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ABSTRACT

In this paper we first isolate a few amazingly ingenious ideas which lie behind the Italian Keynesian conventional wisdom and ultimately make people believe that monetarism is irrelevant.

Then we sketch a simple monetarist analysis of output and income fluctuations in a small open economy, translate the analysis into a set of empirically testable proportions, verify their internal consistency and eventually confront them with the data. All the key monetarist hypotheses receive considerable support from the empirical evidence.

1. Introduction

With this paper I intend to move an attack on the current standard Keynesian approach to monetary theory and policy in Italy and stress the logical consistency and empirical reliability of the competing monetarist hypothesis.

There are three major sections. The first one introduces the reader to the current state of the debate and points to some of the most severe shortcomings of the hard-line Keynesian conventional wisdom; the second gives a concise description of the monetarist approach to the problems of output and price fluctuations as well as balance of payments disequilibria in a small open economy under a fixed exchange rate regime and it also translates this alternative approach into a small scale model, à la David Laidler and Patrick O'Shea, which, in the third section, is tested against the Italian data. The period under consideration is 1953-1970.

Results are impressive and indeed all the key monetarist hypotheses receive considerable support from the empirical evidence. The demand for money is well defined and the notion of an equilibrium level of output also comes out strongly. As to the international transmission of the inflationary impulses, both the direct expenditure and the price expectations mechanisms are found to play significant roles. Monetary disequilibrium as well as influencing the balance of payments turns out to affect the short-run behaviour of domestic real output in a most powerful way. Finally, but not least, the model is also capable of detecting the significant impact of fiscal policy on the demand for output and therefore throws some light on the much-debated problem of short-run stabilization policies.

2. The Conventional Wisdom and the Re-emergence of the Monetarist School

For nearly three centuries, right from the beginning of the quantity theory and up to the 1950s, the Italian tradition in the field of monetary theory has laid great emphasis on the role of money in the economy, on the need for a tight control over its supply, on the 'monetary and world' nature of the problem of inflation as well as on the portfolio-balance approach to balance of payments disequilibria and it has been so successful in competing with the German and English speaking worlds that even today, the scholarly contributions of such economists as Galiani (1750)[1], Bresciani-Turroni (1934, 1937), Einaudi[2] and Baffi (1965)[3] are highly regarded internationally by the profession.[4]

Subsequently, with the emergence of the Oxbridge economics, quite a few radical changes occur and in a few years we have a situation where:

a) the 'push on the string' and the liquidity trap arguments (Graziani (1966, 1974), Izzo et al. (1970), Fazio (1969)) systematically lead to the conclusion that money is a passive magnitude which has no independent influence on the other economic variables;[5]

b) the role assigned to the central bank is to monitor the creation not of money but of total financial assets and liabilities (Bank of Italy (1976), Vaciago (1977));

c) inflation is considered to be a 'push and domestic' phenomenon (Sylos-Labini (1967, 1972), Modigliani and La Malfa (1967), Modigliani and Tarantelli (1975, 1977);

d) acceptance of the permanent trade-off doctrine is widespread (Modigliani and Tarantelli (1973, 1977)); and

e) economists mainly rely on the elasticity approach to the balance of payments, on the complete sterilization assumption and, quite often, they even apply closed economy models (Modigliani and La Malfa (1967), D'Adda et al (1976, Fua' (1976)).[6]

This situation seems to persist and, as recently as December 1977, the Italian monetary authorities have been praised for their remaining "uncontaminated by the proliferation of targets for monetary aggregates" as well as for their resisting "...the spread of monetarist theses, which has been echoed by the Other Central Banks..." (Vaciago (1977)).

Because of all this one cannot escape the impression that in Italy too[7] Keynesianism is thriving in an archaic form and totally disregards the theoretical and empirical developments of the last two decades. The 'push on the string' argument is by now totally discredited. For it rests on the confusion between an infinite and a longer lag (Tanner (1979)) and ignores the fact that monetary policy is bound to work in one direction only, when the rate of interest is kept from falling during the easy money period and unless, of course, we make the marginal efficiency of capital schedule shift outwards (Modigliani and La Malfa (1967)). The liquidity trap hypothesis and statement (b) amount to the same thing since the analysis behind the Bank of Italy's strategy aimed at controlling the creation of total financial assets is indeed based upon the assumption à la Radcliffe Committee (1959), Gurley and Shaw (1960) and Kaldor (1970) that "money is merely the small change of the financial system and that financial intermediation makes the elasticity of the demand for money extremely high" (Johnson (1972a)). The shortcomings of that analysis are well known; no proper distinction between money and credit is drawn , the devastating objections raised by Patinkin (1961) and Marty (1961) are totally ignored and so is the empirical evidence on the demand for money in Italy (Fazio (1969), Vaciago (1973), Tullio (1979b), Spinelli (1979a)).[8]

The remaining three major building blocks of the conventional wisdom, c), d) and e) have also fallen under the systematic attacks of the re-emerging monetarist school; the cost-push hypothesis, the idea of a purely domestic inflation as well as the notion of a stable long-run trade-off have all failed

to survive the tests conducted by Spinelli (1976, 1979b, 1980) and Fratianni (1978, 1979) while the work done by Tullio (1977a, 1977b, 1978a, 1978b, 1979a, 1979b) stresses the high degree of integration between the Italian and the European capital markets as well as the empirical reliability of the monetary approach to balance of payments disequilibria and exchange rate fluctuations.

