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Appendix 3
Money Supply Periodization, 1884–1913

Periodization

One of the more difficult tasks in economic history is the division of an entire period of analysis into several historical subperiods of different economic significance. Monetary historians, usually restricted to annual data, have used a standard rationale for the choice of the subperiods of analysis. Turning points are usually based on changes in several key nominal variables, such as the money supply, the price level or the exchange rate, and usually reflect underlying changes in economic conditions or policies or both. Using this approach we present data on four different periods:

1. The period following the convertibility suspension, 1884–89;
2. The years 1890 and 1891, known as the Baring Crisis years;
3. The period of stabilization and fiscal reform following the crisis, 1892–99;
4. The gold standard with fixed exchange rates, 1900–1913.

We can then subdivide the first period into the period 1884–87 which we call the "return to convertibility scenario" and the period 1887–89, the "banking reform" period. Finally, we also considered as distinct subperiods 1884–99, the "paper standard" period, the "postcrash" period of 1892–13, and the entire period 1884–13.

Definitions

The Monetary Base

The hybrid nature of the monetary standard in 1884–87 creates a problem for choosing a definition for the monetary base. From 1883 the prevailing monetary standard was a mixed bimetallic specie and fiduciary standard in which monetary authorities were issuing specie obligations in the form of gold pesos and fiduciary obligations called "metallic" notes. In principle, gold pesos minted according to the monetary law of 1883 were the monetary base, in the sense that banks held fractional reserve of gold pesos against paper and gold liabilities. Therefore, under this institutional arrangement, the monetary base MB is defined as the sum of specie held by the banks SB plus vault cash held by the commercial banks VC plus hand to hand currency held by the public CU, that is

$$MB = SB + VC + CU = RE + CU, \text{ for the years 1884–87,}$$

where $RE = SB + VC$ is reserves of the commercial banks defined as the sum of specie held by banks plus vault cash in paper notes.

The Law of National Guaranteed Banks implied a switch toward a paper-based monetary system. In that institutional arrangement specie and gold were regarded as a source of monetary base and the guaranteed notes were now basically the use of the base. Thus, from 1888 onward we define the monetary base as hand-to-hand currency issued, that is, currency held by the public plus vault-cash held by the commercial banks,

$MB = VC + CU = RE + CU$, for the years 1888 and later,

where now $RE = VC$ is reserves of the commercial banks defined as only vault cash in paper notes.

The Money Supply

The Argentine money supply is defined throughout as hand-to-hand currency plus deposits in commercial banks (including the Banco de la Nación Argentina). No distinction between time and demand deposits is made, so our definition of money is a broad one (equivalent to what is usually termed M2). We have defined the monetary base as

$$MB = CU + RE,$$

and the money stock as

$$M = CU + DE,$$

where

RE = vault reserves at banks;
CU = hand to hand currency held by the public;
DE = commercial banks deposits.

The money multiplier m is defined as the ratio between the money stock and the monetary base

$$m = \frac{M}{MB} = \frac{CU + DE}{CU + RE} = \frac{1}{\frac{CU}{M} + \frac{RE}{M}} = \frac{1}{\frac{CU}{M} + \frac{RE}{DE}\frac{DE}{M}}.$$

It is then straightforward to show that

$$m = \frac{1}{c + r - rc},$$

where

c = CU/M = currency-money ratio of the non-bank public;
r = RE/DE = reserve-deposit ratio of the banking system.

The relationship between the money supply and its determinants is then

$$M = \frac{1}{c + r - rc} MB.$$

Any changes in the money supply M are attributable to changes in the three determinants c, r, and MB. To decompose any given change in M into the change due each of the determinants we can log-differentiate the last expression and obtain

$$\Delta \ln M = \Delta \ln MB - m(1 - c)\Delta r - m(1 - r)\Delta c + \ldots,$$

where we omit higher order terms. Each term on the right-hand side denotes the change in the stock of money that would have occurred if each of the determinants had changed, leaving the others fixed. This decomposition of changes in money supply is used in Table 2.4.[1]

Statistics

Table 2.3 shows, for each of the periods, the total percentage change and the average percentage change per year in several key monetary, real and financial variables. These are: money stock M; monetary base MB; money created by the banks $M - MB$; real output Y; price level P; exchange rate U; and U.K. price level P^*, as a proxy for the rest of the world price level. The table also reports the average level of several other variables: money multiplier M/MB; income velocity of money $V = PY/M$; ratio of gold stock to monetary base G/MB; ratio of specie hoarding by the public to monetary base $GPUB/MB$; and ratio of nonperforming assets to total loans for the principal state banks NA/L.

Table 2.4 shows the proximate determinants of the Argentine money supply for the ten periods under consideration using the decomposition discussed in the previous section. Note that three agents are involved in the determination of the money stock: the monetary authorities (or banks of issue), the (other) commercial banks, and the public. In a fractional reserve banking system, the behavior of the money multiplier should be closely followed since it is affected by two ratios that are largely determined by choices made by the public. The currency-money ratio is determined by the public when they choose between the alternative forms of holding cash-balances, currency in their own hands and deposits in banking institutions. The reserve-deposit ratio may be set at a profit-maximizing level by the banks or may be fixed by legal requirements.

Table 2.4 contains information on several variables derived using this method: percentage change in the proximate determinants of money; fraction of the percentage change in the money stock attributable to its proximate determinants; fraction of change in the money stock consisting of changes in the monetary base and bank credit; fraction of total change in the monetary base attributable to the monetary specie and domestic assets. Figure 2.4 displays the proximate determinants of the money multiplier. Figure 2.5 displays the ratios of fiat currency in hands of the public, bank-created money, and specie hoarding to real output.

1. This is the well-known framework of Friedman and Schwartz (1963) and Cagan (1965).