Michele Fratianni Anton Muscatelli Franco Spinelli Carmine Trecroci

QUANTITATIVE ESSAYS IN ITALIAN MONETARY HISTORY

FrancoAngeli

Studies in Money, Banking and Finance

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- 1. "Fiscal Dominance and Money Growth in Italy: the Long Record", *Explorations in Economic History*, 38, 2001, 252-72 (by M. Fratianni and F. Spinelli).
- 2. "The determinants of the discount rate in Italy, 1876-1913: an empirical and documentary analysis", *Review of economic conditions in Italy*, 3, September-December, 2004, pp. 431-464 (by F. Spinelli and C. Trecroci).
- 3. "The long-run stability of the demand for money: Italy 1861-1996", *Journal of Monetary Economics*, 45, 3, June 2000, pp. 717-739 (by V.A. Muscatelli and F. Spinelli)
- 4. "Gibson's Paradox and Policy Regimes: A Comparison of the Experience in the US, UK and Italy", in *Scottish Journal of Political Economy*, Vol. 43, No. 4, September 1996, pp. 468-492 (by V.A. Muscatelli and F. Spinelli).
- "Fisher, Barro and the Italian Interest Rates, 1845-1993", *Journal of Policy Modeling*, 22, 2, March 2000, pp. 149-169 (by V.A. Muscatelli and F. Spinelli).
- 6. "Fixed Exchange Rates and Adaptive Expectations Monetarism: the Italian Case", *Review of Economic Conditions in Italy*, 1, 1983, pp. 97-124 (by F. Spinelli).
- "Macroeconomic shocks, structural change and real exchange rates: Evidence from historical data", *Journal of International Money and Finance*, 26, 2007, 1403-1423 (by V.A. Muscatelli, F. Spinelli and C. Trecroci).
- 8. "The Phillips Curve and the Italian Lira, 1861-1998", *North American Journal of Economics and Finance*, 2010 (by A. Del Boca, M. Fratianni, F. Spinelli and C Trecroci).

INTRODUCTION

There are at least three good reasons why Italian monetary history deserves to be analysed from a quantitative point of view. First, A Monetary History of Italy by Fratianni and Spinelli (2001), the premier reference for this field, is mainly non-quantitative. It provides a thorough understanding of Italian macroeconomic and monetary history, based on detailed and unifying hypotheses on the long-term economic performance of the country. However, the History is necessarily dry on econometric tests of those hypotheses, calling for a complementary quantitative approach. Secondly, the Italian "case" is scarcely studied in the quantitative literature at the international level. Commonly, Italy receives some consideration only within cross-country analyses, with no significant focus on national details, and very often with attention only to the short-to-medium run. On a number of important macroeconomic issues, one of the major industrial economies of the past century has not been studied with the same analytic focus and breadth of similarly sized economies like France or the United Kingdom. Finally, as any other country, Italy's economy holds peculiar features that make its experience with market discipline and macroeconomic policies over the centuries a unique case study in the long-lasting debate over the optimal design of monetary policies. This volume is the result of a collective effort at bridging some of the literature's gaps mentioned above.

The essays' ordering stems from a stylised macroeconomic model of a small open economy. We start from modelling money supply and demand, then interest rates, the exchange rate and inflation. Last, we amalgamate most of our hypotheses within a compact macroeconomic model aimed at checking their overall significance and consistency. The main message that stands out is that the Italian economy behaves according to Keynesian features in the short run, while in the long run classical features like money neutrality and a vertical aggregate supply function clearly emerge. In the **first** essay, Fratianni and Spinelli investigate the validity of the "fiscal dominance" hypothesis for Italy throughout the 1861-1998 period. In essence, the hypothesis amounts to a situation in which monetary policy's stabilization objectives are systematically swamped by the dynamics of budget deficits and the need to ensure long-term solvency of public finances. The authors study the institutional structure linking budget deficits to monetary base creation, falling short of uncovering a stable relationship. However, they do find that the bulk of long-run money growth is determined by monetary base growth, and that over long sub samples – the 1930s and the 1970s – the monetization of deficits held the upper hand.

In the **second** essay, Spinelli and Trecroci focus on the determinants of official interest rates under the international gold standard. Their analysis shows that the Italian discount rate depended above all on the internal liquidity ratio, more strongly in the years of full convertibility of the lira, and on the UK discount rate. However, both of these determinants seem to have played a less important role than for other countries. This amounts to evidence that the Italian monetary authorities made a far less broad use of the interest rate channel than those of the other countries of the gold standard.

