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WORKING PAPER N° 11

MONETARY AND BANKING EXPERIMENTS IN ARGENTINA:
1861 - 1930

Gerardo della Paolera

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Melancholy as it may be to dwell on old splendors when the present is uninspiring, the task of examining the past for clues about recent difficulties is indispensable in the Argentine case.

Carlos F. Diaz Alejandro, Essays on the Economic History of the Argentine Republic.

Abstract

During the 1861-1930 period, Argentina was under a virtual gold-exchange standard regime in the 1867-1876; 1883-1884 and, 1900-1913 years. In the remaining periods, a managed paper standard was in place, always with the aim to restore convertibility.

I show that currency substitution was already an economic phenomenon in the Argentine economy. If currency substitution prevailed, then the notion that Argentina, by abandoning the Gold-Standard rule, could manage an independent monetary and banking policy to insulate the level of economic activity from shocks arising from the rest of the world should be qualified if not dismissed. In the medium run domestic attempts to inflate (or deflate) the economy were mainly reflected in changes in the foreign exchange rates and/or prices.

The evidence marshalled in the paper suggests that the 1890-1891 financial collapse -known as the Baring Crisis- had its roots in the design of inconsistent domestic monetary and fiscal policies. Disinflation and economic adjustment was the strategy implemented by the authorities during the nineties to restore the Gold Standard regime which was internally perceived as the most efficient monetary arrangement to take advantage of international trade and finance.

For 1900-1913, simple econometric tests support the monetary theory of the operation of the classical gold standard. It is shown that gold reserves tend to accumulate in the Conversion Office to bring the actual growth in the money supply closer to the desired domestic demand for money.

In 1914, the Conversion Office worked in an asymmetric fashion: gold inflows could increase international reserves which were, correspondingly, monetized at the 1899 original parity; gold outflows (that is an excess in the demand for foreign exchange) were not satisfied by the Office leaving unchanged the quantity of money.

In the interwar years, monetary decisions were severely handicapped by the changes in the world economic scenario. By the end of WWI, Argentina experienced sizeable balance of payments surpluses with the ailing european nations together but chronic deficits with the raising economic power, the United States.

I. From Paper Money Disarray to Appreciation: the Mitre Administration (1862-1868)

I.1 The Monetary and Banking Regime

The annexation of the province of Buenos Aires in 1860 to the Argentine Republic changed the economic and fiscal perspectives of the confederation. To restore confidence in the failing monetary, banking and fiscal institutions, the federal government had to tackle, what historians characterized as a chaotic currency regime.

In the rich province of Buenos Aires, economic agents did use paper money, predominantly issued by the Banco de la Provincia de Buenos Aires (BPBA), for their daily transactions. In the remaining provinces, bolivian, chilean, peruvian and other specie coins circulated as money together with reduced amounts of inconvertible provincial paper notes. Since those provinces were not specie producers, coins and money in circulation varied as a function of their balance of payments situation.

In 1862, Mitre's administration decreed that only paper money issued at the Banco de la Provincia de Buenos Aires (BPBA) was to be accepted as legal tender by the Custom Office at a parity of 20 pesos papel per 1 peso fuerte which was the specie numeraire of the economy. This meant a forced "financial innovation" to encourage the use of paper money as a mean of payment. However, in the foreign exchange market the nominal rate still quoted 24 paper pesos per peso fuerte. By 1862, BPBA, the single bank of issue, was still under provincial jurisdiction and with a charter specifying neither a maximum size of paper note issues, nor the the type of assets to be held against its paper notes. To redress devaluatory expectations in the foreign exchange market was not an easy task. Memories of reckless paper printing were fresh: during the 1859-62 period the paper money supply increased by 88 per cent to secure military equipment for the on-going civil wars.

The government announced in 1863 that consolidated budget deficits would be covered with issues of convertible bonds and presented two alternatives for the future status of BPBA. Either the Nation would take over the privilege of issuing paper notes from BPBA; or, the government would favor the project to establish a regime of competitive banks of issue for issuing bond-backed convertible paper notes.¹ None of the projects passed in the Congress and BPBA retained, at least formally, the control of monetary policy. The Nation will have to wait until 1890 to centralize the issues of fiduciary currency.

I.2 Money and Interest Rates

The period from 1862 to 1868 might be divided in two subperiods: (a) 1862-1864, a period dominated by inflationary expectations and (b) 1865-1868 a period

¹ See Cortes Conde (1989), p. 31.

characterized by the revaluation of paper money and the increase in nominal and real interest rates. As indicated below in Table 1, paper money depreciated rapidly from 22.1 paper pesos per peso fuerte in 1861 to 29 in 1864. BPBA had expanded considerably the quantity of paper money to finance the 1859 and 1861 wars with the commitment to buy-back the notes at the end of the war conflict. Until 1863, the national administration could not negotiate with Buenos Aires the amortization of paper notes consistent with a targeted exchange rate of 20 pesos per peso fuerte.

In 1864, the government connived with BPBA to establish a Conversion Law (Ley de Conversion de 1864) to be in force on July 1st 1865. Specie reserves to back convertibility could not be raised postponing the "specie-exchange-standard" for 1867. While the strict convertibility regime failed due, this was an important step towards a limit of the quantity of paper notes on the part of BPBA. In 1864, the provincial bank began the amortization of paper notes to seek stability in the money market. The credit crunch was unavoidable: during the 1864-1867 period loans in paper pesos declined by 51 per cent. The illiquid monetary situation peaked in 1865 when outstanding credit in paper pesos declined by 27 per cent in one year while domestic activity, proxied by the semi-sum of exports and imports, increased by 21 per cent.

The export sector (the "hacendados"), debated with the monetary authorities the inconvenience of a contractionary monetary policy combined with a floating exchange rate regime. At the height of the business cycle, they favored a fixed exchange rate regime that would stop the appreciation of currency because specie inflows would have increased the quantity of money. The appreciation of currency is correlated with the upsurge in domestic interest rates as shown in column (10) of Table 1. Most important, the annual ex-post real interest rate in the economy skyrocketed: it went from 6.2% in 1864 to 18.5% in 1865. It attained an all-time high of 29% in 1866 before receding to an average of 7% by the end of the decade.²

The behavior of real interest rates prompted the government to put an end to the appreciation of paper money. By 1867, two monetary laws passed: (1) BPBA was authorized to issue metallic notes up to a maximum of 100 million paper pesos³; (2) an Office of Exchange (Oficina de Cambios) was established to exchange paper notes for specie at a fixed exchange rate set at 25 paper pesos per hard peso.

From 1867 to 1876, Argentina formally adhered to the international Gold Standard.

² The ex-post real interest rate is calculated as $(1 + i)/(1 + de) - 1$ where i = domestic nominal interest rate, de = rate of devaluation.

³ Specie reserves backing the so-called metallic notes were to be set at 33 per cent of outstanding circulation, see Cortes Conde (1989), p.50.

TABLE 1
REAL ACTIVITY, MONETARY VARIABLES AND INTERES RATES
1861 - 1882

YEAR	EXCHANGE RATE (1)	EXPORTS (2)	IMPORTS (3)	MONETARY BASE (4)	SPECIE RESERVES (5)	DEPOSITS PAPER (6)	MONEY (7)	LOANS PAPER (8)	i* (9)	i (10)	YIELD (11)
1861	22.1	-	-	n.a.	n.a.	263	n.a.	179	9.8	7.9	n.a.
1862	24.0	16.1	22.1	n.a.	n.a.	296	n.a.	154	8.0	6.8	n.a.
1863	28.0	18.2	25.2	354	14.0	344	711	241	11.3	10.6	n.a.
1864	29.0	18.8	21.8	342	32.0	334	718	252	10.0	10.0	15.0
1865	27.4	22.0	27.1	347	48.3	321	679	183	10.5	12.2	15.0
1866	24.3	26.7	37.4	431	112.3	251	762	129	9.8	14.2	14.7
1867	24.9	33.2	38.8	536	30.0	296	978	123	7.0	7.0	11.6
1868	25.0	29.7	42.4	588	90.0	324	1045	260	7.5	8.0	12.6
1869	25.0	32.4	41.2	558	15.0	348	1157	307	7.0	7.0	10.4
1870	25.0	30.2	49.1	639	45.0	367	1247	372	n.a.	n.a.	9.2
1871	25.0	27.0	45.6	802	92.5	372	1423	449	n.a.	n.a.	8.7
1872	25.0	47.3	61.6	964	137.5	486	1824	581	6.0	6.0	8.0
1873	25.0	47.4	73.4	827	62.5	487	1653	687	6.0	6.0	7.6
1874	25.0	44.5	57.8	787	110.0	457	1563	569	-	-	7.8
1875	25.0	52.0	57.6	717	85.0	615	1619	544	8.0	-	8.9
1876	29.4	48.1	36.1	895	4.2	622	1835	546	8.0	-	12.8
1877	29.5	44.8	40.4	790	3.6	734	1832	675	-	-	10.6
1878	32.4	37.5	43.8	870	4.2	744	1862	704	-	-	10.7
1879	31.9	49.3	46.4	853	9.9	801	1937	775	-	-	9.2
1880	28.6	58.4	45.3	864	3.7	814	1836	820	-	-	7.9
1881	25.0	57.9	55.7	828	128.0	-	1921	785	-	-	7.0
1882	25.0	60.4	61.2	740	22.0	959	2065	1005	-	-	6.9

Notes and Sources:

(1) The exchange rate is the quotation of the paper-peso in terms of the peso fuerte; for 1861-1867 from della Paolera (1983), p.30; for 1868-1882 from Cortés Conde (1989), Apéndice I.

(2) and (3) Exports and Imports in millions of gold-pesos; for 1862-1866 from della Paolera (1983), p.9; for 1867-1882 from Extracto Estadístico de la República Argentina (1915).

(4) through (7) Figures in millions of paper pesos; from Cortés Conde (1989).

(8) Figures in millions of paper pesos; for 1861-1867 from della Paolera (1983), p.18; for 1868-1882 from Cortés Conde (1989).

(9) Specie deposit interest rate in annual percentage rates; for 1861-1867 average of the Banco de la Provincia de Buenos Aires della Paolera (1983), p.28; for 1868-1882 from Cortés Conde (1989).

(10) Paper peso deposit rate in annual percentage rates; for 1861-1867 average values of the Banco de la Provincia de Buenos Aires from della Paolera (1983); for 1868-1882 from Cortés Conde (1989).

(11) Yields of Public Bonds in annual percentage rates from Cortés Conde (1989), Appendix II, Table IV.

II. A Managed Gold-Exchange Standard Regime at Work: from Resumption to Collapse (1868-1880)

Most of President Sarmiento's term in office between 1868 and 1874 can, certainly, be characterized as years of a definite economic expansion. From 1868 to 1872, exports and imports increased on average by more than 50 per cent. Aggregate demand, mainly driven by public investments, was expanding: the cumulative deficit of the national administration for 1868-1872 represented 2.5

times the amount of fiscal receipts.⁴ Deficits were covered with external loans and bank advances.

Interestingly enough, public expenditures had no sizeable contemporaneous crowding-out effects. Yields on financial assets were declining throughout the convertibility period. From an average level of 15 per cent in 1866, domestic interest rates stood at 7.5 per cent in 1872. In 1871, commercial paper rates and yields on public bonds started to converge towards levels observed in the USA economy.⁵ The dynamics of adjustment were characteristic of an import-capital economy within a convertibility regime: sizeable balance of payments surpluses increased the stock of money in the economy which in turn reinforced the downward pressure on domestic interest rates.

From 1868 to 1872, the monetary base increased at an average annual rate of 16 per cent. The formidable increase in the demand for money was only surpassed by the bank created money (defined as money supply minus money base) which grew at an average annual rate of almost 20 per cent in the same period. The composition of the sources of expansion of the monetary base reflects that all money injection was not solely the result of the automatic Gold Standard mechanism. During the expansionary period, almost 68 per cent of the increased in the money base is explained by gold inflows to the office of exchange. Bank issues of metallic notes explained 17 per cent of the growth in the monetary base. While this was not quantitatively important in 1872, it reflected a fundamental weakness in the monetary and banking institutional arrangements.

BPBA and the newly founded Banco Nacional could "manage" two instruments of monetary policy: (1) the reserve-deposit ratio and (2) the supply of fractionally backed metallic notes. Rules of the game were clear for the Office of Exchange; room for discretion to "undo" the automatic adjustment was allowed at the banking level.

Figure 1 displays the annual growth rate of the monetary base, of the office of exchange notes and of the metallic notes. During the 1868-1872 period of economic expansion and capital inflows, all monetary variables co-moved together on average, suggesting that banking policies put some additional fuel on an already liquid money market. Adverse domestic and international conditions started in 1873. The government reacted to the contraction in the gold-backed money supply by expanding the stock of metallic notes. The attempt to sterilize the negative effects of gold outflows on the money stock failed at each successive step and convertibility was abandoned in May 1876. The expansionary

⁴ Deficit is measured as fiscal receipts minus total outlays of the public sector and is equivalent to the so-called "Uso del Credito". Figures from Cortes Conde (1989), P.86.

⁵ In column (10) of Table 1 we show the commercial deposit rate which stood at 6 per cent in 1872; call money rates (lending rates) in USA stood at 8 per cent in the same year (Figures from Table 4.8, column 7 in Friedman and Schwartz (1982), p. 122.

monetary policy was not just thought to prevent the fall in the domestic money stock but to replenish the exhausted banking reserves of the system. At the initial stage of the monetary crisis, the banks tried to decrease the level of vault reserves. However, the external drain quickly became an internal drain in which depositors tested the convertibility of deposits into cash. The reserve-deposit ratio declined from 20 per cent in 1872 to 3 per cent in 1876. Then, the issue of metallic notes prevented the banks from collapsing.