If we combine all this with the assertion that, because of political and/or economic reasons, fiscal policy has not proved to be very effective (Hansen (1969), Campa (1970), OECD (1973), Graziani (1974), Fratianni (1975)) and that, if anything, financial impulses dominate (Brunner et al. (1973), Fratianni (1978)) we do have a set of results which, on one side, show how serious the inconsistency between the established orthodoxy and the most salient facts of reality is and, on the other, seem to lend support to every one of the key monetarist proportions.

The debate will certainly become more and more lively and, although it is difficult to predict what it will look like in the more distant future, we believe that, on the part of the monetarist school, the next major step which has to be taken is to "put things together", i.e., set up a small scale but nevertheless complete macro model which embodies all the key monetarist hypotheses and then find out whether the overall picture makes sense both from an analytical and from an empirical viewpoint.[9] For the rest of the paper we will be addressing this problem.

One final point before we actually start building up the model. There are two reasons behind our choice to focus on the period 1953-1970. First of all, we wish to keep the analysis as neat as possible and avoid having to accommodate the flexible exchange rates type of experience; secondly, we want to be able to "sharpen" and test the extreme monetarist assumptions on output and price fluctuations in a small open economy under fixed rates. Because of the newly created European Monetary System such assumptions are of great contemporary relevance.

3. Small Open Economies Under Fixed Exchange Rates: A Monetarist Analysis a la David Laidler (1973, 1975, 1978)

Needless to say, the monetarist analysis focusses on the effects of temporary disequilbria in the market for money. The first building block is usually given by the supply of money identity which states that the nominal stock of money (M_s) is equal to the sum of domestic (C), and foreign (R) assets, i.e.,

$$M_s = C + R$$

where C is taken to be domestic credit (under the control of the monetary authorities) and R is simply the stock of international reserves.

As for the demand side, our second major building block, there is the assumption of a stable and well-defined demand for nominal money balances which is a function of four key variables, namely permanent income, or the stock of wealth, the general price level which enters with a unit coefficient,[10] the return on real assets, and the specific negative return on money balances measured by the expected rate of inflation.

The crucial question arises as to which ones of the relevant variables that appear in the demand for and supply of money functions have to vary to restore equilibrium. For, of course, the market for money does not systematically clear. Usually the monetarist analysis runs as follows. First of all the real rate of interest is considered to be constant or slowly changing over time with productivity and thrift. Secondly, in the long run, and independently of the adopted exchange rate regime, the domestic economy is expected to converge on the equilibrium or permanent level of real output, Y*, so that the scale variable too is exogenous to the market for money and unable to vary in such a way as to accommodate any disequilibrium rate of money creation. Furthermore, if the economy adopts fixed exchange rates then there cannot be any

systematic gap between the domestic and the world levels and rates of price change; as a consequence the remaining two variables that appear in the demand for nominal balances are also unable to help clear the market. All this amounts to saying that, in the long run the desired stock of money is completely exogenous to the system and that it is therefore the supply side which has to accommodate, via changes in the stock of international reserves, any rate of domestic monetary expansion which exceeds or falls short of the world rate of inflation (that ultimately determines the speed with which the desired stock of money balances grows over time). Basically this is the essence of the monetary approach to the balance of payments and what lies behind the typically monetarist contention that, in the long run and in a small open economy under fixed exchange rates, monetary policy only affects the balance of payments accounts and the composition of the domestic money stock.

For analytical purposes we abstract from growth by making Y* (permanent income) constant over time and we disregard the two opportunity cost variables;[11] furthermore, we also choose the units of measurement in such a way as to have[12]

$$M_d = P\ Y^* = P \qquad (2)$$

where M_d indicates the desired stock of nominal money balances and P the domestic general price level. The expression embodies the neutrality and no money illusion assumptions. As already said, in the long run only does the market for money clear and the equilibrium condition

$$M_s = M_d \qquad (3)$$

hold. But if we let economic agents be "off" their long-run schedule most of the time then the questions arise as to whether monetary policy maintains its neutrality in the short run and as to what kind of adjustment process any disequilibrium rate of domestic credit expansion will translate itself into.

In other words: what are the non-steady state properties of the monetarist analysis?; where should monetary disequilibrium (i.e., a ratio M_s/M_d which is different from one) appear?

To answer these questions which are crucial to the problem of discriminating between competing views of the world, of designing the most appropriate stabilization policies and, of course, of building up and eventually testing any macro model, we will divide the adjustment process into a first stage during which actual real output (as well as the stock of international reserves) is mainly effected and made diverge from its steady state value and a second one where the domestic price level and its rate of change rise above or fall short of the world values.