In the **third** essay, Muscatelli and Spinelli present evidence on the stability of the demand for money in Italy, over 1861-1996. Two main results emerge. Despite the country had experienced various monetary regimes, Italy had a relatively stable long-run demand for money. Second, and in contrast with evidence relative to the US and UK, money, income, interest rates and prices seem to be related through a bi-directional link. Money balances adjusted to the determinants of money demand, but simultaneously excess money balances were also influencing income, inflation and interest rates, in line with traditional accounts of the monetary transmission mechanism (Friedman and Schwartz, 1963; Laidler, 1980).

In the **fourth** essay, Muscatelli and Spinelli extend to Italy the investigation of the so-called Gibson Paradox – a positive correlation between interest rates and prices. Again, most of the existing empirical evidence on this issue has been limited to the UK and the US, where the correlation was first noticed. The chapter presents evidence that the Paradox did not apply from the late 19th century onwards, in coincidence with Italy's adherence to the gold standard. Overall, the authors find little support for explanations of the Paradox based on fiscal shocks, or cycles in monetary and fiscal policies. In the **fifth** essay, Muscatelli and Spinelli examine some of the factors underlying the behaviour of nominal and real interest rates, reaching two main conclusions. First, nominal rates adjusted to expected inflation slowly and only to a limited extent, even in the post World War II period, suggesting that inflation expectations only adjust following sustained changes in the local trend of inflation, rather than in response to short-run movements in inflation. This finding will re-emerge in the analysis of inflation conducted in chapter eight. Second, there is evidence that sustained expansions of government spending and the debt ratio had a positive impact on real interest rates, particularly post-World War II.

In the **sixth** essay, Spinelli applies a small-scale monetarist model with adaptive expectations to output and price fluctuations as well as balance-ofpayments disequilibria in a small open economy under fixed exchange rates, and tests it on Italian data. The main results validate all the key monetarist hypotheses. The demand for money and the equilibrium level of output are well defined. Monetary disequilibrium, besides influencing the balance of payments, turns out to affect the short-run behaviour of domestic real output. Last, the model detects a significant impact of fiscal policy on aggregate demand.

In the **seventh** essay, Muscatelli, Spinelli and Trecroci present empirical evidence on the forces driving real exchange rates in the long run. Using data from the US, UK and Italy across different exchange rate regimes, the study finds support for the hypothesis that productivity and fiscal shocks matter. However, in some cases fiscal shocks cause depreciations, likely triggered by the monetary accommodation of fiscal shocks. Finally, the traditional Harrod-Balassa-Samuelson effect of productivity on real exchange rates is reversed in some cases, which confirms the importance of the distributive sector in driving productivity gains, particularly clear in the Italian case.

Finally, in the **eigth** essay, Del Boca, Fratianni, Spinelli and Trecroci examine Italian inflation rates and their correlation with output developments over the entire existence of the Italian lira from political unification (1861) to the country's entry in the European Monetary Union (end of 1998). The following are the main findings. The rate, volatility and persistence of inflation display significant fluctuations. Fixed exchange rate regimes, and especially the international gold standard, are associated with lower inflation rates than more flexible arrangements of exchange rates.

The 1970s and 1980s stand out as the only major non-war inflationary period. Inflation persistence is higher under flexible exchange rates, especially after the demise of Bretton Woods. In addition, non-stationarity appears to be too a feature of flexible exchange rates. As to the inflation-output trade-off, the estimates reveal a striking negative relationship over the whole sample, suggesting dominance of supply-side shocks and inflation expectations. Yet, when estimation accounts for the large effects of the two world wars and post-Bretton Woods inflation, the Phillips curve exhibits the textbook positive feedback from cyclical conditions to inflation. The inference is that Italy has experienced a conventional inflation-output trade-off only during times of low inflation and stable aggregate supply.

1. FISCAL DOMINANCE AND MONEY GROWTH IN ITALY: THE LONG RECORD

by Michele Fratianni and Franco Spinelli*

1. Introduction

This paper examines fiscal dominance in Italian monetary history, that is, the influence of government deficits on the growth of the money supply since the formation of the Italian state in 1861. Fiscal dominance is the key theme in our monetary history (Spinelli and Fratianni, 1991; Fratianni and Spinelli, 1997). It can be traced to the behavior of early banks of issues such as the Banca Nazionale degli Stati Sardi (created in 1850), the Banca Nazionale nel Regno d'Italia (1867) and the Banca d'Italia (1893). Each one sought to become the sole bank of issue, and this quest for the monopoly right of issue implied subservience to the political authority. Operationally, subservience meant that the monopoly bank would grant ready and "cheap" access to credit to the government.