The Avellaneda's administration (1874-1880) had to cope with a depreciating currency combined with capital outflows and a precarious budgetary situation.⁶ The real sector of the economy adjusted almost instantaneously to the credit rationing situation: trade deficits translated into sizeable surpluses much needed to cope with the burden of the external debt service. This result was achieved through the implementation of restrictive monetary and fiscal policies: public expenditures were reduced by 40 per cent in real terms in 1877, money base remained fixed and the nominal exchange rate declined to its previous gold-exchange standard level of 25 pesos per hard peso. Again, economic adjustment prepared the scenario for a new monetary experiment.

III. The Institutional Framework and the Use of Gold during the International Gold Standard Years: 1881-1913

III.1 The Monetary System and the Use of Specie by Banks:

In 1878, Congressmen of all provinces of the Argentine Confederation discussed the establishment of a national monetary system. In 1881, the Congress voted a currency reform law. The monetary law of the 5th November 1881 introduced a bimetallic standard system, the units to be the gold peso, of 24.89 grains, 9/10 fine, and the silver peso, of 385.8 grains, 9/10 fine (Art.1). At those gold definitions of content, the legal ratio of gold to silver was 15.5 and the following gold parity rates were established: one British pound = 5.04 gold pesos, one U.S. dollar = 1.04 gold pesos, five Francs = 1 gold-peso.

Only national minted coins and "accepted national money" could serve as legal tender for all debts, private and public (Art.5). A mint was to be created and foreign metallic coins were to be accepted at their bullion value in exchange for gold and silver pesos.

By 1881, the outstanding paper notes represented 73 percent of the currency in circulation.⁷ The problem was how to replace the mass of 822 millions of inconvertible pesos for the new paper notes exchangeable at par with the gold-peso. The law only contemplated an accounting device: banks of issue were, within two years from the passage of the law, to renew their paper notes in

⁶ In 1876, the budget deficit amounted to 93 per cent of fiscal receipts. Calculations were made from Cortes Conde's (1989) figures, p.112.

⁷ See P. Agote (1882), p.212.

accordance with the new monetary unit at the prevailing market rate of 25 old paper-pesos to 1 new gold-peso. The privilege of issuing the new notes was restricted to five banks: the Banco Nacional, BPBA, the Banco Provincial de Santa Fe, the Banco Provincial de Cordoba and the Otero&Co, which was the only private bank.⁸

The law was silent with respect to the specie that banks would have to hold to back their paper notes. Rules regulating the relationship between paper notes and specie would be the ones stated in the respective charters of the Banks of Issue. For example, under its 1872 charter, the issue of convertible notes by the Banco Nacional could not exceed double of its capital; the bank should always maintain a specie reserve equivalent to a fourth of all notes.⁹ The charter of BPBA specified neither a maximum size of note issue, nor the type of assets to be held against its notes. On March 1883, the Board of Directors passed a special motion stating that "the specie held by the bank will be increased to a minimum of a third of the circulating bank notes...".¹⁰ Notice that under such a scheme, any supplementary note issue did not require a 100-percent marginal bullion reserve as under the British specie standard.¹¹ In addition, specie was not to be solely confined to back the paper note issues. Since national minted coins were to be legal tender, the banks could choose to make loans and discounts in metallic coins as long as they did not violate the monetary reserve requirements. In short, specie holdings were to have a double purpose: first, as an asset held to ensure convertibility and, second, as an asset held to meet liabilities payable in specie.

By July 1883, the Argentine monetary standard was a practicable mixed specie and fiduciary standard in which the paper-peso exchanged at par with the gold-peso. The period of convertibility lasted only seventeen months. By the end of December 1884, the banks of issue did not stand ready to sell gold at par to all who offered the metallic notes. In March 1885, the federal Government decreed "curso forzoso", that is, the inconvertibility into gold of paper money and stated that resumption would be restored in December 1886. But, resumption

⁸ See John Williams, Argentine Trade Under Paper, p.35.

⁹ See Norberto Pinero, La Moneda, el Credito y los Bancos en la Argentina (Buenos Aires, Ed. Jesus Menendez, 1921), p.247.

¹⁰ See Horacio Juan Cuccorese, Historia del Banco de la Provincia de Buenos Aires (1972). The sentence quoted in the text is my translation from Article 3rd p.297.

¹¹ For the remaining banks of issue a similar fractional specie reserve requirement was established by their respective charter. For the Banco de Cordoba specie reserves were to be 45 percent of the issue, for the Banco de Santa Fe "the bank could increase the emission, proportionately to its capital and resources". See Pedro Agote, Report on the Public Debt, Banking Institutions, and Mint (Buenos Aires: Stiller & Laass, 1887), p.218-225 and p.212-215.

was never achieved; when December 1886 arrived, convertibility was suspended indefinitely; what happened afterwards is better captured by Figure 2. From 1884 to 1899, the Argentine monetary regime was a de facto paper standard in which the paper peso floated against gold and hence against the major key currencies. The gold premium remained stable in the two years that followed the suspension of convertibility but, after then, it skyrocketed until 1891; so did the price level. After the 1891 financial crash that meant the demise of the Banco Nacional and BPBA, the government committed to a strict disinflation policy in order to reestablish a commodity system. As it is apparent from the figure, deflation took place until 1899.

In November of the same year, the Congress sanctioned a conversion law proposed by the Executive. A redemption bureau, modelled exactly as the issue department of the Bank of England, would mechanically exchange national paper notes for gold, and gold for national paper notes on demand and at a fixed exchange rate of 2.27 paper pesos for a gold peso. That rate, being the market rate, meant that Argentina, instead of debasing her gold peso as created in 1881, opted to devalue its paper currency as a method to achieve convertibility. Convertibility was successfully maintained until the outbreak of the First World War in 1914.

In short, Argentina legally had adopted gold and silver as the basis for its monetary system in 1881. The establishment of a credible commodity standard in which specie coins would circulate side by side with paper notes failed in 1884. In 1899, Argentina reentered the gold standard system. However, the Argentine gold standard was to be a gold-exchange standard far different from the initially intended gold and silver specie standard.

III.2 The Role and Use of Gold and Silver by the Public:

A useful starting point to appraise how the institutional structure and changes in that institutional structure impacted on the expectations of the public, is to assess the role and use of specie by the people. Although there are few quantitative measures of public holdings of gold and silver, contemporary scholars reported that gold and silver coins were never widely used in domestic monetary transactions.

For the period after the demise of the commodity standard, recent scholars endorsed the fact that specie in circulation was insignificant relative to the currency stock. For example Alec Ford (1962, p.93) states:

"... By 1896 when the coinage of gold ceased, gold coins to the value of 31.7 million gold pesos had been issued (nearly four times the original issue planned), yet in 1896 no gold coins circulated, any more than they did in 1881..."

However, the relative importance of specie as means of payments does not tell the relevant monetary story for the interim 1885-1896.

In order to assess the importance of specie for the public we have to distinguish its use as means of payments from its use as a store of value. First, the fact that the monetary authorities discontinued the mint of national metallic coins may have not precluded domestic residents from holding specie in the same way as today the fact that the Argentine government is not empowered to issue U.S. dollars does not preclude residents from holding and hoarding U.S. dollars in significant amounts. Second, even if gold did not circulate as a generalized means of payments one should not leap from that proposition to the conclusion that the role of gold as store of value was insignificant.

To get an order of magnitude for the public holdings of specie, I estimated the specie in hands of the public for the period 1884-1913.

The specie stock may be held by three categories of holders: the monetary authorities, the banks and the public. Elsewhere, I estimated the holdings of specie by the domestic financial system including monetary authorities;¹² then as a residual, one obtains public hoarding of specie. The results for 1883-1899 are displayed in the Table 2 and Figure 3 and they reveal that public hoarding was due to the failure of the monetary regime. During all the years that preceded the financial crash of 1891, the public as asset holders attempted to restore their portfolio balance in the face of expected paper money depreciation, demanding gold as hedge against inflation.

The important issue here is that if people attempt to flee from the paper peso and into gold and, the monetary authorities do not precommit to fix the paper-gold exchange rate, under the assumption that the stock of gold is steady, one should expect the gold premium to rise. However, the historical evidence is more complex than that. Especially striking is the acute "reallocation" of specie in between the public and the banking system for the years 1888-1891. The demand of the public for gold was financed by the banking sector, in particular by the banks of issue, who provided the stock of specie in order to defend notes against expectations of devaluation. The "dirty" float ceased once the bank's specie stock was depleted in 1890. By 1891, the year of the financial crash, public holdings of specie amounted to 90 percent of the stock, while at the beginning of the monetary "experiment" they represented 15 percent. For the remaining part of the century, confidence on the banking system was not restored and almost the same relative shares were maintained.

¹² Explanation in della Paolera (quoted in the remaining as GDP (1988), Column 9, Table 29, Appendix C.

TABLE 2
 ARGENTINE SPECIE STOCK 1883-1899 (millions of gold-pesos, Dec. 31)

YEAR	INITIAL SPECIE STOCK I(t-1) (1)	NET SPECIE FLOW (2)	TERMINALS SPECIE STOCK I(t) (3)	SPECIE HELD BY BANKS (4)	PUBLIC HOARDING OF SPECIE (5)
1883			22.5	19.5	3.0
1884	22.5	0.4	22.9	20.7	2.2
1885	22.9	-2.1	20.8	17.4	3.4
1886	20.8	12.3	33.1	26.5	6.6
1887	33.1	-0.1	33.0	21.9	11.1
1888	33.0	36.1	69.1	52.7	16.4
1889	69.1	-16.7	52.4	22.0	30.4
1890	52.4	1.9	54.3	10.0	44.3
1891	54.3	7.5	61.8	7.9	53.9
1892	61.8	4.5	66.3	9.1	57.2
1893	66.3	3.7	70.0	11.8	58.2
1894	70.0	2.9	72.9	10.7	62.2
1895	72.9	4.6	77.5	13.0	64.5
1896	77.5	3.9	81.4	12.9	68.5
1897	81.4	-4.3	77.1	12.3	64.8
1898	77.1	5.7	82.8	13.4	69.4
1899	82.8	1.7	84.5	18.4	66.1

Sources: As in della Paolera (1988) Table 32, Appendix C.

During the gold-exchange standard regime public holdings of specie lost relative importance and this is a result one should expect from a credible fixed paper-gold exchange rate.

III.3 The Historical Evidence and the Money Supply Process

I initially focused on four different periods: a) the period following the convertibility suspension (1884-1889); b) the years 1890 and 1891, known as the Baring crisis years; c) the period of stabilization and fiscal reform following the Baring crash (1892-1899) and d) the period when Argentina was on an international specie standard with fixed exchange rates (1900-1913).

Subsequently, I subdivided the first period into the period 1884-1887 which I call the return to convertibility scenario, and the period 1887-1889, the banking reform period. Finally, I also considered 1884-1899 which was the paper standard period, the post-crash period of 1892-1913, and the entire period 1884-1913.

Table 3 and Table 4 present evidence about each of the periods and sub-periods. In Table 4, I report the proximate determinants of the Argentine money supply for the 10 periods under consideration using the well known framework pioneered by Friedman and Schwartz (1963) and Cagan (1965).

It contains: a) the percentage change in the proximate determinants of money; b) the fraction of the percentage change in the money stock attributable to its

proximate determinants; c) the fraction of change in the money stock consisting of changes in the monetary base and bank credit; d) the fraction of total change in the monetary base attributable to the monetary specie and domestic assets. Figure 4 displays the proximate determinants of the money multiplier.

TABLE 3
A DESCRIPTION OF THE PERIOD 1884-1913

Period	1884-87 (1)	1887-89 (2)	1884-89 (3)	1890 (4)	1891 (5)	1892-99 (6)	1884-99 (7)	1892-13 (8)	1900-13 (9)	1884-13 (10)
Number of Years	3	2	5	1	1	7	15	21	13	29
A. Percentage change in:										
(1) Money Stock	47.3	58.2	105.5	11.1	-25.8	18.0	101.2	146.4	124.5	229.6
(2) Monetary Base	53.0	25.5	78.5	40.4	6.4	3.4	136.1	107.2	102.6	239.9
(3) Bank created Money	42.7	80.2	122.9	-8.1	-63.9	48.9	60.6	208.8	151.7	220.6
(4) Real Output	17.2	25.3	42.5	-4.5	-11.7	30.6	65.5	109.0	80.8	143.9
(5) Prices	19.7	18.4	38.1	33.9	44.5	-22.3	71.5	14.0	24.3	107.8
(6) Exchange Rate	30.0	28.8	58.8	36.0	37.1	-38.0	81.1	-37.1	-1.7	82.0
(7) U.K. Prices	-14.4	4.6	-9.8	-0.1	3.4	-9.2	-21.3	14.2	15.3	2.1
B. Percentage change per year in:										
(8) Money Stock	15.8	29.1	21.1	11.1	-25.8	2.6	6.7	7.0	9.6	7.9
(9) Monetary Base	17.7	12.8	15.7	40.4	6.4	0.5	9.1	5.1	7.9	8.3
(10) Bank created Money	14.2	40.1	24.6	-8.1	-63.9	7.0	4.0	9.9	11.7	7.6
(11) Real Output	5.7	12.7	8.5	-4.5	-11.7	4.4	4.4	5.2	6.2	5.0
(12) Prices	6.6	9.2	7.6	33.9	44.5	-3.2	4.8	0.7	1.9	3.7
(13) Exchange Rate	10.0	14.4	11.8	36.0	37.1	-5.4	5.4	-1.8	-0.1	2.8
(14) U.K. Prices	-4.8	2.3	-2.0	-0.1	3.4	-1.3	-1.4	0.7	1.2	0.1
C. Average Level of:										
(15) Multiplier	2.1	2.6	2.4	2.2	1.6	1.5	1.9	1.7	1.9	1.9
(16) Income Velocity	1.8	1.5	1.6	1.7	3.1	2.8	2.3	2.5	2.3	2.3
(17) Gold Stock/Base(%)	26.0	37.0	32.0	22.0	24.0	26.0	28.0	35.0	40.0	33.3
(18) Hoarding/Base(%)	5.0	13.7	8.6	18.0	20.0	22.0	16.6	16.4	13.3	15.0
(19) Non-Performing Assets/Loans (%)	6.8	5.6	6.2	19.5	21.0	1.5	-	1.3	1.2	-

Note: All calculations compare the initial year to the end year period.