To see how all this works let us suppose that a shock to the money market occurs which drives the rate of domestic monetary expansion above its long-run equilibrium value. Economic agents will soon begin to run down their excessive money balances by purchasing a whole variety of assets which includes near monies as well as physical consumption and investment goods thereby stimulating real output. Although the transmission mechanism is left unspecified, it is clear that it is expected to work via direct liquidity effects as well as short and long interest rates changes which are set in motion by systematic attempts, on the part of economic agents, to acquire less and less liquid assets. So it turns out that the output equation is a natural place for monetary disequilibrium to appear. Formally,

$$Y = \left(\frac{M_s}{M_d}\right)^{\alpha_1}_{-1} \qquad (4a)$$

The left-hand side is the ratio of actual income (Y) to (the unit) permanent income; α_1 is an elasticity coefficient while the subscript -1 indicates the time lag. On the whole the expression says that Y is expected to be equal to one (i.e., equal to permanent income) iff the market for money clears.

From the previous analysis it is also evident that part of the excessive money balances might as well be spent on foreign goods and/or on foreign currency denominated financial assets, so that it seems reasonable to include monetary disequilibrium[13] in the equation for international reserves too. Our fifth building block is given by the following equation:

$$\frac{R}{R_{-1}} = \left(\frac{M_s}{M_d}\right)^{\gamma_1}_{-1} \qquad (5a)$$

which maintains that a necessary condition for there to be a constant stock of international reserves (i.e. $R = R_{-1}$) is the absence of monetary disequilibrium.

The extent to which domestic monetary growth translates into deviations of output from its trend value is crucial to the understanding of the short-run behaviour of the domestic rate of inflation. The link is provided by the first explanatory variable, namely excess demand, which appears in the expectations augmented Phillips curve:[14]

$$\frac{P}{P_{-1}} = Y^{\beta}_{-1} \left(\frac{P^e}{P}\right)^{\varepsilon_1}_{-1} \qquad (6)$$

Thanks to the particular lag structure of this equation domestic inflation at time t turns out to depend upon the excess demand for output (Y) at time t-1 and, via the output equation (4a), on the rate of domestic monetary expansion at time t-2, just in line with the typically monetarist hypothesis of a drawn-out[15] transmission mechanism and the not so popular (even among monetarists) hypothesis of the absence of a <u>direct</u> link between money and prices.

The second explanatory and unobservable variable which appears in equation (6) has to be removed and therefore some additional hypothesis about the way in which economic agents form their expectations is needed. Given the

reliance on a fixed exchange rate regime and given its consequences upon the steady-state value of the domestic rate of inflation an obvious candidate appeared to be some distributed lag on the world rate of inflation, which, after some preliminary empirical work, has become a simple one-period lag so that:

$$\frac{P^e}{P_{-1}} = \frac{\Pi}{\Pi_{-1}} \tag{7}$$

where Π is the world general price level.

A domestic rate of inflation which is high relative to the world rate inevitably leads to a decline in the demand for domestic output and, as a consequence, adds to the loss of international reserves. So there are potential strong feedbacks from the price equation (6) to the output and reserves equations (4a) and (5a) which have to be modified to include the gap between domestic and foreign prices among the explanatory variables. They become:

$$Y = \left(\frac{M_s}{M_d}\right)^{\alpha_1}_{-1} \left(\frac{E\Pi}{P}\right)^{\alpha_2} \tag{4}$$

and

$$\frac{R}{R_{-1}} = \left(\frac{M_s}{M_d}\right)^{\gamma_1}_{-1} \left(\frac{E\Pi}{P}\right)^{\gamma_2}_{-1} \tag{5}$$

where E indicates the exchange rate which, in the analysis that follows, will be set equal to one. Given Π, P is measured in such a way as to make the whole price ratio equal to one when the balance of payments is in equilibrium.

Equations (4) and (5) are central to the understanding of the way in which, even without active government intervention and provided the country does not run out of reserves in the process, all the relevant variables will

eventually converge on their steady-state values. As long as the domestic rate of inflation stays above the world level, money balances are systematically destroyed because of the direct and indirect loss of international reserves as captured by the two explanatory variables on the right-hand side of equation (5) so that, via equation (1), the gap between M_s and M_d is expected to become narrower and narrower over time. This already determines a decline in the demand for domestic output which is strengthened by the loss of international competitiveness that stems from the widening gap between domestic and world prices.

In the intermediate stage Y is found to fall short of its unit full-employment value and, via the Phillips curve, to drive domestic inflation down, below its predicted (and actual world) value; in the end the world and the domestic price levels will once again be equal to each other. This in turn will restore the equilibrium level of output Y*, the equality between the world and the domestic rates of inflation and it will also bring about a zero rate of change in the stock of international reserves. Therefore the initial monetary disturbance turns out to be completely neutral; a lower R/M_s ratio is its only visible and lasting effect.