The Banca Nazionale in the State of Piedmont successfully negotiated with the powerful Prime Minister, Camillo Benso Cavour, for the right to serve as the state's banker and make its notes legal tender. The same bank, after the political unification of Italy, ceaselessly undermined the other banks to emerge as monopoly bank of issue. This goal was finally achieved in 1926 by the Banca d'Italia (BI), the successor of Banca Nazionale. The BI continued to push for more power, increasing its control over the entire banking system, which it gained with the Banking Law of 1936. Its authority was further expanded after the second World War (De Cecco, 1976). Yet, as these powers increased, so did BI's dependence on the Treasury. Fiscal dominance, or dependence on Treasury, meant that interest rates had

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to be kept low so as to reduce the cost to Treasury of financing budget deficits. Dependence also meant that interest rate targeting, rather than targeting monetary aggregates, was the preferred operating procedure.

The height of fiscal dominance was reached under the Governorship of Guido Carli (1960-1975). In addition to monetizing a large share of budget deficits, the BI put in place a complex web of controls and regulations to redirect national saving away from the private sector and towards government. while keeping interest rates low relative to inflation rates. Banks were subject to ceilings on bank loans and to minimum levels of purchases of government securities. An intricate web of regulations was enacted to prevent people from diversifying assets across currencies. Controls on exchange rates and capital movements were increasingly tightened to the point that the freedom to travel abroad was seriously compromised. Such actions were readily justified as the necessary price to keep interest rates below the level prevailing abroad and to allow the government to fund the excess of expenditures at "reasonable" cost. Yet, the low cost of borrowing made it easy for the political authority to postpone needed adjustment. Hard decisions were not taken and budget deficits rose. Fiscal dominance left a legacy of fiscal profligacy and low credibility of the BI. The "divorce" agreement of 1981 re-established some of the credibility BI had lost during the troubled 1970s. Credibility was again lost in September 1992, when Italy left the European Monetary System (EMS) following a severe currency crisis. The Maastricht Treaty and the conditions to qualify for stage three of the European Monetary Union (EMU) imposed tight constraints on Italian policy makers. The BI was finally made independent of the executive and budget deficits had to be drastically curtailed.

The fiscal dominance hypothesis has been challenged by some authors (Toniolo, 1989; Carli, 1993; Tattara and Volpe 1995) and confirmed by others (Cotula and Spaventa, 1993; Gallo and Otranto, 1998; Favero and Spinelli, 1999). We revisit the issue for two reasons. First, we want to test the hypothesis more "formally" than it was done in the *Monetary History of Italy*. The methodology of the *History* is more of descriptive statistics and causal narrative than formal hypothesis testing. The causal narrative revealed many of the underlying forces at work. Here, we want to complement that approach with formal hypothesis testing. The second reason for revisiting the issue is to consider the evidence in its totality, that is, from political unification to the present.

The major conclusion of the paper is that fiscal dominance is the prevailing regime in Italy. Fiscal dominance is not only operative in much of post-World War II period, but also in the thirties, the twenties, in the socalled gold standard period, and even more so during wars. The paper is organized as follows. Section 2 reviews the literature on fiscal dominance, placing special emphasis on the studies that have been written after the appearance of our *History*. In Section 3 we test the hypothesis of fiscal dominance. We proceed in two stages, starting with money growth accounting and then establishing a causal link from budget deficits to the growth rate of the Treasury monetary base.

2. Fiscal Dominance: A Review of the Literature

The starting point of the theory of fiscal dominance is the intertemporal government budget constraint (King and Plosser, 1985). Define the year-t budget deficit as:

(1)
$$S_{t} = (1 + i_{t-1})S_{t-1} + GE_{t} - T_{t} - TR_{t},$$

where S = interest-bearing government securities, GE = total government expenditures, excluding interest payments, T = total tax revenues, and TR = transfer to government by the central bank (*i.e.*, seigniorage).