Sources by Row:

(1)-(3) Money stock, monetary base and bank created money figures are as in GDP (1988) Appendix B Table 30.

(4) For 1884-1899, I derived a real activity index by extrapolating the 1900-1927 Gross Domestic Product at 1950 prices to those years on the following time series: physical volume of exports and imports; indirect trade indexes that include: tons carried in railroads and in ships, passengers transported in railroads; population; gross investment figures including: public sector construction, private non-agriculture construction and railroad investments. For 1900-1913, Gross Domestic Product in 1950 Prices from C.E.P.A.L., El desarrollo economico argentino (Santiago de Chile, mimeograph, 1958), Cuadro 1, p.3. See GDP (1988) column 6 Table 37, Appendix D.

(5) A Wholesale Price Index for the period 1882-1913 was constructed based on two implicit indexes: the Dieguez's implicit price of exports (Dieguez 1972) and the Ford's implicit price of imports (Ford 1955). The weights applied are those of the budget in working-class families estimated by Roberto Cortes Conde

(1976) for the period 1883-1912. For a detailed discussion on the weighing scheme used see GDP (1988) Column 4 Table 37 Appendix D.

(6) The Exchange Rate is defined as paper-pesos per gold-peso. From J. Alvarez, *Temas de historia economica argentina* (1929), p.122-3.

(7) The U.K. Prices are the Board of Trade wholesale prices indexes taken from B.R. Mitchell, *Abstract of British Historical Statistics* (1971), p.476.

(8)-(14) Continuously compounded--the change in the natural logarithm of the variable over each period was divided by the number of years and multiplied by 100.

(15) Same as (1)-(3); the money multiplier is defined as the ratio of the money stock to the monetary base.

(16) The income velocity is defined as the real output divided by the real cash balances in 1950 pesos. Series underlying (1), (4) and (5).

(17) Total specie stock in gold-pesos divided by the monetary base in paper-pesos; the ratio is calculated at par. Sources underlying Table 2.

(18) Hoarding is defined as the difference between total specie stock and specie held at banks (including Treasury balances). Series underlying Table 2. The ratio is calculated at par.

(19) This indicator is constructed for the two leading banks: the Banco Nacional and the Banco de la Provincia de Buenos Aires as a rough solvency indicator of the state-chartered Banks.

TABLE 4
THE MONEY SUPPLY PROCESS 1884-1913

Period	1884-87 (1)	1887-89 (2)	1884-89 (3)	1890 (4)	1891 (5)	1892-99 (6)	1884-99 (7)	1892-13 (8)	1900-13 (9)	1884-13 (10)
A. Money Stock Change(%)	47.3	58.2	105.5	11.1	-25.8	18.0	101.2	146.4	124.5	229.6
B. Proximate Determinants of the change in the Money Stock:										
(1) Monetary Base	53.0	25.5	78.5	40.4	6.4	3.4	136.1	107.2	102.6	239.9
(2) Currency Ratio	1.2	6.4	8.4	-31.9	-32.2	10.4	-18.5	18.6	11.6	-0.3
(3) Reserve Ratio	-6.9	20.3	14.4	-2.6	-8.0	2.4	-27.4	9.3	6.9	-10.6
(4) Interaction of Ratios	0.0	6.0	4.2	5.2	8.0	1.8	11.0	11.3	3.4	0.6
C. Fraction of Change in Money Stock attributable to change in:										
(5) Monetary Base	1.12	0.44	0.74	3.64	-0.25	0.19	1.34	0.73	0.82	1.04
(6) Currency Ratio	0.02	0.11	0.08	-2.87	1.25	0.58	-0.18	0.13	0.09	0.00
(7) Reserve Ratio	-0.16	0.35	0.14	-0.23	0.31	0.13	-0.27	0.06	0.06	-0.05
(8) Interaction of Ratios	0.00	0.10	0.04	0.47	-0.31	0.10	0.11	0.08	0.03	0.01
D. Fraction of Change in Money Stock consisting of a change in:										
(9) Monetary Base	0.51	0.17	0.28	1.44	-0.13	0.13	0.73	0.42	0.44	0.50
(10) Bank Created Money	0.49	0.83	0.72	-0.44	1.13	0.87	0.27	0.58	0.56	0.50
E. Fraction of change in Monetary Base consisting of a change in:										
(11) Domestic Assets	0.84	1.62	1.15	1.08	1.00	1.00	-	-	0.00	-
(12) Monetary Specie	0.16	-0.62	-0.15	-0.08	0.00	0.00	-	-	1.00	-

Notes: 1. For 1884-1887 monetary base includes specie at hand in banks as a source of base and as a use of base. For 1888-1890, specie is considered only a source of the monetary base. See GDP (1988) Appendix B for a definition of the monetary base.

2. Bank created money is defined as the money supply less the monetary base.

3. All calculations compare the initial year to the end year of the period.

Sources by line:

1-8 Computed as described in GDP (1988) Appendix B.

9-10 The total change in monetary base and bank credit weighted by their initial year period share divided by the total change in the money stock. Series from GDP (1988) Appendix C.

10-11 The total change in monetary specie and domestic component weighted by their initial period share divided by the total change in the monetary base. For 1884-1891, the monetary specie is the specie held by the banks of issue as in column 6 Table 32; for 1900-1913, as in column 7 Table 32.

The boom years:

1884-1890.

This is the period that J. Williams (1920) called one of "heavy borrowing":

"...The borrowing was maintained throughout the eighties, culminating in loans of such extent as have probably never been equalled, by a country of so small a population as was that of Argentina...."¹³

Revised estimates confirmed the importance of the European capital transfers to the Argentine economy: in between 1884-90 the country absorbed 11 percent of the new portfolio issues of the London market; North America with a population twenty times that of Argentina absorbed 30-percent of the new issues.¹⁴ Most of the foreign capital was used to finance changes in the composition of production of the new settled country. The bulk of the investment went to the construction of social overhead projects, the improvement of cultivable lands and the expansion of the railroad network. When by the middle of the eighties, European investors became especially enamored with Argentine stocks, federal and provincial governments capitalized on the momentum and borrowed for fiscal purposes. During the boom period, the federal administration augmented the level of indebtedness relative to real output from a ratio of 64 percent in 1884 to a 101 percent in 1890.¹⁵ The ease with which Argentina acceded to the London capital markets had important consequences for the fiscal debt management; the possibility of floating government bonds externally enlarged the other, and relatively restricted, sources of fiscal revenue, namely foreign trade taxes and inflationary finance.

¹³ See Williams (1920) p.3.

¹⁴ Estimates for Argentina are from A. Ford, The Gold Standard, 1880-1914: Britain and Argentina, p.148 defined as London issues for Argentina; total London issues from Mathew Simon, "The Pattern of New British Portfolio Foreign Investment, 1865-1915", in The Export of Capital from Britain 1870-1914, by A. Hall (1968), p.38. North America includes Canada and U.S.A.

¹⁵ The level of public debt is defined as the stock of outstanding funded debt stipulated in pesos and hard currency. For 1884 it amounted to 197.6 millions of gold-dollars or 3218.2 millions of 1950 pesos; real output can be estimated at 4991.8 millions of 1950 pesos. For 1890 funded debt is 361.3 millions of gold-dollars or 7398.0 millions of 1950 pesos; real output 7348.0. Figures for Debt are my revised estimates from MH= Memorias de Hacienda de la Republica Argentina and V. Vazquez-Presedo, Estadisticas Historicas Argentinas, (Buenos Aires, Eudeba, 1971), p.93; real output was proxied as in GDP (1988), Appendix D. For annual figures see GDP (1988) Table 37, Appendix D.

At the beginning of the period one of the aims of fiscal policy was the resumption of the specie standard. The resumption was seen as a necessary step that would encourage the inflow of private capital from abroad by reducing the exchange rate uncertainty. From the figures of the Tables 3 and 4 one is tempted to conclude that the "pre-commitment" of the monetary authorities to return to parity had a positive impact in several aspects: banks increased their level of reserves awaiting for the convertibility period (eg: from Table 4, for 1884-87 the reserve-ratio contributed negatively to the growth in Money Supply, that is banks were replenishing its vaults after the convertibility crisis of december 84); despite the demise of the specie standard, the level of specie hoarding was maintained at around 5 percent of the monetary base or 2.5 percent of the money stock; and finally, the domestically created inflation was attenuated because of the worldwide deflation.

The Law of National Guaranteed Banks

In 1888, the financial scenario drastically changed when the government launched a new monetary experiment: The Law of National Guaranteed Banks. The framers of the law intended to create a national banking system that would mirror the United States National Currency Act of 1867 in which any banking organization with a minimum required capital could issue bond-secured notes.

In fact, the bill deviates from the American one in two fundamental aspects: a) the American bond-secured paper notes were redeemable in gold while in Argentina the specie standard was not operating, and b) in the United States, eligible public bonds came from active secondary markets while in Argentina eligible bonds were to be specially created for the purpose of backing the new paper issues; this meant creation of new public debt. The rules of the game to start the business of issuing bond-secured notes worked in the following way: banks, could issue paper-money, provided that they purchase National Gold Bonds to the full amount of the notes to be emitted; the bonds, and this is an important detail, were to be paid for with bullion; and the bullion and the bonds were to be deposited in the Banco Nacional. If the banks remained solvent, they were entitled to the interest payments on the bonds; in the case of bankruptcy, the government would sell the securities and reimburse creditors out of the proceeds.

By December 1888, sixteen banks were given the right to issue 39 millions of pesos in guaranteed notes attaining the ceiling prescribed by the law. The majority of these banks were provincial and mixed banks that contracted foreign loans to purchase the guaranteed bonds with gold. Williams (1920) estimated that the loans amounted to 47 millions of gold-pesos; I estimated that by the end of 1888 the stock of bullion in guarantee

of the notes at the Banco Nacional amounted to 33.4 millions of gold-pesos.¹⁶ The scheme was an arbitrage operation by which foreign investors were implicitly partners in the business of issuing paper-money. From the macroeconomic point of view, the scheme acted as an implicit "one way road" gold-exchange standard by which the issue of 39 million of paper-pesos were backed with 33.4 million of gold-pesos in gold; the rules of the game were strictly respected since almost all the supplementary note issues were backed with a hundred percent marginal bullion reserve. But, early in 1889, foreign investors became reluctant to absorb more Argentine government debt and, even more, a few of them were dumping Argentine bonds in the London stock exchange market.¹⁷ It seemed that Argentina had hit its debt ceiling; in Buenos Aires, the public started to attack continuously the guaranteed paper-peso depreciating its value relative to gold. The government decided to intervene in the foreign exchange market to calm down the devaluatory expectations with part of the gold stock in guarantee of the paper issues. In March 1889, 5 million pesos in gold were sold; by December, the stock of gold remaining in the vaults of the Banco Nacional was only 5.8 millions and the emission of "guaranteed" notes amounted to 73.2 millions of paper-pesos. The government "sterilized" the effects of their own open market operations by rediscounting the bills initially absorbed, perpetuating then the excess supply of paper notes. One ex-ante possible rationale for this policy was that, by "rigging" the gold market to maintain a flat gold premium, the government tried to signal foreign investors that resumption was still a feasible outcome. In any case, the government discounted the fact that by maintaining a steady inflow of specie the lost stock would be easily rebuilt. But, the capital flow ebbed by the end of 1889 and the government could not avoid using the notes initially absorbed in order to buy gold exchange and service the foreign debt. This simply meant that the rules of the game of the Law of National Guaranteed Banks were broken.

From the Tables 3 and 4, the arithmetic of the period shows: a) there is a dramatic change in the portfolio composition of the issuing banks: there is an inverse association between monetary specie and paper. Banks expanded their paper liabilities, which were nominally backed with public bonds, but there was no bullion backing the National Gold Bonds ; b) bank created money increased by 80 percent in the period 1887-1889 reflecting also the multiplier

¹⁶ See John Williams, Argentine Trade Under Paper, p.58, and GDP (1988) Table 29 Column 1, Appendix C.

¹⁷ In Charles Kindleberger's book A Financial History of Western Europe (London, Allen&Unwin, 1984) this is presumed : "...Germans sold off Russian bonds to France, and even unloaded Argentine bonds in London in 1888 and 1889. Various explanations had been given for dumping Argentine bonds: investors became uneasy about Argentina and enamored of gambling in industrial shares at home; or they were disturbed by instability in the Argentine exchange rate, at a time when British investors were slow to see its implications..." p.258-259.

effect of sustained entry of new institutions into the banking system; c) the reserve-ratio contributed 35 percent to the growth in the money stock; a possible explanation for the fall in commercial banking reserves could lay in one aspect of the banking regulation that allowed already established banks of issue to "dispose of half the specie reserve provided by the law in order to purchase the public funds";¹⁸ and d) the level of hoarding as a percentage of the monetary base rose from a steady level of 5 percent to 15 percent with the banking sector "financing" the public's process of currency substitution away from paper money and into specie. One question that we must now consider is how did this currency crisis spread into a real financial crisis, for that, I turn to the analysis of the so-called Baring crisis.