Having outlined the monetarist analysis and transformed it into a set of empirically testable propositions we now can take a look at the overall properties of the four equation macro model that results from the substitution of equation (2) into (4) and (7) and the elimination of the unobservable expected rate of inflation from the Phillips curve. For analytical as well as empirical purposes it is worth rewriting the equations in logarithmic terms as follows:

$$\dot{m} = \mu \dot{r} + (1 - \mu)\dot{c} \qquad (1')$$

$$y = \alpha_1 (m_s - p)_{-1} + \alpha_2 (\pi - p) \qquad (4')$$

$$\dot{r} = \gamma_1 (m_s - p)_{-1} + \gamma_2 (\pi - p)_{-1} \qquad (5')$$

$$\dot{p} = \beta y_{-1} + \varepsilon_1 \dot{\pi}_{-1} \qquad (6')$$

where lower case letters indicate natural logarithmic values and the dot stands for the proportionate rate of change or the first logarithmic difference. Basically there are four endogenous variables, $\dot{m}$, y, $\dot{r}$ and $p(=M_d)$ or its rate of change; as to the exogenous variables three of them $\dot{c}$, $\dot{\pi}$ and π appear explicitly while the remaining two, namely the exchange rate and permanent income, are now equal to zero and therefore do not appear among the regressors.

(1') is already hard to reconcile with the Italian conventional wisdom. For this systematically relies on the complete sterilization hypothesis and, as a matter of fact, Sylos-Labini (1967) and Filippucci-Gardini (1974) are the only empirical studies that we know of that make the money supply depend upon the trade account.

As for equation (4') several comments are in order. First of all it does stress that full-equilibrium involves the achievement of a stock as well as a flow equilibrium, which is typical of the monetarist analysis. Secondly, the equation is built upon the no less typical monetarist notions of a disequilibrium real balance effect, of money as a buffer stock in an uncertain world and, of course, of a non-instantaneously clearing money market (Archibald and Lipsey (1958), Laidler (1974), Jonson (1976)). At the same time however the very fact that the dependent variable is given by the deviation of "real" output from trend is in line with the eclectic, modern quantity theory approach whose key insight is that a discrepancy between the nominal quantity of money

demanded and the nominal quantity supplied "will be manifested primarily in attempted spending, thence in the rate of change in nominal income" (Friedman (1974)) and therefore implies that we are borrowing from Keynesianism (Laidler (1977)). Thirdly, and we would like to draw the attention of the Italian reader to this, our refusal to spell out the details of the transmission mechanism and to specify two separate equations for consumption and investment expenditure reflects our belief that there is no theoretical justification for assuming that the causal sequence must run from money to the yields on monetary assets to expenditure on a particular set of real assets called investment rather than from money to all assets held in the portfolio, consumer durables included.[16] This too is hard to reconcile with the conventional wisdom that makes monetary policy work via changes in investment expenditure only (Modigliani-La Malfa (1967), Sylos-Labini (1967).

There are two explanatory variables on the right-hand side of equation (5'); the former captures the idea of an exogenous money stock while the latter emphasizes the eclectic nature of the analysis that lies between the Keynesian fixed price and the extreme PPP assumptions. It is also worth noting that as the residents of a country can get rid of or acquire money either through trade or through the international security market and as a large gap between domestic and foreign prices can shake people's faith in a fixed exchange rate and trigger speculation, the two explanatory variables do not relate to the capital and trade account respectively. The monetary approach to the balance of payments is a macro theory and as of now we have no choice but to stress our inability to identify and classify the Humean "hundred canals" from an analytical and statistical point of view. Needless to say,

equation (5') is quite different from the one Italian economists are used to. They maintain that there must be two different theories, one for the capital account and one for the trade account; the latter, which represents the focus of their analysis, is cast in terms of relative price effect and once-and-for-all changes in the exchange rate while monetary disequilibrium is totally disregarded (Sylos-Labini (1967), Bank of Italy (1970), Modigliani-La Malfa (1967), D'Adda (1976), Fua (1976)).

So we come to equation (6') which is certainly going to raise a lot of controversy. First of all there is no push or mark-up variable and this already runs counter to what many Italian economists use to say (Sylos-Labini (1967), Tarantelli (1970), D'Adda (1976), Fua (1976)). Furthermore, it is evident that the scenario we have in mind is not one where world inflation reaches domestic prices only via the price of imports; a second more direct link has been added that works via price expectations.

Having said that we might take a look at the four reduced forms. They are as follows:

$$\dot{m} = (1-\mu)\dot{c} - [2\ ]\beta\alpha_2](1-\mu)\dot{c}_{-1} + (1 - \beta\alpha_2 + \beta\alpha_1)(1-\mu)\dot{c}_{-2} - \beta\alpha_1(1-\mu)\dot{c}_{-3} + \mu\gamma_2\dot{\pi}_{-1} - \mu(2\gamma_2 + \gamma_1 + \gamma_1\beta\alpha_2)\dot{\pi}_{-2} + \mu(\gamma_1 + \gamma_2 + \beta\alpha_1\gamma_2)\dot{\pi}_{-3} + (2 + \mu\gamma_1 - \beta\alpha_2)\dot{m}_{-1} - (1 + \mu\gamma_1 - \beta\alpha_2 + \beta\alpha_1 - \mu\beta\alpha_2\gamma_1)\dot{m}_{-2} - (\mu\gamma_2\beta\alpha_1 - \beta\alpha_1)\dot{m}_{-3}$$