The central bank issues non-interest bearing liabilities in the form of monetary base, MB, against which it lends to government, MBTR, non-government units, MBOT, and the rest of the world, BF. The central bank's assets – the source side of the monetary base – earn an interest flow, which is returned to the Treasury, after deducting operating expenses. In fact, as can be seen from equation (2), $TR_t = i_{t-1}$ (MBTR + MBOT + BF)_{t-1}:

(2)
$$MBTR_t + MBOT_t + BF_t + TR_t = \Delta MB_t + (1 + i_{t-1}) (MBTR + MBOT + BF)_{t-1}.$$

Substitute (2) into (1) and simplify by setting MBOT and BF equal to zero; deflate all nominal magnitudes by nominal national income; let P_{t-1}/P_t (1 + i_t) = 1 + the real rate of interest; solve forward; and impose the constraint that (s-mbtr) _{t+∞} = 0. The resulting equation is:

(3)
$$(s-mbtr)_{t} + \sum_{j}^{\infty} \rho_{ij} (ge)_{t+j} = \sum_{j}^{\infty} \rho_{ij} (\tau_{t+j} + \Delta mb_{t+j}),$$

where lower-case letters refer to variables deflated by national income and ρ is the ratio of one plus the growth rate of real national income divided by one plus the real rate of interest. Equation (3) is virtually identical to equa-

tion (4) in King and Plosser (p. 169). Fiscal dominance occurs when government can determine the stock of debt, MBTR and the path of total expenditures and taxation. Under these conditions, the government, by raising the permanent level of expenditures without at the same time raising taxes, can affect the current and future flows of the monetary base and, hence, of the money stock and the inflation rate. This is the central message of Sargent and Wallace's "Some Unpleasant Monetarist Arithmetic" (1981): fiscal dominance implies an intertemporal positive correlation between government budget deficits and money growth.

A positive correlation between money growth and government deficits, however, can take place also in the absence of fiscal dominance (Barro, 1979; Joines, 1985, p. 331). If government were to target real as opposed to nominal values of government debt, nominal debt would rise in proportion to the price level; so long as money growth and inflation are positively correlated, deficit and money growth would also be positively correlated, in the absence of debt monetization by the central bank. So, the test of fiscal dominance must include (i) evidence of monetization and (ii) an intertemporal causal relation from government deficits to monetary base growth.

Evidence on fiscal dominance is mixed. Joines (p. 331) reviews the evidence for the United States and finds almost an equal number of authors finding and failing to find a positive relation between government deficits and money growth or the growth of the monetary base. Joines, relying on annual data from 1866 to 1983, arrives at the conclusion that:

[there is] no relation between non-war federal deficits and the growth of highpowered money. High-powered money growth does appear to be positively associated with war spending and possibly with the unemployment rate...The data are consistent with the view that the government has set its non-war real deficit and the growth of high-powered money independently of each other and has let its nominal deficit drift upward over time in part to offset the inflation-induced depreciation in the real value of its debt and in part because its real deficit has grown (p. 330).

Barro (1987) examines the impact of temporary changes in government purchases on a variety of variables, including the growth of money in the United Kingdom from 1701 to 1918. These changes are shown to raise money growth and inflation only when the gold standard was suspended (from 1797 to 1821 and from 1914 to 1918). It should be noted, however, that the UK government was relatively well behaved and ran budget deficits primarily during wars, with these deficits being highly correlated with military spending (Barro, 1987, Fig. 9 on page 240). King and Plosser (pp. 186-87) fail to find a contemporaneous correlation between seigniorage (Δmb in our notation) and deficits for the United States, the United Kingdom, France, Germany, Switzerland, Japan, Spain, Mexico, Chile, and South Korea, but find it for Argentina, Brazil, Mexico, and Italy. About Italy, these authors have this to say:

Italy stands out as the sole exception among those eight countries for whom we have data on both deficit measures, displaying a positive and significant (at the five percent level) regression coefficient in each case. The correlation for Italy is perhaps the result of a treasury bill price support policy that the Banca d'Italia employed during at least a portion of our sample period... (p. 187).

As we will see later, there is much more than interest-rate pegging in the Italian story.

Burdekin (1987) estimates Barro-Gordon type reaction functions for the growth of the monetary base, with deficits entering separately and interactively with the growth of real government purchases and price level as well as with the level of the short-term interest rate and unemployment rate for Canada, France, the U. K., and West Germany in the period 1961-1983. The main result is that monetary policy in these four countries becomes more accommodating as the budget deficit rises. The study may not be conclusive in light of the limited sample period and the tendency of reaction functions of being unstable over time.

Studies on Italy

Several studies, mostly following our 1991 *History*, have dealt with the issue of fiscal dominance. We review in this section the most relevant ones, starting with those that use the longest time horizons and then those that consider specific sub-periods. Two studies look at the long span of Italian monetary history and both of them corroborate the hypothesis of fiscal dominance. Favero and Spinelli (1999), using data for the period 1875-1994, find that money growth is endogenous relative to budget deficits, that the positive differential between Italian and foreign inflation is explained by the higher Italian money growth, and that fiscal dominance begins to break down with the Governorship of Paolo Baffi in 1975. Gallo and Otranto (1998), using data for the period 1863-1994, arrive at similar conclusions, but in particular find that government spending is a critical factor in explaining the expected growth of the money stock.