IV. The 1890-1891

Baring Crisis Years

By inspecting the money arithmetics of the 1890-1891 years, one can infer that the Baring crisis had severe macroeconomic implications for the Argentine economy. A notorious aspect that characterizes the two years as crisis years is the discrepancy in the changes in the monetary base and in the money stock. In 1890, a 40 percent increase in the monetary base resulted in an increase of only 11 percent in the money stock, the contractionary effects emanating principally from the public's behaviour. The currency-money ratio contributed negatively to the money growth and if, it had changed alone, in that year the money stock would have been reduced by 32 percent. A more cautious behaviour of the commercial banks was also an offsetting element evidenced by a rise in the reserve-deposit ratio that contributed negatively to the change in the outstanding stock of Money. In 1891, there was a sudden reduction in the rate of growth of the monetary base to an annual rate of 6.4 percent, but the public's demand for monetary base was sustained and the money stock fell by 26 percent. The money multiplier dropped from 2.2 in 1890 to 1.6 in 1891. The demise in 1891 of the most important commercial bank: the Banco de la Provincia de Buenos Aires by itself explained a 31 percent of the decline in the money multiplier. At first, the Baring crisis clearly exhibited the symptoms of a typical banking crisis in which the money stock is reduced through an increase in the currency-money ratio and in the reserve-deposits ratio and, in addition, by the liquidation of some financial institutions that had the effect of destroying deposits.

A crucial difference with other typical banking crises of the nineteenth century experienced in more central countries is that, despite a fall in the nominal stock of money, both the price level and the income velocity of money, (defined as the ratio of real output to real cash balances), rose. The velocity index abruptly changed from an average value

¹⁸ see Art.26 and Art.27 of the proposed Law in Agote (1887), p.421-422.

of 1.6 in 1884-1890 to 3.1 in 1891, a number clearly influenced by the demise of the banks of issue. This result is not sensible to our velocity definition that stresses the role of money as an asset (that is the use of M2 as the definition of money). A transactions velocity of currency redefined by using the monetary base replicates the above pattern: from an average value of 3.8 in 1884-1891, the velocity of currency circulation rise to 4.9 in 1891 reflecting a sudden illiquid situation due to the extreme inflationary situation. The fact that velocity did not move in a smooth fashion was a manifestation of the way the adjustment in the fiduciary system worked itself out once capital inflows stopped. In a typical specie standard system in which specie is a main component of the monetary assets, hoarding generally increased as a reaction to a widespread banking crisis and then the transactions velocity of currency (defined as real output divided by the amount of metallic currency held by the nonbank public) fell¹⁹. In our experience, I already showed that, since 1887, metallic hoarding have been steadily increasing reflecting the failure of the monetary authorities to establish a mixed specie and fiduciary standard in which paper would exchange at par with gold; on this ground, one may also say that the transactions velocity of hard cash defined as real output divided by the metallic currency held by the public fell. The divergent movement in the "paper" velocity and the "specie" velocity indicates that a small open economy can only have in the very short run an independent monetary policy.²⁰ At some point, currency substitution begins to nullify the expansionary actions of the government. The sterilization policies of 88-89 had the "benign" effect of inflating the economy without having inflation in the very short-run but once, any source of outside money became depleted, nominal variables adjusted upward from their "repressed" values.

Fiscal Deficits, Inflation and Public Debt: 1885-1893

The Baring collapse had its roots in the design of inconsistent monetary and fiscal policies within Argentina. Table 5 shows that the federal government did not collect enough revenues to cover its expenditures and so ran persistent flow deficits from 1885 to 1893.

The fiscal scenario drastically changed by 1888 when, in only one year, the fiscal expenditures corrected by the debt service payments grew by 41

¹⁹ See Michael Bordo and Lars Jonung, The long-run behavior of the velocity of circulation (Cambridge, Cambridge University Press, 1987), Chapter 3: "The Institutional Approach", p.22-28.

²⁰ The "paper" velocity index took the following values: in 1888 1.3, in 1889 1.4, in 1890 1.7 and in 1891 3.1. The transactions velocity of hard currency index defined as real activity index divided by metallic hoarding took the following values: in 1888 20.2, in 1889 12.6, in 1890 8.1 and in 1891 6.4.

percent and fiscal receipts remained at the level of the previous year. Since then and until some fiscal adjustment took place, the federal government typically had to raise an additional in revenues equivalent to almost two thirds of receipts to cover the flow deficits. During the 1892-1893 reform years, the fiscal budgets converged towards balance when expenditures were frozen in nominal terms but there was an important upward correction in the yield of receipts.

Table 6 shows evidence on the relationship among the exchange rate, the budget deficit, the inflation rate and changes in the level of the public debt and reserves. Unfortunately, there is no detailed evidence on the paper notes directly advanced to the treasury by the banks of issue; however, here, theory can substitute for facts. The figures in Column (6) of Table 6 were constructed under the assumption that in each year, federal deficits had been completely financed with issues of paper notes. In other words, if fiscal deficits had been fully monetized, yet other factors such as the output and the velocity had remained approximately the same, what would have happened with the inflation rate?²¹ Several important features arise from comparing the actual inflation or devaluation rate with the counterfactual one.

For the year 1885, the inflation rate is closely matched by the counterfactual fiscal inflation rate suggesting that the monetary authorities may have monetized a considerable proportion of the budget deficit. This possibility is well supported by the fact that the federal government appeared to have been credit constrained and had to amortize part of the public debt stock (see Column 7).

In 1886 and 1887, the public funded debt played a leading role as a mean to finance the deficit; consequently, as it can be seen from a comparison

²¹ The counterfactual inflation rate is constructed as follows. First by assuming that the deficit is fully monetized, I generate a hypothetical paper money rate of growth $u(t)$ for each year by dividing the deficit as in column(3) in Table 6 by the outstanding stock of paper notes existing the year immediately before. Basically, the framework used is as in the author's Ph.D. Dissertation, GDP (1988), p.75-89:

$$(5.2)' \frac{DEF(t)}{DC(t-1)} = \frac{DC(t) - DC(t-1)}{DC(t-1)} = u(t)$$

Then, economic theory tells that the paper money in circulation $DC(t)$ times the velocity $V(t)$ must be identical to the product of the real product $Y(t)$ times the price level $P(t)$ as in (5.7):

$$(5.7) DC(t) \cdot V(t) = Y(t) \cdot P(t) \quad ; \text{ expressed in rates of change, gives:}$$

$$(5.7)' u(t) + v(t) = y(t) + p(t)$$

then, by assuming that output and velocity behave as they did, one can solve for the counterfactual inflation rate $p(t)$ in equation (5.7)'. The values used to construct the counterfactual are shown in GDP (1988) Table 38 Appendix D.

of the numbers in columns (5) and (6), there was no clear correlation among deficits and inflation rates. In column (4), the estimates for the deficit net of interest and amortization payments for the public debt (called usually the primary deficit) reveal that, in those years, there was a tendency towards a healthier budgetary situation. The primary deficit was brought into balance and this impacted positively on the people's perception of the government's ability to meet its service obligations without resorting to inflationary finance, making more credible the commitment to return to parity.

TABLE 5
THE BUDGET 1885-1893

YEAR	1885	1886	1887	1888	1889	1890	1891	1892	1893
(in million of pesos)									
Receipts	36.4	42.3	51.6	51.7	72.9	73.0	75.5	110.9	124.7
Expenditure	55.1	55.5	67.7	75.9	107.3	95.7	127.2	128.0	122.5
Corrected Expenditure	55.8	58.0	67.9	85.8	121.0	115.2	127.8	128.0	122.5
Corrected Budget Deficit	19.4	15.9	16.3	34.1	48.1	42.2	52.3	17.1	-2.2
(in million of gold pesos)									
Receipts	26.6	30.4	38.2	34.9	40.5	28.3	20.2	33.7	38.5
Expenditure	40.2	39.9	50.1	51.3	59.6	37.1	34.0	38.9	37.8
Corrected Expenditure	40.7	41.7	50.3	58.0	67.2	44.7	34.2	38.9	37.8
Corrected Budget Deficit	14.1	11.3	12.1	23.1	26.7	16.4	14.0	5.2	-0.7
Corrected Deficit as percent of:									
Receipts	53.3	37.6	31.6	66.0	66.0	57.8	69.3	15.4	-1.8
Corrected Expenditure	34.8	27.4	24.0	39.7	39.8	36.6	40.9	13.3	-1.7

Notes and Sources:

The figures are derived from MH= Memorias de Hacienda de la Republica Argentina. See GDP (1988) Tables 34, 35 and 36, Appendix D.

The corrected expenditures are defined as the reported expenditures plus the difference between the debt service realized payments and the budgeted pesos.

TABLE 6
FISCAL DEFICITS, INFLATION AND PUBLIC DEBT 1885-1893

YEAR	in MM Paper Pesos			in percent			in MM Gold Pesos				SPREAD WITH ITALIAN RENDITA
	PAPER-GOLD EXCHANGE RATE	TOTAL PAPER NOTES	CORRECTED BUDGET DEFICIT	PRIMARY DEFICIT	RATE OF INFLATION	COUNTERF. FISCAL INFLATION RATE	CHANGE IN PUBLIC DEBT VAR 2	CHANGE IN SPECIE RESERVES	YIELD INTERN BOND	YIELD EXTERN BOND	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1885	1.37	74.8	20.1	5.4	22.8	24.1	-12.7	-4.8	7.90	6.09	1.53
1886	1.39	89.2	15.9	-1.0	3.1	8.8	23.8	9.1	7.86	5.93	1.79
1887	1.35	97.3	16.3	0.4	-4.0	3.3	10.5	-5.3	8.79	5.48	1.02
1888	1.48	129.5	34.2	15.1	0.0	7.9	34.0	23.8	8.02	5.18	0.66
1889	1.80	163.7	48.1	18.9	19.8	31.2	43.1	-31.2	8.01	5.17	0.59
1890	2.58	245.1	42.2	12.8	40.9	19.7	11.8	-6.3	10.34	5.83	1.23
1891	3.74	261.4	52.2	8.8	56.2	62.3	15.7	-0.8	10.28	7.58	2.87
1892	3.29	281.6	17.1	-15.7	-20.6	-21.8	56.7	0.4	9.15	7.51	2.85
1893	3.24	306.7	-2.2	-38.8	-6.0	-12.1	1.7	1.2	8.73	7.70	3.07

Notes and Sources by Column:

(1) Figures from GDP (1988) Table 37 column 2, Appendix D.

- (2) Total paper notes in circulation are taken from GDP (1988) Table 30, column 2, Appendix C.
- (3) The corrected budget deficit is as in Table 8.
- (4) The primary deficit is defined as the corrected budget deficit less service debt payments.
- (5) The annual rate of inflation is the rate of change of the constructed Wholesale Price Index as in GDP (1988) Table 37, Appendix D.
- (6) The counterfactual inflation rate is as explained in the text.
- (7) The Debt Stock is taken from GDP (1988) Table 36 column 10.
- (8) The Specie reserves of the guaranteed banks are from GDP (1988) Table 32 column 6, Appendix C.
- (9) The percentage yield of a long term internal government bond (floated and yielding in paper pesos) is taken from GDP (1988) Table 33 column 2, Appendix D.
- (10) The percentage yield of a long term external government bond (floated and yielding in british pounds) is taken from GDP (1988) Table 33 column 4, Appendix D.
- (11) The figures are defined as the excess of an Argentine external bond yield as in Col(10) over a comparable long term Italian bond called the Rendita Italiana. Quotations of the Rendita Italiana from GDP (1988) Table 33 column 8, Appendix D.

This, in turn meant that the government could float more public bonds in the capital markets and at better prices. The reason for this to happen is that there is a direct link between the market value of the government debt and the prospective situation of the federal budgets. Basically, it can be proved that the market value of the government funded debt at each moment in time is equal to the present value of the government primary surpluses.²² Initially, there was a positive reaction to the Argentine fiscal and monetary intentions and by 1888-1889 bond prices fared much better and, consequently, yields required by investors to hold internal and external government assets were reduced (see Columns (9) and (10)). Another important feature was the important fall in the spread relative to a comparable European long-term bond as is shown in Column (11), evidence of the government's good credit ratings in the international capital markets.

But the fiscal discipline was short lived and it was precisely in those years when public finances got derailed. In 1888, despite a clear worsening in the budget situation, the inflation and depreciation rates were not closely associated with the counterfactual inflation rate. Recall that 1888 was the only year in which the monetary authorities respected the rules of the game established by the law of guaranteed banks that provided for a gold backed paper note issue. This is shown by the close association between the increase in the paper notes stock as in Column (2) and the increase in the stock of specie as in Column (8). In turn, observe that specie reserves were matched by an increase in the level of public debt since the banking reform was financed by an arbitrage operation involving loans negotiated abroad. Basically, the expansion of a gold backed monetary base paralleled the expansionary fiscal policy and no dramatic changes occurred with the price level and the paper-gold exchange rate.