$$y = [2 + \mu\gamma_1 - \alpha_2\beta]y_{-1} - [1 + \mu\gamma_1 - \alpha_2\beta + \alpha_1\beta - \mu\gamma_1\alpha_2\beta]y_{-2} + [\alpha_1\beta - \alpha_1\mu\gamma_2\beta]y_{-3} - \mu\gamma\alpha_2\pi_{-1} + (\mu\gamma_1\alpha_2 + \alpha_1\mu\gamma_2)\pi_{-2} - \alpha_1\mu\gamma_2\pi_{-3} + \alpha_1(1 - \mu)(\dot{c}_{-1} - \dot{c}_{-2}) + \alpha_2\dot{\pi} - 2\alpha_2\pi_{-1} - (\alpha_1 - \alpha_2 - \mu\gamma_1\alpha_2)\dot{\pi}_{-2} + (\alpha_1 - \alpha_1\mu\gamma_2)\dot{\pi}_{-3}$$

$$\dot{r} = (2 + \gamma_1\mu)\dot{r}_{-1} - (1 + \beta\alpha_1 + \gamma_1\mu)\dot{r}_{-2} + (\beta\alpha_1 - \gamma_2\beta\alpha_1\mu)\dot{r}_{-3} +$$

$$\gamma_1(1 - \mu)(\dot{c}_{-1} - c_{-2}) + \gamma_2\beta\alpha_1(1 - \mu)\dot{c}_{-3} + \gamma_2\dot{\pi}_{-1} - (2\gamma_2 + \gamma_1)\dot{\pi}_{-2} +$$

$$(\gamma_1 + \gamma_2 + \beta\alpha_1\gamma_2)\dot{\pi}_{-3}$$

$$\dot{p} = (2 - \beta\alpha_2 + \mu\gamma_1)\dot{p}_{-1} - (\beta\alpha_1 - \beta\alpha_2 + 1 + \mu\gamma_1 - \mu\gamma_1\beta\alpha_2)\dot{p}_{-2} +$$

$$(\beta\alpha_1 - \beta\alpha_1\mu\gamma_2)\dot{p}_{-3} + (\beta\alpha_2 + 1)\dot{\pi}_{-1} - (\beta\alpha_2 + \mu\gamma_1 + \mu\gamma_1\beta\alpha_2 + 2)\dot{\pi}_{-2} +$$

$$(\mu\gamma_1 + \beta\alpha_1\mu\gamma_2 + 1)\dot{\pi}_{-3} + \beta\alpha_1(1 - \mu)(\dot{c}_{-2} - \dot{c}_{-3}) \quad .$$

One general comment is in order; these expressions are fairly complicated which, once again, conveys the impression that the return to equilibrium may take time and indeed give rise to cycles.

Solving for the steady state values of the four equations yields:

$$\hat{\dot{m}} = \hat{\dot{\pi}} \qquad (1'')$$

$$\hat{y} = 0 \qquad (4'')$$

$$\hat{\dot{r}} = -\frac{(1-\mu)}{\mu}\hat{\dot{c}} + \frac{\hat{\dot{\Pi}}}{\mu} \qquad (5'')$$

$$\hat{\dot{p}} = \hat{\dot{\pi}} \qquad (6'')$$

These steady-state conditions are very easy to interpret; in the long run the economy converges on the natural levels of output and employment while the money stock, the domestic as well as the world price level all grow at the same rate. Equation (5″) is particularly interesting since it throws some light on the appropriate rate of domestic credit expansion, $\dot{c}$. A true steady-state situation is one where μ, i.e., the ratio R/M_s, is constant over time and this, according to (5″), implies that $\dot{c}$ has to be set equal to $\dot{\pi}$ which of course is a well known result. Any rate of domestic credit expansion that exceeds (falls short of) $\dot{\pi}$ will inevitably translate into a steady decline (increase) in the value of μ which will eventually become equal to zero (one).[19]

The second general comment is that these results are perfectly in line with the previous analysis and that the model we have set up and are about to confront with the data is indeed a true monetarist model, as it was meant to be. Finally, it is worth mentioning that, as Whitman (1975) emphasizes, the model is fairly robust to a whole variety of alternative specifications. Usually the standard monetary approach to the balance of payments theory is charged with neglecting temporary fluctuations of output and prices which, from a policy point of view, may be quite important and with emphasizing the long-run neutrality of money which does not seem to be a burning issue (Modigliani (1977)). Our analysis has shown that the same steady-state results hold even when money is allowed to affect output and prices and the short-run validity of the PPP condition is denied.