Tattara and Volpe (1995) test and reject what they believe to be fiscal

dominance for the period 1862-1913. The heart of the empirical work of these two authors is a reduced-form equation of a model where neither government expenditures, nor taxes, nor budget deficits have any role to play. Furthermore, in their model the domestic interest rate is determined by uncovered interest rate parity, despite strong evidence that this parity did not hold for Italy during the gold-standard period.

Many of the studies on specific sub-periods were financed or sponsored by the BI to celebrate the institution's first centennial; we refer to those as the centennial series.¹ Toniolo (1989), in a volume of the centennial series, examines the monetary consequences of World War I and comes to the conclusion (pp. 12-13) that "...the contribution of monetary financing of war-time government spending was *relatively* modest, taken due consideration of the circumstances." This assessment appears to be in conflict with the analysis in another volume in the centennial series, written by Cotula and Spaventa (1993, pp. 36-37):

During the war and in the first years of its aftermath the yield on government securities – particularly, the new issue yield on long-dated securities – had exceeded for long periods the level of the official interest rates. This structure of rates favored the placement of public debt, also because economic agents could rely on banks of issue to extend credit against the value of the subscribed bonds (cf., for example, document 21); the support to the placement of public debt through discounts and advances made, however, uncertain the net effect on monetary circulation of the new issues of government securities.

The dominance of government on money matters also emerges in a passage written by Bonaldo Stringher, Director General of the BI, in the Bank's 1917 annual report: "The Banca was aware of the State's needs to give to currency production the same impulse as the mechanical industry has given to the production of arms." (Toniolo, 1989, pp. 16-17).

Guarino and Toniolo (1993), also part of the centennial series, divide the BI's inter-war policy in three different phases. In the first phase, from 1920 to 1924, the BI acted primarily as a lender of last resort in an effort to prevent large-scale banking and industrial failures; in the second phase, extending to 1930, the Banca accommodated government objectives and directives; and in the third, extending to 1936, the BI acted as a mere technical agent without ever participating in the formulation of strategic decisions. In essence, the BI, in the inter-war period, was either passive or ac-

¹ The collection of volumes is known as the Historical Collection of the BI ("Collana Storica della Banca d'Italia) and has been published by Laterza.

commodated government policy. The two authors (p. 17) explain these outcomes as emerging from policy makers' preferences:

The Italian political elite, and this has been true up to recent times, had a rather pessimistic view of the solidity of the social fabric, the stability of the institutional framework, and even of the stability of democracy itself...Consequently, if forced to make a decision, this elite showed a higher propensity to accept the risks connected with monetary instability – which, in their view, could undermine the social fabric in an indirect way and in the long run – than the risks associated with instability of the real sector whose damages appeared to be immediate, violent, and irreversible. In the period under consideration, the Banca d'Italia shared this view.

This passage is important in that it tries to provide a utility-based explanation of fiscal dominance. The elite, both in government and in the central bank, had a gloomy assessment of the stability of the real sector of the economy. It was up to public finance to provide stability. Money was simply an extension of public finance, complementary in achieving the ultimate objective of sustaining economic activity and preserving social peace. If this is true, then fiscal dominance cannot be a temporary phenomenon, identified with particular circumstances or specific periods of history. On the contrary, fiscal dominance is bound to be long-lasting. It will change either because of the emergence of a new paradigm – for example, the acceptance of the stability of the real sector – or because of a change in regime – for example, the Maastricht Treaty that imposes on member governments the establishment of independent central banks and tight ceilings on budget deficits.

The inter-war period is also analyzed by Cotula and Spaventa (1993), whose main thesis is that the BI had little or no control over money, a situation that stemmed from the fact that government, not the Bank, had jurisdiction over the determination of short-term interest rates. We read this as evidence supporting fiscal dominance. They write (p. 4):

Over the period monetary policy follows a parabola: constrained at the start by the needs of the real economy and public finance, gains autonomous dignity with the reforms of 1926 and 1928, only to find itself enslaved to the orders of the [Fascist] regime, in defiance of the very spirit of the reforms.

In reviewing the Cotula-Spaventa study, Quadrio Curzio (1994, pp. 89-90) interprets the history of the BI as a search for independence:

The regime of fiscal dominance that characterizes large part of the period under examination – to which the authors [Cotula and Spaventa] give less importance