However, the fiscal regime clearly changed early in 1889 when the Argentine government decided to pay off in paper pesos part of the funded debt

²² For a detailed theoretical discussion on the links between the market value of public debt and the conduct of fiscal policy see Sargent (1985) and Dornbusch (1986).

service denominated in hard dollars. The decision was tantamount to a partial default on the Argentine contractual obligations and the international financial centers reacted in anger. This change in the Argentine political economy was stressed by *The Economist* (May 25, 1889) in an article titled "Argentine Untrustworthiness" when it stated that :

"...That those who are now protesting against the claim of the Argentine Government to pay off the Hard Dollars Loan in paper have justice on their side is unquestionable...the claim of the Argentine Government comes as an opportune reminder that in its dealings with its creditors it is not to be trusted, and it is well that this fact should be brought home to investors, because it would appear that before long it will be attempting to raise money here...but the experience that has lately been gained of its financial untrustworthiness, exemplified both in its dealings with bondholders and its refusal to respect its own laws, ought to make investors little disposed to respond to fresh appeals..."

If it is hard to find an economic rationale for this abrupt change in the service of the debt regime, it is even harder to understand why the government embarked itself in a policy that combined partial repudiation with a protracted intervention in the foreign exchange market to stabilize the value of the guaranteed paper notes. The intervention in the foreign exchange market was a futile strategy because the public, anticipating that the policy would shift gears from a currency resumption scenario to fiscal profligacy, flew away from paper currency into specie and produced an intense currency substitution phenomenon. The monetary and fiscal inconsistency became apparent by the end of the year when the government, already in a debt-ceiling situation and with its specie reserves almost depleted, had to switch from debt to money creation to finance an ongoing budget deficit (compare the evolution of the stock of paper notes with the fall in specie reserves).

Since then and until 1891, the monetary policy became endogenous to the budget deficit influencing the economy's inflation rate. For the 1889-1891 period, the accumulated inflation rate (163.7 percent) and the accumulated depreciation rate (152.7 percent) are closely correlated with the accumulated counterfactual inflation rate (154.9 percent) suggesting that inconvertible paper notes were issued to finance accumulated fiscal deficits.

Another important feature that one can distillate from the Argentine historical experience has to do with the dynamics of the inflation tax in the presence of currency substitution. We said before that the macroeconomic evidence suggested that velocity did not move in a smooth fashion when available alternative assets like gold begun serving as store of value. In this public finance context, the instability of velocity implies that a given real fiscal deficit financed with money creation can be associated with more than one inflation rate.

This result became clear with an economic policy that finally exhausted all the available genuine means of finance and suddenly heavily relied on the inflation tax to finance the budget. The 1885 deficit measured in 1886 pesos equalled 20.7 million of paper pesos and could be financed with an inflation rate of 24.6 percent. The 1891 deficit was exactly the same in real terms (20.6 million of 1886 pesos), but then it required a 63.2 percent inflation rate.²³

V. Stabilization, Deflation and the Gold Standard Resumption (1890-1899)

In August 1890, Carlos Pellegrini replaced Juarez Celman as president, in the middle of a chaotic economic and political situation. On the economic front, the domestic financial system was tumbling down, the inflation rate was peaking to unprecedented levels and the provinces and the national government had virtually defaulted on their public debt obligations. President Pellegrini tried to temporize and made an important concession to the moderate wing of the up coming political party, the Civic Union by appointing two of its most prominent affiliates to crucial positions in the Cabinet: Vicente Fidel Lopez as finance minister and Victorino de la Plaza as the middle-men for the renegotiation of the external debt payments.²⁴

The political class agreed in the diagnosis of an economy disrupted by inflation and a complete disarray in the public finances but their agreements stopped just there. There was no unanimous consensus among congressmen and policymakers about the course of economic actions to be taken to overcome the ongoing banking crisis and to arrange the foreign debt situation.²⁵

This is an important starting point to understand the stabilization and disinflation experience following the Baring crisis. These political constraints had left impregnate their mark in the design of the macroeconomic measures of the early nineties.

²³ The 1885 deficit of 20.1 million of paper pesos is deflated by .97 while the 1891 deficit of 52.2 million is deflated by 2.53 (Annual Price Level figures from GDP (1988) as in Table 37 Appendix D).

²⁴ H.S. Ferns, Gran Bretana y Argentina en el siglo XIX (Buenos Aires: Solar/Hachette, 1979), p.454.

²⁵ The most compelling sentence that senses the political climate of the moment is by President Pellegrini in his 1891 speech to the Congress in the opening session May 25th of 1891: "... There is a great anarchy in opinion about the means to confront the difficulties in which we are immerse and this anarchy does not surprise me... ". " Mensaje de Carlos Pellegrini al abrir las sesiones del Congreso en mayo 1891" in H. Mabragana, Los Mensajes (Buenos Aires, ?, ?), Vol V.

The Institutional Fiscal and Monetary
Changes to Stabilize the Economy

Some timid elements to stabilize in gold pesos the fiscal revenues collectible in paper pesos were already under way during the Juarez Celman government. In 1889, the Congress voted an additional import tax of 15 per cent to alleviate the fall in the fiscal revenues because of the paper peso depreciation. In that same year, fiscal revenues rebounded by 16 percent, to stumble by 30.1 percent in 1890.²⁶

In 1890, a new custom law established that half of the trade duties should be paid with gold pesos and the rest in paper pesos at par. In January 1891, the government finally made a definite fiscal move and the law was supplemented with the following tax measures: (a) custom duties were to be paid in full with gold pesos or its equivalent in paper pesos at the prevailing paper-gold market rate; (b) an ad-valorem tax of 4 percent on exports of skins, wool and meat were to be established temporarily and (c) taxes on internal consumption were to be introduced for the first time at a federal level.

This effort to rectify the fiscal regime was implemented too late; during 1891, the value of imports was reduced to a half of what they have been the year before and fiscal receipts fell again by 31 percent.²⁷ With import duties representing 65 percent of the fiscal revenues, the yield of tax receipts in gold pesos could not improve in the immediate short-run. A full adjustment towards a balanced budget as a necessary pre-condition to eliminate the inflation tax was already an unfeasible task; in 1891 it would have required to cut expenditures net of interest by 62 percent.

Moreover, the budget would worsen because the value in paper pesos of the external debt service increased with further depreciations, making fiscal expenditures to be partially indexed to the gold premium. In 1890, the debt service amounted to 11.4 million gold pesos representing a fourth of the fiscal expenditures; in 1891, service payments were 11.6 million but its share of expenditures rose to 34 percent. With approximately the same burden of debt service payments in gold pesos for those two years and, if every other expenses would have remained constant in paper pesos, the 1891 level of expenditures would have increased by 11.2 percent exclusively on account of the paper peso depreciation.

After all this is what happened in 1891: expenditures increased by 10.9 percent because little fiscal adjustment could be accomplished.

²⁶ see MH 1890, in Sources of Revenue under heading: Adicional de importacion 15 % , p.119; see A. Martinez (1898) under Droit additionnel a l'importation, p.522.

²⁷ For value of total imports see GDP (1988) Table 37 Appendix D.

The new administration also attempted changes in the monetary regime to suspend the decentralized emissions of paper notes. In October 1890, the Executive Power and the Congress connived to settle the currency situation and created for that purpose the Caja de Conversion (Conversion Office), a body that would take over the note issue privileges of the guaranteed banks and "effect the gradual conversion and amortization of the legal tender currency".²⁸

The Article 11 of the Conversion Office chart stated that the government would not only aim at the stability of the paper money but even more, the paper peso should be rolled back to a par value with gold: "Once the amount of paper notes amortized would equal the amount of paper notes issued by the Banco Nacional, or when, the market value of the fiduciary currency would be at par or near to par, the Board of Directors of the Bureau of Exchange, in agreement with the Executive, shall exchange paper notes for gold, or viceversa, with the aim of fixing the value of the fiduciary currency...".²⁹

There was the question of where the resources were to come to achieve such an ambitious deflationary plan and here, of course, the proposals were far less clear-cut. To proceed with the paper currency redemption, the project contemplated the creation of a Conversion Fund composed by the metallic reserves of the guaranteed banks (almost exhausted at the moment the law was passed), by the public funds issued to guarantee the paper notes and by "all sums which, in virtue of other legislative enactments, might be destined to the conversion of bank paper, and especially those proceeding from economies made out of the general budgets".³⁰

Needless to say that despite all these legal and institutional "gymnastics" to redress the currency situation, the 1890 short run economic results were just the opposite to the intended ones. The continued depreciation of the paper peso was the market response to a government that, by printing money to acquire real resources, turned the back on its own monetary pledge; simply put, in 1890 the fiscal reforms did not square with an institutional arrangement that called for a swift control of the monetary base.

To take the heat off the foreign exchange market, the government attempted to rollover the service of the external debt with a moratorium for one year under the form of a funding loan of four million pounds but the

²⁸ F. Sabsay, La Sociedad Argentina: Argentina documental (1806-1912), "Caja de Conversion - Ley 2741 , 7 de Octubre de 1890", Articulo 1, p.615-616.

²⁹ F. Sabsay, p. 615-616.

³⁰ Albert B. Martinez and Maurice Lewandowski, The Argentine in the Twentieth Century (London: T. Fisher Unwin, 1911), p.343.

negotiations were interrupted when, in November 1890, the Baring Brothers failed.³¹

On January 23, 1891, the Argentine middle-men Victorino de la Plaza finally signed a contract with a syndicate of merchant banks, coordinated by the Bank of England, who agreed to grant the Treasury a 6 percent funding loan of fifteen million pound to cover in full the service of the external debt to come due over the next three years. As usual, the external loan was granted conditional on several provisions, the most urticating one related with the conduct of the domestic monetary policy. While the Conversion Office included currency contraction as a matter of a "desired" policy to be achieved at some point in time, the article 16 of the funding loan agreement set a precise redemption timetable: the Conversion Office would have to retire each year, for three consecutive years, the amount of fifteen million pesos of bank notes from circulation.³²

In April 1891, with a tighter monetary policy in sight, the government decided to suspend the convertibility of deposits into currency of the official banks which were suffering a severe drain of deposits, and announced that substantial reforms in the banking system would be performed.

To proceed with the banking reform, the Congress created in October 1891, the Banco de la Nacion Argentina as a "semi-public" institution with a capital of fifty million pesos, the shares to be offered for public subscription. But investors - if there were at all - regarded the project with apprehension and abstained from buying any shares. Ultimately, the government "backed" the capital with fictitious claims converting the bank into a state institution. Initially, there were reasonable fears in the foreign exchange market that the banking project would degenerate as in the previous experiences, but there were a couple of clauses intended to prevent such an outcome.³³

First of all, in an effort to separate the commercial banking functions from the government finances, the project put severe limits on the amount of credit that could be extended to the National Treasury. The Banco de la Nacion "may not lend money to any public power or municipality other than the

³¹ J. Williams (1920), op.cit., p.117-118.

³² MH, 1891, Anexo 15, "Contrato General para la emision de una suma de pesos 75 000 000", p.43-60.

³³ To flavor the market climate and reaction to the project it is worth to report here the quotations in the weekly magazine *The Economist*: "...The new bank of the Argentine Nation will open its doors to the public on the 9th (December). Its 50 millions of inconvertible notes will rapidly get into circulation, as the provision for issuing them in series of ten millions is merely a blind, and the inevitable economic result of a battle between coin and inconvertible and depreciated paper currency must issue. The imported gold will be driven away faster than it came, and our currency will be in a worse plight than ever...", 28 November 1891, p. 1523.

National Government, whose credit with the Bank must not exceed two million pesos (Article 12) and the bank "would not use deposits as the funding for public loans" (Article 14).

Second, minimum reserve requirements were imposed to prevent money creation associated with an excessive credit expansion. Originally, a minimum of 25 percent of its total deposits were to be maintained in the vaults of the bank and in June 1892, a decree established that an additional guaranteed fund equivalent to a 75 percent of the private deposits were to be deposited in the Conversion Office.³⁴

In short, by mid 1891, the package of measures contemplated all the dismantled fiscal and monetary fronts: there had been a tax reform, a draconian adjustment in the banking regime with the liquidation of the Banco Nacional and the Banco de la Provincia de Buenos Aires, the establishment of an independent body to control the monetary base and a renegotiation of the external government debt.

Deficits, Money, Prices and The Level of Business Activity During The Disinflation Years

The figures in Table 7 show that the state of public finances improved markedly from 1892 to 1894. The government moved towards a balanced fiscal budget and even a small budget surplus was obtained in 1893. Increased taxation and a sharp improvement in the gold value of fiscal revenues were much more important for fiscal adjustment than cuts in the level of fiscal expenditures. Yet the goal to separate the control of the amount of currency from the state of public finances was again threatened in 1895-1898 when the imminent possibility of a war with the neighboring Republic of Chile (consequence of a border and territorial dispute in southern Patagonia) produced a spectacular outburst in military expenditures. However, some confidence in the capital markets was brought back and the 1895-1898 resurgent budget deficits were entirely financed with internal debt and short-term foreign loans and not with paper money creation.

³⁴ For the Chart of the Banco de la Nacion from E. Tornquist, The Economic Development of the Argentine Republic in the last fifty years (Buenos Aires, Compania Sudamericana de billetes, 1919), p. 311-312. For the decree of June 1892 from Banco de la Nacion Argentina, B.A., Memorias y balance general del ejercicio 1891-1892, p.3.