4. The Empirical Results

> "...monetarism [is] not...a rigid and dogmatic credo, but rather...an ongoing and largely empirically-based approach to macroeconomics and monetary analysis."
> (Nobay and Johnson (1977))

The estimation of the model presents a few problems. Permanent income can hardly be considered to be constant over time and therefore made equal to one which has three implications; we have to measure it, respecify the demand for money and redefine y. Y* (in logarithmic forms) is obtained by performing a linear regression of the logarithm of actual income on time; the residuals about that trend are taken to be our y. As to the demand for money a standard log linear formulation is chosen; it becomes:

$$m_d = \delta_o + \delta_1 Y^* + p.$$

Next we have to compute the exchange rate and the world price level. They are both defined as a GNP weighted average[20] of the price of 17 countries' currencies in terms of lire and of the same countries' price indexes. The base year is 1970 when Π, E and P are all set equal to one. According to our analysis this is a situation which, if accompanied by the absence of monetary disequilibrium, generates a balance of payments equilibrium and as a consequence we have to include a term "a" which measures the extent to which e has to be adjusted to make it compatible with a balance of payments equilibrium given the 1970 π and p values.[21]

Once we take into consideration the newly-defined demand for money function as well as the parameter a and the non-zero variable e, the model becomes:

$$\dot{m}_s = \mu \dot{r} + (1 - \mu)\dot{c} \qquad (1''')$$

$$y = \alpha_1 (m_s - \delta_o - \delta_1 Y^* - p)_{-1} + \alpha_2 (\pi + e + a - p) \qquad (4''')$$

$$\dot{r} = \gamma_1 (m_s - \delta_o - \delta_1 Y^* - p)_{-1} + \gamma_2 (\pi + e + a - p)_{-1} \qquad (5''')$$

$$\dot{p} = \beta Y_{-1} + \varepsilon_1 \dot{\pi}_{-1} \qquad (6''')$$

The period taken into consideration is 1953-1970; data and sources are given in the Appendix. The model is fitted by Full Information Maximum Likelihood Technique in the Wymer version.[22]

Table 1 presents a first set of results which are impressive. There are ten parameters to estimate, they all come out with the right sign and nine of them are strongly significant. The money supply is well-defined with 90 percent of the weight placed on the domestic credit component and ten percent on the stock of reserves, just in line with the historical evidence.[23] The output equation is also well defined. The size and the level of statistical significance of α_1 strongly suggest that monetary policy is to be held responsible for fluctuations in the level of income around its trend values; this result, which does endorse the monetarist analysis,[24] is certainly more meaningful than all those obtained on the basis of a test à la Friedman-Meiselman (see Pettenati (1969) and Keran (1920)) or à la Sims (Sitzia (1972)). α_2 is well determined and points to a fairly strong relative price effect on the demand for output. The demand for money comes next. It is worth noting that the value of the permanent income elasticity parameter is extraordinarily in line with the results we have obtained in our previous (Spinelli (1979a)) single equation study[25] which made use of different data, of an Ordinary Least Square Technique and of a much richer specification.

Table 1

Parameter	Estimate	T-Statistics
α_1	.582	6.78
α_2	.352	4.08
α	.063	2.12
δ_o	-11.662	30.35
δ_1	1.408	40.14
β	.664	4.12
ε_1	1.026	6.66
γ_1	-1.960	3.08
γ_2	.369	.70
$1 - \mu$	.908	27.94
LLF*	271.061	

*Log of the Likelihood Function

As to the Phillips curve equation, the excess demand variable comes out strongly while the coefficient on the expected rate of inflation is indeed equal to 1.03; this represents a severe blow to the "cost-push plus permanent trade-off" Italian conventional wisdom and in this context it is perhaps worth mentioning that, after having endorsed the money illusion hypothesis for several years,[26] Modigliani (1977) now begins to write "one must distinguish between the model as such and a specific implication of that model, namely that the long-run Phillips curve is vertical or, in substance, that in the long run money is neutral. That conclusion, by now, does not meet serious objections from non-monetarists." Once again it should also be stressed that the magnitude of β and ε_1 is perfectly in line with the value we have obtained in our previous (Spinelli (1976)) single equation study of the price equation which, taken together with what we have just said about the demand for money, seems to suggest that the monetarist methodology which favours a research that is first done on a piecemeal basis and subsequently incorporated into a macro model is effective and tends to generate fairly consistent results.

The monetary approach to the balance of payments, the studies by Tullio (1977a,b; 1978a,b; 1979a,b), Kouri and Porter (1974) and Blejer (1978) as well as the Italian historical evidence which has systematically emphasized the dramatic consequences of swings in the rate of money creation on the balance of payments led us to expect a negative and robust coefficient γ_1 and our expectations prove to be correct. Furthermore, because the monetary approach itself places more emphasis on the direct expenditure effect than it does on the Hmean price-specie flow effect, the low level of statistical significance of γ_2 is hardly surprising. Work done by the Ancona group (Fuà (1976)), the Bank of Italy (Bank of Italy (1970), Rey (1967), Roccas (1972)) and Tullio (1978b, 1979b) has yielded the same kind of results.

Having shown that, contrary to the general belief, the monetarist hypothesis does stand up to the facts and indeed draws considerable support from the empirical evidence the questions arise as to how the model behaves when fiscal policy is taken into consideration and as to what kind of role we are prepared to assign to it.

Perhaps we are wrong in interpreting the messages that come from some monetarist quarters and our mistake may or may not be due to our strong ties to what has been called 'the gentle or soft' British monetarism which is known for making more modest claims,[27] but we do believe that the contention between the two schools of thought is about the relationship between the long-run consequences of a fiscal expansion and the way it is financed and not about the short-run efficacy of fiscal policy.[28] As far as we are concerned this idea remains undisputed and we are certainly prepared to go along with it.

