiro: IPEA).

_____ (1983) Reforma Monetária e Instabilidade Durante a Transição Republicana (Rio de Janeiro: BNDES).

Fritsch, W. (1988) External Constraints on Economic Policy in Brazil, 1889-1930 (London: Macmillan).

_____ (1985) 'Sobre as interpretações tradicionais da lógica da política econômica na Primeira República', Estudos Econômicos , 13 (2).

_____ and Franco, G.H.B. (1991) 'Import repression, productivity slowdown and manufactured export dynamism: Brazil, 1975-1990' in G.K.Helleiner (ed.) Trade Policy and Industrialisation in Turbulent Times (London and new York: Routledge).

Furtado, C. (1964) Formação Econômica do Brasil (São Paulo: Cia. Editora Nacional).

Goldsmith, R.W. (1986) Desenvolvimento Financeiro sob um Século de Inflação (Rio de Janeiro: Bamerindus & McGraw Hill).

Gonçalves, R. and Barros, A.C. (1982) 'Tendência dos termos de troca: a tese de Prebisch e a economia brasileira, 1850-1970', Pesquisa e Planejamento Econômico, 12 (1).

Grilli, E. R. and Yang, M. C. (1988) 'Primary commodity prices, manufactured goods prices and

_____ (1982) 'The cyclical pattern of long term lending' in. M. Gersovitz et al. (eds.) The Theory and Experience of Economic Development Essays in Honor of W. Arthur Lewis (London: George Allen & Unwin).

_____ (1978) Manias Panics, and Crashes. A History of Financial Crises (New York: Basic Books).

Lewis, W.A. (1978) Growth and Fluctuations, 1870-1913 (London: George Allen Unwin).

Lindert, P. (1969) 'Key Currencies and Gold', Princeton Studies in International Finance, nº 24.

Mason, W.E. (1977) 'Winners and losers; some paradoxes in monetary history resolved and some lessons unlearned', History of Political Economy, 9(4) Winter.

Moggridge, D. (1987) 'Problems in the history of the international economy since 1870: the gold standard', Departamento de Economia PUC-RJ, Textos para Discussão nº 160.

Morgenstern, O. (1959) International Financial Transactions and Business Cycles, (Princeton: NBER and Princeton University Press).

Prado, L. C .T .D. (1991) 'Commercial capital, domestic market and manufacturing in Imperial Brazil: the failure of Brazilian economic development in the XIXth century', Ph.D. Thesis, Queen Mary and Westfield College, University of London.

Rostow, W. W. (1948) The British Economy in the Nineteenth Century (London: Oxford University Press).

Saul, S. B. (1965) Studies in British Overseas Trade (Liverpool: Liverpool University Press).

Souza, G. S. (1984) 'Sobre a validade da tese de Prebisch para a série de relações de troca da economia brasileira', Pesquisa e Planejamento Econômico, 14 (2).

Spraos, J. (1980) 'The statistical debate on the net barter terms of trade between primary commodities and manufactures', The Economic Journal, 90.

Stone, I. (1977) 'British direct and portfolio investment in Latin America before 1914', Journal of Economic History, 37.

Triffin, R. (1964) 'Myths and realities of the so-called Gold Standard' in B. Eichengreen (1985).

Versiani, F. (1980) 'Industrialização e economia de exportação: a experiência brasileira antes de 1914', Revista Brasileira de Economia, 34 (1).

Williams, D. (1968) 'The Evolution of the sterling system' in C. R. Wittlesey & J. S. G. Wilson (eds.) Essays in Money and Banking in Honnour of R. S. Sayers (Oxford: Clarendon Press).

[1] In fact, a third episode in 1888-89 could be added, though it lasted slightly more than one year, so that the gold standard could hardly operate.

[2] See Franco (1991, pp. 62-3) for a discussion of alternative estimates.

[3] See Goldsmith (1986, pp. 23 and 83) and IBGE (1987, pp. 523-4).

[4] Figures from Lewis (1978, pp. 196-203).

[5] Financial development, on the other hand, was chronically blocked by doctrinal and political objections to innovative experiences repeatedly proposed by the so called papelistas, who followed either the American model of free banks or the French Credit Mobilier pattern. Besides, the state's actions towards overcoming backwardness were hindered by its control by political groups having their economic power based on the very prevalence of backwardness. For a recent discussion of the factors responsible for the failure of Brazilian industrialization in the 19th century, see Prado (1991).

[6] A very interesting modern assessment of such controversies can be found in Mason (1977) and also in Hicks (1967).

[7] This is one of the themes of the essays in Kindleberger (1985).

[8] For an account of these controversies and also of the later ones, see Calógeras (1910) and Andrada (1923). Regarding more specifically the 1880s and early 1890s, see Franco (1983).

[9] These new banks were granted respectively a monopoly in different parts of the country and could issue inconvertible notes up to three times their holdings of government bonds.

[10] See Fishlow (1987) and Franco (1983 and 1991).

[11] This refers to the fact that the government had a deficit in its gold, or hard currency denominated revenues and expenditures, and a surplus in its 'paper currency' denominated revenues and expenditures. A real devaluation, in this case, worsens the overall fiscal balance in local currency

[12] For a fuller description of these events, see Fritsch (1988, pp 4 e ff).

[13] The rubber boom peaked in the first decade of the 20th century, when rubber exports claimed a share of nearly 30 per cent of Brazilian exports. The collapse of prices, however, was impressively rapid too, following the appearance of British and Dutch suppliers from East Asian plantations. Before the 1910s decade was over the share of rubber exports had fallen below 3 per cent and did not recover.

[14] Franco (1991, p. 65).

[15] The rationale for these schemes - which, with minor changes in their operational features, would continue to take place until just before the Great Depression - was that it was possible to place stocks at a later date given the cyclical pattern of large coffee crops. The interesting aspect of these operations was that it tied the price of coffee, and thus the Brazilian terms of trade, with the availability of external financing, thus reinforcing a positive correlation between capital movements and the terms of trade. For an extended discussion, see Fritsch (1988).

[16] Fritsch (1988, pp. 16 ff).

[17] Fritsch (1988, p. 165).

[18] Id., ibid.

[19] For example, Gunder-Frank (1976).

[20] Eichengreen (1985, p. 18).

[21] Certainly, many of the issues treated by these authors using a modern, or quantitative approach, had been previously dealt with by the many early accounts of the working of the gold standard. The work of Hawtrey (1927) is especially relevant in this specific regard.

[22] .See, for example, Kindleberger (1985).

[23] It goes without saying that the mechanisms of international transmission of financial crises revealed a rich menu of channels in the crises of 1914 and 1929.

[24] See Lindert (1969, table 1).

[25] For a discussion, see Kindleberger (1982).

[26] See Souza (1984).