TABLE 7
KEY FISCAL INDICATORS 1891-1899

YEAR	CONSUMP	FISCAL	FISCAL	FISCAL	FISCAL	CORRECTED	PRIMARY
	TAX YIELD IN MM PAPER \$\$ (1)	RECEIPTS IN MM GOLD \$\$ (2)	RECEIPTS (3)	EXPEND. (4)	DEFICIT (5)	FISCAL DEFICIT (6)	DEFICIT (7)
	In Million of Paper Pesos						
1891	2.6	20.2	75.5	127.7	52.2	52.2	8.8
1892	4.1	33.7	110.9	128.0	17.1	17.1	-15.7
1893	6.8	38.5	124.7	122.5	-2.2	-2.2	-30.7
1894	7.0	34.0	121.7	142.9	21.2	4.4	-35.7
1895	7.6	38.2	131.4	165.8	34.4	19.8	-16.7
1896	13.6	43.6	129.1	179.1	50.0	41.2	4.6
1897	20.7	51.5	149.9	178.3	28.4	15.7	-17.2
1898	21.2	53.2	136.7	206.4	69.7	69.7	38.8
1899	34.3	72.9	164.0	173.0	9.0	9.3	-48.9

Sources and Notes:

Columns 1 through 7 from GDP (1988) Tables 34, 35 and 36 in Appendix D.

For the period 1894-1897, the service of the debt under the Romero agreement was estimated as follows. A 6 percent in concept of interest plus amortization was applied to the outstanding stock of internal debt denominated in paper pesos; a 4 and a half interest applied on the internal debt denominated in hard currency not including gold bonds related with the law of guaranteed banks. The external debt service was 1.6 million British pound under the agreement plus 1 million gold pesos in payments for the performing external bonds not included in the agreement. This adjustment explains the difference between columns 5 and 6.

The figures in the first column of Table 8 indicate that the monetary base increased by 7.7 percent in 1892 and by 8.9 percent in 1893 but fell steadily from 1893 to 1899 by an average (compounded rate) of 0.9 percent per year.

The increased monetary base did not augment the liquidity in the money market because the Banco de la Nacion's legal reserve requirements and the private banks desires to build up reserves after the crash had an offsetting effect on the money supply through the money multiplier (Table 9). The nominal money supply increased secularly during 1892-1899 by an average annual compounded growth rate of 2.6 percent, a modest increase by comparison to the 21.1 percent experienced during the 1880s boom years. The income velocity index, measured by the ratio of the real output index to the money stock at 1886 prices, displayed a somewhat erratic behaviour during all the deflationary period. The intra period evidence suggest, however, that three distinct patterns can be observed; first, a period of profound decline in the money velocity through 1893 and, after an upward adjustment in 1894 and 1895, a time of almost constant velocity (with a slight declining trend by the end of the period). Except for 1892, the velocity's behaviour is replicated by an alternative measure presented in Column (8) of Table 8 defined as the ratio of the semi-sum of the gold peso value of exports and imports -used as a proxy for the business activity instead of the real output index- to the money supply measured in gold pesos. The divergent movement for 1892 is explained

by the spectacular recovery in the level of imports from a value of 67 million gold pesos in 1891 to 91 million in 1892.

With a tight monetary base, a calm situation in the domestic financial system and resumed economic growth, the income velocity of money could only remain constant or even decline with a protracted deflation in the paper-gold exchange rate and in domestic prices.

TABLE 8
MONETARY BASE, MONEY SUPPLY, PRICE LEVEL, EXCHANGE RATE
MONEY VELOCITY AND THE LEVEL OF ACTIVITY, 1891-1899

YEAR	Monetary	Money	Price	Paper-	Real	Money	Semi-sum	Money
	Base	Supply	Level	Gold	Output	Velocity	Exports	Velocity
	in MM Paper	Pesos	(1886=100)	Exchange	in MM	Var 1	Imports	Var 2
	(1)	(2)	(3)	Rate	1950 pesos	(6)	in MM Gold	(1891=100)
				(4)	(5)		Pesos	(8)
							(7)	
1891	261.4	417.3	252.7	3.74	6535	3.08	89.1	100.0
1892	281.6	387.0	201.3	3.29	7113	2.88	107.9	114.8
1893	306.7	415.4	188.8	3.24	7466	2.64	112.7	110.1
1894	298.7	419.3	184.8	3.58	8040	2.76	118.8	127.0
1895	296.7	435.4	220.5	3.44	8093	3.19	134.5	133.1
1896	295.2	437.0	187.2	2.96	8768	2.93	143.6	121.8
1897	292.7	439.9	194.1	2.91	8198	2.82	123.6	103.0
1898	292.1	442.6	187.0	2.57	8888	2.93	158.8	115.4
1899	291.3	463.1	161.1	2.25	9666	2.62	183.6	111.7

Notes and Sources by Column:

(1)-(6) as in GDP (1988) Table 37, Appendix D.

(7) the value of exports and imports are as in column 8 and column 10 of Table 37.

(8) the velocity variant 2 is defined as the semi-sum of exports and imports multiplied by the paper-gold exchange rate and divided by the money supply.

The effect of the change in the monetary regime (reflected in the valorization of the paper peso) was reinforced by the worldwide macroeconomic situation. In 1892, with expectations stabilized and a swift recovery in the level of business activity, enhanced by the stringent situation in the international agricultural markets, there was an increase in the quantity of money demanded that was ultimately accommodated by a 20.6 percent decline in domestic prices.

But this was a brief respite and after a period of relative price and financial stability from 1885 to 1891, international finance and trade difficulties followed the Baring crisis. The 1892-1894 years marked the bottom of the so-called 1870-1895 Great Depression. Gold world prices of goods and services declined at rates never experienced before and an endless number of financial panics -the most important being the 1893 U.S. banking panic triggered by fears that the United States would soon leave the gold standard regime under pressure from the silver interests- depressed the international movement of goods, capital and labor.³⁵

³⁵ M. Friedman & A. Schwartz, A Monetary History of The United States, 1867-1960 (Princeton: Princeton University Press, 1963), Chapter 3: Silver Politics and the Secular Decline in Prices, 1879-97, p.89-134.

TABLE 9
KEY MONETARY COEFFICIENTS 1891-1899

END-OF YEAR	CURRENCY RATIO (1)	RESERVE RATIO (2)	BANCO NACION RESERVE (3)	OTHER BANKS RESERVE (4)	MONEY MULTIPLIER (5)
1891	0.50	0.26	0.03	0.36	1.59
1892	0.49	0.47	0.58	0.45	1.37
1893	0.45	0.53	0.89	0.42	1.35
1894	0.41	0.51	0.84	0.41	1.40
1895	0.38	0.48	0.79	0.40	1.47
1896	0.38	0.48	0.66	0.43	1.48
1897	0.38	0.46	0.66	0.41	1.50
1898	0.36	0.47	0.70	0.40	1.52
1899	0.35	0.43	0.62	0.38	1.59

Notes and Sources: GDP (1988)

(1)-(2) from columns 1 and 2 Table 31, Appendix C.

(3) from column 1 Table 28, Appendix C.

(4) figures underlying Tables 26 through 29, Appendix C.

(5) from column 3, Table 31 Appendix C.

The world deflationary situation was transmitted to the Argentine economy by means of the commodity arbitrage and, from 1891 to 1894, domestic prices fell at an average annual rate of 9.3 percent while the exchange rate appreciated on average by only 3.1 percent.

The international macroeconomic outlook radically changed in 1895 when the monetary liquidity in the central gold standard countries rose as a consequence of the substantial augmentation in the world gold stock, caused by the combined effect of new gold mine discoveries and technological progress in the process of extracting gold from ore. From then on, Argentina imported the external inflation: from 1894 to 1899 domestic prices declined by 12.8 percent in spite of a cumulative paper peso appreciation of 37.1 percent.

In sum, the monetary authorities succeeded to stabilize the monetary base at some fixed quantity and let the price of the paper peso in terms of gold be determined by market forces. As a result of this stiff monetary growth rule and the ensued deflation of domestic prices, the theme of an eventual return to gold that had been discussed for some years took a definite form in 1898 and was hotly debated in the Congress. The fluctuations in the value of the paper peso were widely viewed as a disturbing factor for economic planning and the design of long-term contracts. The political economy debate centered on whether conversion should be pursued at the then market exchange rates, or if a gold standard regime should be restored at the original 1881 parity.

The urban sectors and commercial interests favored the orthodox view to convert at par while the producers of agricultural exportables and domestic manufactures favored conversion at a high paper-gold exchange rate because,

they argued, further deflation would continue to squeeze the profitability of their industries.³⁶

The figures of the Column (1) in Table 10 show the Argentine export profitability index measured by the paper-gold exchange rate, multiplied by the ratio of the external price of exports to the rural monetary wages. Rural monetary wages are used as a proxy for the evolution of the export sector variable production costs. Thus, a fall (rise) in the index indicates that the export profit margin is reduced (augmented). The figures in Columns (2) and (3) suggest that the 1892-1894 world depression was the main cause for the profitability index to decline. In the last half of the decade, the trend of the profitability index is not clear: monetary forces made the peso to appreciate but this negative effect on profits was neutralized by a swift recuperation in the agricultural world prices.

In Column (4) an index, constructed by R. Cortes Conde (1979), measures the urban monetary wages deflated by food prices; in Column (5) the urban wages are deflated by the constructed wholesale prices. It is apparent that urban real wages steadily rose after 1895 but here, again, real forces that significantly improved the labor marginal productivity may have played an important role in addition to the monetary deflationary forces. A rise in the relative price of the wage services and a relative fall in the export profitability may just reflect the improved economic conditions of this newly settled country. It is rather doubtful whether a mere change in the nominal exchange rate regime would have a long lasting effect on the equilibrium values of these real variables.

A more compelling argument against the maintenance of the deflationary monetary policies is the real interest rate problem. The behaviour in interest rates is a fact that, curiously enough, has received no attention at all in the previous literature. The nominal interest rate, proxied by the yield of a long term internal bond and shown in Table 10, had a definite declining trend over the period. Meanwhile, domestic prices were falling more rapidly producing a regime of very high real interest rates. The figures show that positive real interest rates were sustained and got increasingly higher by 1898 and 1899. In this respect, the claim to shift towards a more expansionary monetary policy (that is, resumption at the prevailing paper gold exchange rates) appeared as a more appropriate course of action.

³⁶ H.J. Cuccorese, Historia Economica Financiera Argentina (1862-1930), (Buenos Aires, El Ateneo, 1966), p.73-82.

TABLE 10
 INTEREST RATES, PRICES, EXPORT PROFITABILITY
 AND URBAN REAL WAGES 1891-1899

YEAR	Export Profit Index (1891=100)	Percent Change Terms of Trade	Percent Change U.K. Prices	Food Prices	Urban Wages deflated by Wholesale Prices	Yield Intern Bond	Domestic Rate of Inflation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1891	100.0	19.7	3.5	100.0	100.0	10.28	56.2
1892	83.5	-8.6	-5.4	116.9	128.6	9.15	-20.6
1893	n.a.	-7.0	-1.7	114.5	121.4	8.73	-6.0
1894	77.1	-11.1	-5.9	108.4	139.2	8.94	-2.1
1895	146.8	52.2	-3.0	97.6	119.6	8.28	19.5
1896	72.9	-3.3	-2.8	104.8	164.3	7.74	-15.4
1897	76.1	10.0	2.2	147.0	196.4	7.78	3.7
1898	88.5	12.3	3.5	201.2	230.3	7.87	-3.6
1899	67.9	-9.0	-1.1	238.5	262.5	7.89	-13.9

Notes and Sources by Column: Data Base from GDP (1988).

(1) the export profitability index is defined as the implicit international price of exports multiplied by the paper-gold exchange rate divided by the nominal rural wage. The nominal rural wage is from Cortes Conde (1979), p.228.

(2) Argentine terms of trade from column 5 Table 37.

(3) U.K. Board of Trade price index from Abstract of British Historical Statistics (1971), p.476.

(4)-(5) nominal urban wages and prices of food from Cortes Conde (1979), p.230 and 226 respectively. Wholesale prices as in column 4 Table 37.

(6) the yield of an internal bond from column 2 Table 33.

(7) the rate of change of the wholesale price index.

In discharge of the tight monetary rule implemented after 1893 and prevailing until the end of the century, one has to ask what were then, the alternative policy choices open to the monetary authorities?

The first policy choice may have been to seek conversion in 1893 by means of devaluating the paper peso as suggested by Pellegrini and Romero. Yet, to implement convertibility, the government needed a substantial external loan to place the outstanding paper currency on a gold cover. It is hard to believe that such a loan, that would put specie in hands of the Treasury, could be obtained from the international financial centers after the catastrophic experience of the national banking system and especially during those years of severe downturn in the international business cycle.³⁷

A second option may have been, still in a regime of inconvertibility, to choose a higher monetary growth rule that would better accommodate the needs of an expanding economy to avoid the protracted deflation. By present monetary theory standards, this course of action would have represented a conscious optimal monetary policy rule in the sense of providing a stable price environment, if only: (a) the government had the relevant information

³⁷ The 1891 Funding Loan was conceived to avoid a major shake-up in the London stock market and not as a mean to replenish the specie reserves of the Argentine Treasury.

and the technical skills to know at which rate money had to be injected to the economy and (b) the economic agents would correctly read the government's intentions to simply avoid deflation and would not perceive the increased supply of currency as a signal of a new inflationary scenario. Again, a conscious design of such a monetary policy under a flexible exchange rate regime is unthinkable in a period dominated by conventional views about the design of monetary policies linked to the gold standard and in which the economic doctrines in vogue mainly prescribed return to gold at par.