From an empirical point of view the inclusion of fiscal policy in the output equation does not raise severe problems. (4‴) has to be re-specified in such a way as to include taxes (t) and government spending (g) among the regressors, i.e.,

$$y = \alpha_1(m_s - \delta_o - \delta_1 y^* - p)_{-1} + \alpha_2(\Pi + e + a - p) + \alpha_3 t + \alpha_4 g$$

t and g are taken to be the deviation of the rate of taxation and of total government spending from their trend values.[29] The model has been re-estimated; results are given in Table 2.

We will simply notice that both α_3 and α_4 present the correct sign and are strongly significant. This, taken together with the slight improvement in the value of the log of the likelihood function, points to the potential role of fiscal policy for short-run stabilization purposes. Secondly, and this too

Table 2

Parameter	Estimate	T-Statistics
α_1	.654	11.25
α_2	.297	5.23
α_3	-.270	4.41
α_4	.154	2.69
a	.077	2.50
δ_o	-12.314	60.60
δ_1	1.467	79.95
β	.712	4.32
ε_1	1.003	6.46
γ_1	-2.398	3.58
γ_2	.608	1.37
$1 - \mu$	.897	26.90
LLF	279.060	

is worth stressing, the inclusion of the two fiscal variables leaves the remaining parameters practically unchanged except for α_1 and γ_1 which both rise in value; in other words, monetary policy turns out to be even more significant when fiscal policy is taken into consideration so that Duesenberry's (1977) argument that monetarism is unable to accommodate fiscal policy proves to be inconsistent.

We are now ready to take yet another step forward towards a better specification for the model. Let us first focus on the expectations formation mechanism à la Cross and Laidler (1976) which is embodied in the Phillips curve equation and which makes $\dot{p}^e$ depend entirely on the world rate of inflation. We have just seen that for a small open economy on fixed exchange rates the steady-state inflation rate is indeed given by the world rate so that that mechanism is analytically strong. However there are at least three reasons which lead us to believe (as they did back in 1976--see Spinelli (1976)) that the domestic rate of inflation too must have some active role to play in the process. First of all it may well be that, from time to time, economic agents or at least some of them happen to wonder about the ability and/or willingness of the domestic monetary authorities to stick with a fixed exchange rate. Secondly, the world rate of inflation is a costly piece of information, certainly more costly than the domestic rate. Third, it takes time for the domestic rate to converge on the world rate and for many contracts which are agreed upon and expire before convergence is achieved the former may be a relevant variable to look at. In order to cope with these aspects we shall rewrite the expression for the expected rate of inflation as follows:

$$\frac{P^e}{P_{-1}} = \left(\frac{\Pi}{\Pi_{-1}}\right)_{-1}^{\varepsilon_2} \left(\frac{P}{P_{-1}}\right)_{-1}^{\varepsilon_3}$$

where ε_2 and ε_3, the two relative weights, should add up to one. The Phillips curve has to be modified accordingly.

The second major innovation relates to the demand for money. If we think of the current specification we realize that one fundamental variable is missing, namely the opportunity cost of holding money and footnote 11 can hardly cope with this problem in a satisfactory way. Two alternatives are open to us. One could include an explicit rate of interest variable among the regressors and add a fifth major equation which 'explains' the rate of interest itself.[30] Or, and this is a more economical but equally effective alternative, one could refer to the existing literature on the relationship between the rate of interest and the expected rate of inflation and regress the stock of money directly on the latter variable. If the latter alternative is adopted the demand for money function becomes:

$$md = \delta_o + \delta_1 Y^* + p + \delta_2(\varepsilon_2 \dot{\pi}_{-1} + \varepsilon_3 \dot{p}_{-1})$$

and of course the y and $\dot{r}$ equations have to be modified accordingly. When the model re-estimated we obtain the set of results that appear in Table 3.

Both $\dot{\pi}$ and $\dot{p}$ turn out to affect the expected rate of inflation in a statistically significant way and a slightly greater emphasis is laid on the former variable; ε_2 and ε_3, which have been estimated freely, add up to .97. As to the demand for money the opportunity cost variable comes out strongly with a sensible coefficient of -.77. The remaining parameters are stable and the log of the likelihood function rises slightly with respect to Table 2.