VI. The Adjustment Mechanism during the Gold-Exchange Standard Years (1899-1913)

The 1900-1913 gold standard years are noteworthy for a sharp growth in the Argentine real output and the mild inflation of domestic prices, a reflection of the swift increase in the world's money supply during the so-called "Golden Age" of 1902-1912 (see Table 11). For the student of Argentine monetary history, the domestic gold standard period is relatively uneventful in the sense that wide fluctuations in the stock of inconvertible notes and in the paper-gold exchange rate were removed as independent sources of economic disturbances.

Since November 1899 and until the outbreak of the First World War, the Conversion Office stood ready to automatically exchange paper pesos for gold and, viceversa, on demand and at a fixed exchange rate of 2.27 paper pesos for each gold peso. The figures in Columns (2) and (3) of the Table 11 show that the automatic issue mechanism was strictly followed by the monetary authorities: in all years, the increase in the monetary base was a 100 percent backed by the inflow of gold reserves to the Conversion Office. By adopting the gold exchange rule, the Conversion Office surrendered the control of the quantity of money which became endogenously determined in the money market. A crucial assumption embodied in the idea that, under a gold exchange standard regime, gold inflows are a vehicle to restore the equilibrium in the money market by means of an adjustment in the money supply -rather than having an independent influence on other macroeconomic variables-, is that prices and interest rates are internationally determined on world markets.

Results typical of the tests of purchasing power parity basically have confirmed the idea that Argentina was reasonably well integrated into the international market for commodities during the international gold standard.

TABLE 11

MONEY, DOMESTIC PRODUCT, MONETIZATION AND THE FISCAL BUDGET 1900-13

Year Deficit/	Monetary	Conversion	Money	Money	Domestic	Gross	Money	Fiscal	Fiscal
	Base	Office	Gold	Supply	Price	Domestic	Product	Velocity	Deficit/
		Reserves			Multiplier	Level		Receipts	GDP
	in MM	Paper pesos	(3)	(4)	1886=100	in MM		in percentage	
(1)	(2)				(5)	(6)	(7)	(8)	(9)
1900	295	0.0	481.6	1.63	182	9430	2.78	5.1	0.6
1901	296	0.0	472.3	1.60	159	10220	2.68	5.6	0.7
1902	296	0.0	498.0	1.68	175	10020	2.74	27.7	3.2
1903	380	86.7	640.3	1.69	165	11450	2.30	3.8	0.4
1904	407	114.2	760.5	1.87	169	12670	2.19	3.5	0.4
1905	498	204.8	943.5	1.89	184	14350	2.18	0.0	0.0
1906	526	233.1	972.1	1.85	195	15070	2.36	2.0	0.2
1907	531	238.6	981.4	1.85	201	15390	2.46	1.0	0.1
1908	581	287.6	1121.3	1.93	193	16900	2.27	-0.8	-0.1
1909	685	391.6	1390.0	2.03	210	17730	2.09	26.5	2.5
1910	715	422.2	1580.2	2.21	227	19020	2.13	33.9	3.0
1911	722	429.0	1634.5	2.26	226	19370	2.09	33.9	3.1
1912	799	506.0	1774.7	2.22	231	20950	2.13	17.6	1.6
1913	823	529.4	1673.4	2.03	232	21160	2.29	16.2	1.5

Notes and Sources: GDP (1988).

(1) monetary base as in column 1 Table 37, Appendix D.

(2) Conversion Office gold reserves are the figures as in column 7 Table 32 converted to paper pesos by the paper-gold peso exchange rate.

(3) money supply as in column 2 Table 37, Appendix D.

(4) money multiplier as in column 3 Table 31, Appendix C.

(5), (6), (7) as in columns 4, 6 and 7 respectively Table 37, Appendix D.

(8) fiscal deficit (as in column 7 Table 36) divided by fiscal revenues (as in column 5 Table 36).

(9) fiscal deficit deflated by wholesale price index divided by the Gross Internal Product.

Regressions for 1884 to 1913 of the Argentine price index against the paper-gold exchange rate and the United Kingdom prices are (all variables in logarithms and standard errors in parentheses):

$$p(t) = -0.59 + 0.95.e(t) + 1.08.p^*(t)$$

(1.64) (0.09) (0.34)

$$R\text{-Square} = 0.95 \quad D.W. = 2.06$$

$$p(t) = -0.03 + 0.95.\ln[E(t).P^*(t)]$$

(0.49) (0.09)

$$R\text{-Square} = 0.94 \quad D.W. = 2.10$$

In addition to the arbitrage in the international commodity markets, recall that Argentina became a substantial long-term international borrower in the second half of the nineteenth century. Figure 5 which plots the Argentine-European yield differential on an annual basis shows that the required yield to hold an external Argentine bond was always higher than the yield of a long-term European bond. For the whole 1884-1913 period, the Argentine long-rate averaged 2.8 percentage points higher than the United

Kingdom and 1.5 percentage points higher than Italy. However, the chart does show remarkable changes in the magnitude and evolution of the spread for the various subperiods of analysis. For example, whenever financial markets perceived that the Argentine government was not following prudent fiscal and monetary measures, the London stock exchange market rated Argentine debt instruments as poor risks, despite the explicit government guarantee. From 1889 to 1894, the abrupt rise in the risk spread was essentially connected with the Baring crash; the yield "surcharge" for the Argentine external bonds (that were not in default) amounted to 4 to 5 points in the London market. Since 1895, fears that Argentina would repudiate its external debt commitments vanished and the excess of the Argentine long yield rate over the European rates abruptly declined until 1900, reaching a steady low plateau during the gold standard years (with, however, a declining trend relative to the U.K. consol).

Figure 5 confirms the fact that the abrupt fall in the spread level that occurred from 1895 to 1899 was entirely dominated by movements in the yields of the Argentine external bonds. After 1902, there is a clear convergence of the domestic bond yield to the external interest rate (external bond yield). When the exchange rate and the default government borrowing risk were minimized, capital markets were again closely linked; the Argentine long-term interest rate was almost equal to the long-term rate of the international capital markets.

If one accepts this preliminary evidence in favor of goods and capital markets arbitrage, a simple test can be conducted to analyze the operation of the gold-exchange standard in Argentina for the years 1904-1913. The experiment consists in comparing the actual contribution of the inflow of gold to changes in the domestic money stock with the residuals of the change in the demand for money minus the money stock produced by domestic sources.

The postulated money demand function asserts that the demand for money depends on the real income and on the level of interest rates. The result for 1900-1913 of regressing the logarithm of the real money stock on the logarithm of the real income and the logarithm of one plus the long-run interest rate is (standard errors are in parentheses):

$$(1) \quad \ln(M/P) = -0.32 + 1.00 \cdot \ln(Y) - 8.86 \cdot \ln(1+i)$$

$$(1.62) \quad (0.14) \quad (4.12)$$

$$R\text{-Square} = 0.98 \quad \text{Durbin-Watson} = 1.58$$

For the 1902-1913 period, a short domestic banking rate is available; the reestimated money demand using the short rate is :

$$(2) \quad \ln(M/P) = -3.72 + 1.30 \cdot \ln(Y) - 5.34 \cdot \ln(1+i)$$

$$(2.27) \quad (0.05) \quad (1.23)$$

$$R\text{-Square} = 0.99 \quad \text{Durbin-Watson} = 1.66$$

One might compare the actual effect of the specie reserve flows on the domestic money stock with the effect predicted by the money demands as in (1) and (2).³⁸ The correlations between the predicted and the actual reserve flows seem to lend support to the monetary theory of the balance of payments. That is, the demand for money in excess of the supply provided by domestic sources is mainly satisfied by adjustments in the volume of gold reserves, a reflection of the balance of payments situation. The second equation performs much better in predicting the path of the foreign sources of money growth: a regression coefficient of the actual on the predicted flows was 0.81 with the use of that equation and 0.64 with equation (1).

VII. From World War I to the Great Depression: Looking for a Monetary Standard (1914-1930).

In August 9th 1914, the full convertibility of the peso was suspended and the government prevented specie exports out of the Conversion Office. Since then and until 1927, the Conversion Office worked in an asymmetric fashion: money base augmented automatically when specie reserves increased but gold extractions were not allowed leaving exogenous the quantity of money. Table 12 shows that monetary base grew by more than 9 percent per year between 1914 and 1919, and by almost 16 percent in 1920. The money growth of the early twenties was the result of an extraordinary increase in the external price of exports³⁹ which improved the trade balance combined with capital inflows from Europe. In spite of the money growth, domestic output growth was below its historical level averaging 3 percent per year between 1914 and 1920.

Argentina imported the inflationary pressures of the immediate postwar years: for the 1914-1920 period, wholesale prices went up by 164 percent in the United Kingdom, by 91.6 percent in the USA and by 80 percent in Argentina.⁴⁰ In column (5) of the Table 12 we show the equivalent exchange

³⁸ The change in the foreign sources of the money supply is simply $\frac{S(t-1)}{MB(t-1)} \cdot \frac{dS(t)}{S(t-1)}$ where S is the amount of gold reserves at the Conversion Office, MB is the monetary base and the operator "d" represents the absolute rate of change. The predicted change in the foreign sources is defined as the change in the nominal demand for money less the change in the domestic sources of the money supply defined as $\frac{M(t)}{M(t-1)} - \frac{S(t-1)}{MB(t-1)} \cdot \frac{dS(t)}{S(t-1)}$ where M is the stock of money. The methodology closely follows D. McCloskey and R. Zecher, "How the Gold Standard Worked, 1880-1913" in The Monetary Approach to the Balance of Payments by J. Frenkel and H. Johnson, (London, Allen & Unwin, 1976), p. 357-385. For the Argentine results see GDP (1988) p. 122-131.

³⁹ In 1914-1920 external export prices increased by 86 percent. From Estadísticas de la evolución argentina (1986), p. 126.

⁴⁰ For UK and USA, figures from Milton Friedman and Anna J. Schwartz, Monetary Trends in the United States and the United Kingdom (1982), p. 120-138.

rate of paper pesos in terms of gold pesos. We defined an equivalent rate because when convertibility was suspended the gold peso was still quoted officially at 2.27 paper pesos. Therefore, the equivalent exchange rate is the paper peso valuation of gold through arbitrage with the USA dollar.⁴¹ The 1914 rediscount law was designed to insulate the money market from negative shocks arising from the balance of payments situation. The state-owned Banco de la Nación was permitted to rediscount commercial papers presented by other banks which it could, in turn, deposit (with the consent of the Executive Power) at the Caja de Conversión in exchange for money base, as long as the gold reserves backing currency never fell below 40 percent of circulation. A quick comparison of absolute changes in the money base stock and in the stock of gold reserves shows that, in spite of this rediscounting device, the "asymmetric" rules of the game were respected.

The Argentine "Belle Epoque" vanished with the collapse of the United Kingdom as the world financial and monetary center in 1921. In 1920-21, the British pound lost 25 percent of its value against the US dollar. At the same time, Argentine monetary authorities asked why the paper-peso, which had an 80 percent gold-backing suffered in two years a 40 percent devaluation against the US dollar. The answer to that difficult question may rely on whether the Argentine monetary system was characteristic of a gold-exchange standard regime or whether it was merely a unilaterally pegged regime to the British pound.

Carlos Diaz Alejandro (1970) advanced the idea that Argentina suffered before the Great Depression from the so-called "trilateral" trade problem: the country experienced sizeable current account surpluses with the ailing European nations but chronic deficits with the rising economic power, the United States. In 1927, Argentina resumed convertibility but the anticipated bonanza was short-lived. In 1928 money base increased by only 2 percent; in 1929 the external drain diminished the base by more than 11.3 percent and the authorities decided to break away from the Gold-Exchange Standard.

While Argentina was one of the first countries that broke away from the Gold-Exchange Standard at the beginning of the depression, it followed a much more conservative attitude towards the repayment of its international debt. The country was the only major Latin American debtor to honor the service on its external debt, only that, in 1931, this was possible by using up almost 60 percent of the gold reserves at the Conversion Office. Gold backing of the currency diminished from 80 percent in 1928 to 45 percent in 1931 and, immediately, the paper-peso suffered a 65 percent depreciation relative to the US dollar. Once more, Argentina was in a fiduciary system awaiting for a new challenging monetary experiment: Central Banking.

⁴¹ See Harold Edwin Peters, The Foreign Debt of the Argentine Republic, the John Hopkins Press, 1934, Baltimore, p.55.

TABLE 12
MONEY, PRICES AND INTEREST RATES
(1914-1930)

YEAR	MONETARY BASE	GOLD RESERVES	WHOLESALE PRICES	REAL MONEY	EQUIVALENT EXCHANGE RATE	GDP GROWTH RATE	INTEREST RATE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1914	804	225	100.8	1618	2.28	-10.4	7.94
1915	988	305	107.5	1723	2.30	0.5	7.59
1916	1013	317	122.5	1666	2.27	-2.9	7.11
1917	1013	317	152.0	1554	2.20	-8.1	6.84
1918	1154	379	166.0	1904	2.16	18.3	6.33
1919	1177	389	171.0	1991	2.22	3.7	7.20
1920	1363	471	180.0	2114	2.45	7.3	7.79
1921	1363	471	143.0	2550	3.03	2.6	7.72
1922	1363	471	129.0	2955	2.67	8.0	7.70
1923	1363	471	135.0	2930	2.80	11.0	6.50
1924	1320	452	144.0	2787	2.81	7.8	6.49
1925	1320	452	146.6	2782	2.39	-0.4	7.40
1926	1320	452	131.6	3153	2.37	4.8	6.90
1927	1378	478	129.3	3390	2.27	7.1	6.90
1928	1406	490	130.1	3708	2.27	6.2	6.30
1929	1247	420	126.3	3770	2.30	4.6	6.90
1930	1260	426	121.0	3939	2.64	-4.1	7.20

Notes and Sources:

(1) and (2) Figures in millions of paper-pesos and millions of gold-pesos respectively from Anuario Geográfico Argentino (1914) p. 420-430.

(3) Base Year 1913=100. Figures from Estadísticas de la Evolución Económica Argentina (1986). Document prepared by Roberto A. Domenech in Estudios Económicos. Córdoba. n.p.

(4) Real Money is Money Supply deflated by the Wholesale Price Index. Figures from Sources as in col. (1) and col. (3).

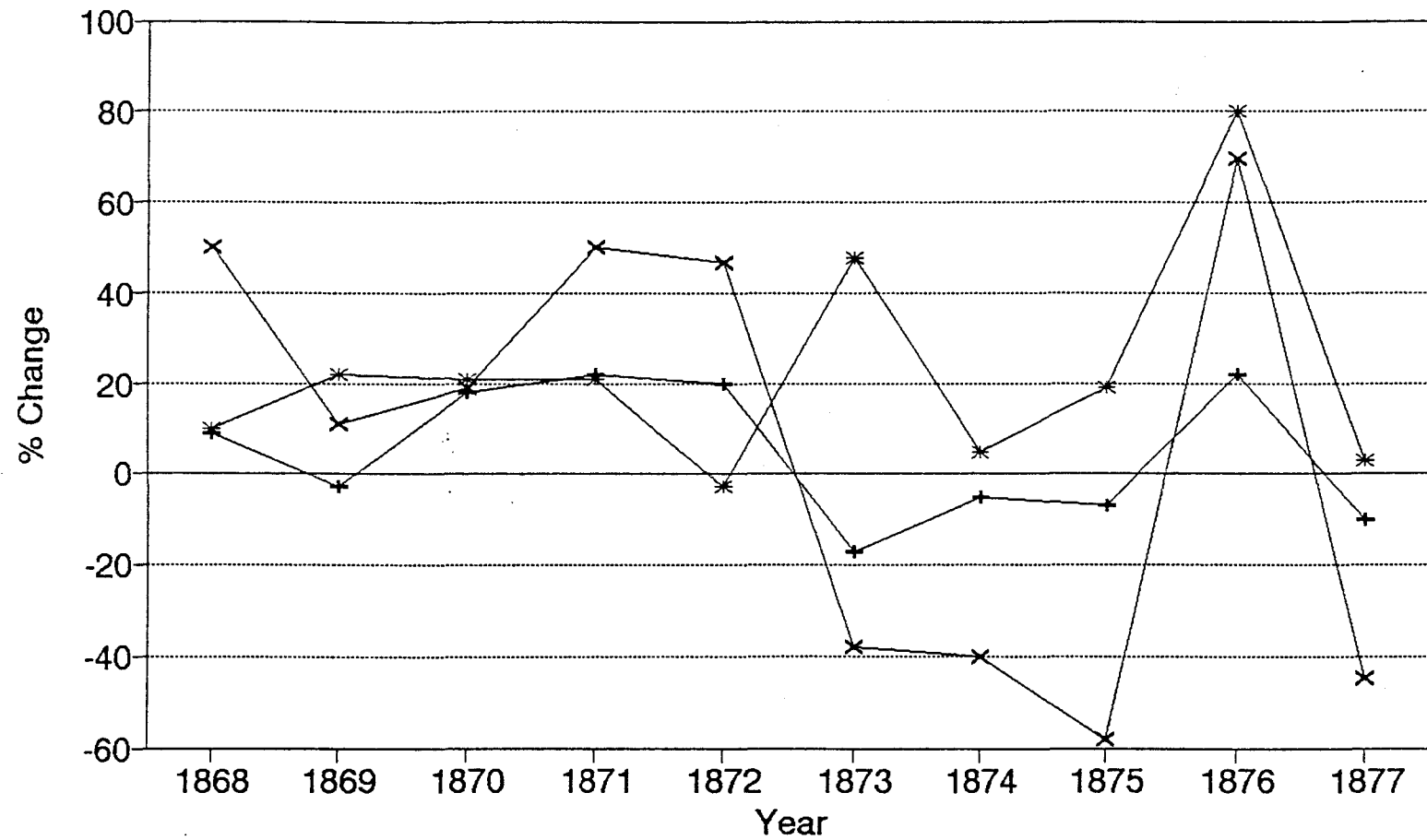
(5) The equivalent exchange rate is defined as the theoretical nominal rate of paper-pesos per gold pesos through arbitrage with the U.S. dollar. Figures as in col.(1) and (2) p.430.

(6) GDP growth rate in per cent. Figures from Estadísticas de la Evolución Económica Argentina (1986), p.159.

(7) Interest rate is the "tasa de descuento" of banks. From Análisis Estadístico y Económico de algunas series Bancarias y Afines en el período 1901 a 1927. (1929), p.38.

Figure 1

A Managed Gold-Exchange Standard



+ Money Base * Metallic notes x Exchange notes

All Figures in annual percentage changes

Figure 2
Price Level and Exchange Rate 1883-1912

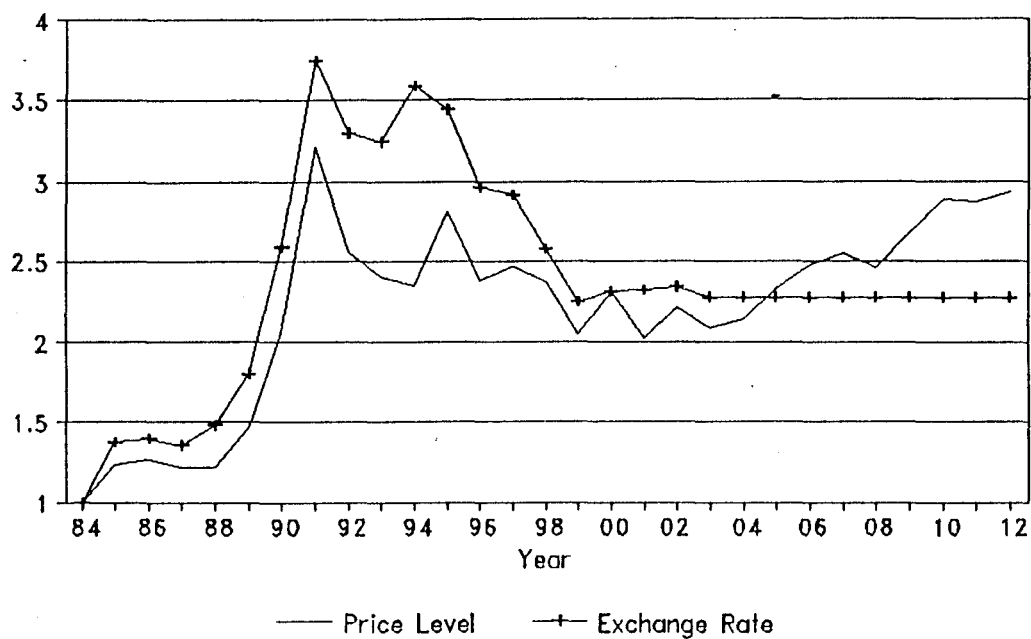


Figure 3
Specie Holdings in Argentina, 1883-1899

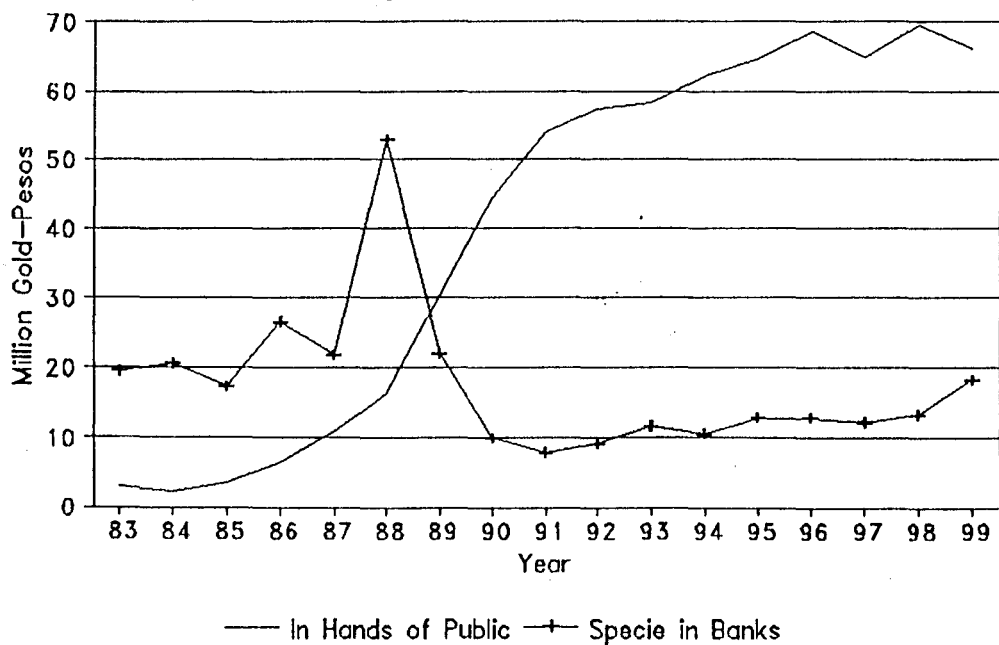


Figure 4
Determinants of the Money Multiplier

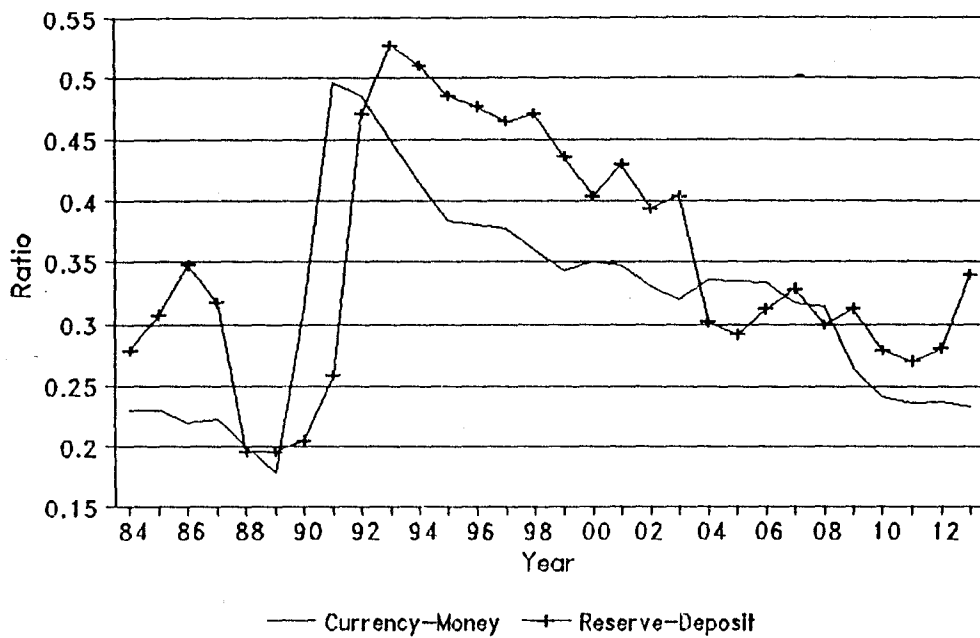
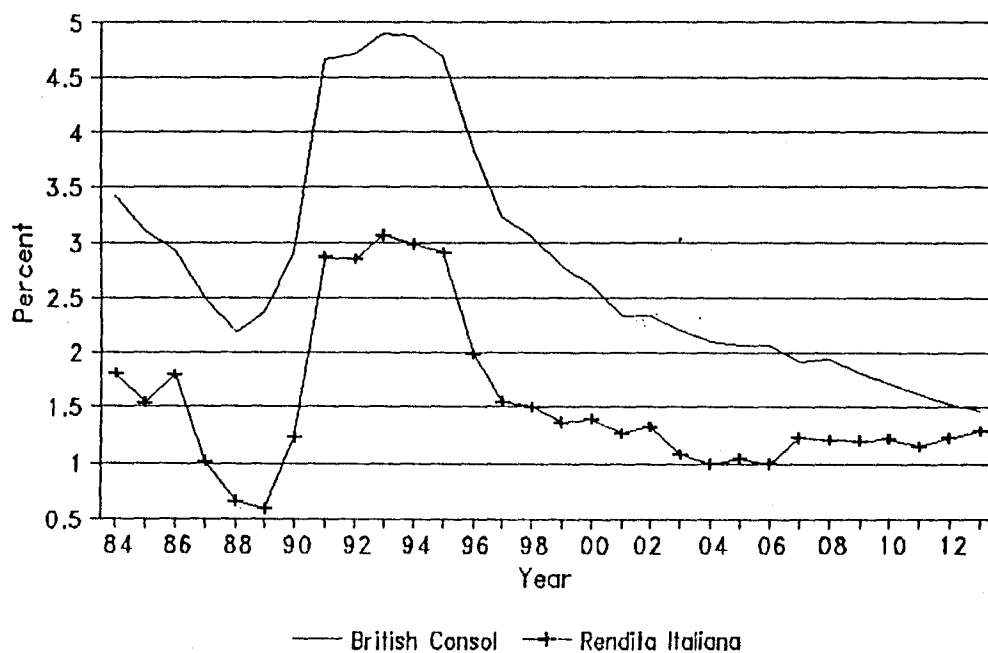


Figure 5 - Excess Yield over British Consol and Rendita Italiana, 1884-1913



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