Table 3

Parameter	Estimate	T-Statistics
α_1	.636	10.66
α_2	.356	5.58
α_3	-.238	4.05
α_4	.177	3.22
a	.10	1.86
δ_o	-12.231	49.95
δ_1	1.463	67.95
δ_2	-.774	2.20
β	.543	3.59
ε_2	.533	2.65
ε_3	.435	2.87
γ_1	-2.184	2.93
γ_2	.014	.12
$1 - \mu$	.881	21.98
LLF	281.687	

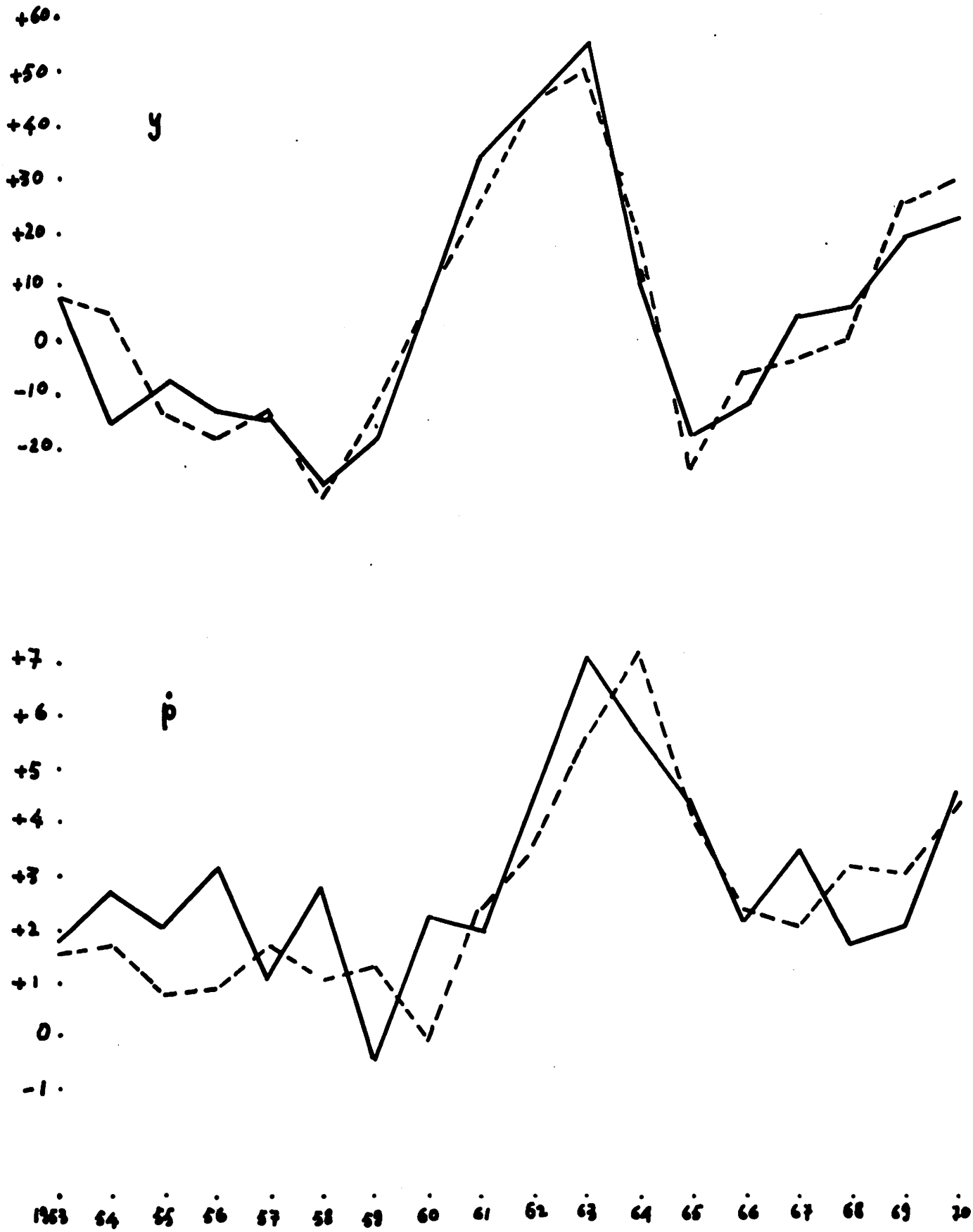
The performance of the model can also be assessed by taking a look at the graphs of the actual and fitted values. Three equations out of four, namely output, prices and money, turn out to perform fairly well and they certainly generate a satisfactory fit; the balance of payments equation however does perform poorly and it does so in a systematic fashion. There may be two different reasons for this. First of all our data on $\dot{r}$ should have been purged of the borrowing by the domestic monetary authority.[31] Secondly, and this, if we also considered the results by Laidler and O'Shea (1979), appears to be the fundamental reason, the 'other things being equal' condition which lies behind our $\dot{r}$ equation and which implies that the rest of the world is systematically in equilibrium is certainly too strong. However this is a kind of problem that cannot be dealt with in a single country study; the least we can do is to specify some 'world' demand for money, define the 'world' monetary disequilibrium and then include it among the regressors. We leave this as a suggestion for further work.[32]

5. Conclusions

In this paper we started off by isolating a few amazingly uningenious key ideas which lie behind the Italian Keynesian conventional wisdom and ultimately make people believe that monetarism is simply irrelevant.

Then we sketched a simple monetarist analysis of output and income fluctuations in a small open economy, translated the analysis into a set of empirically testable assumptions, verified their internal consistency and eventually confronted them with the data.

Our general conclusion could be as follows "...it must be acknowledged that every one of the monetarists' criticism of early simple minded Keynesians has proved in considerable measure correct..." (Modigliani (1977)).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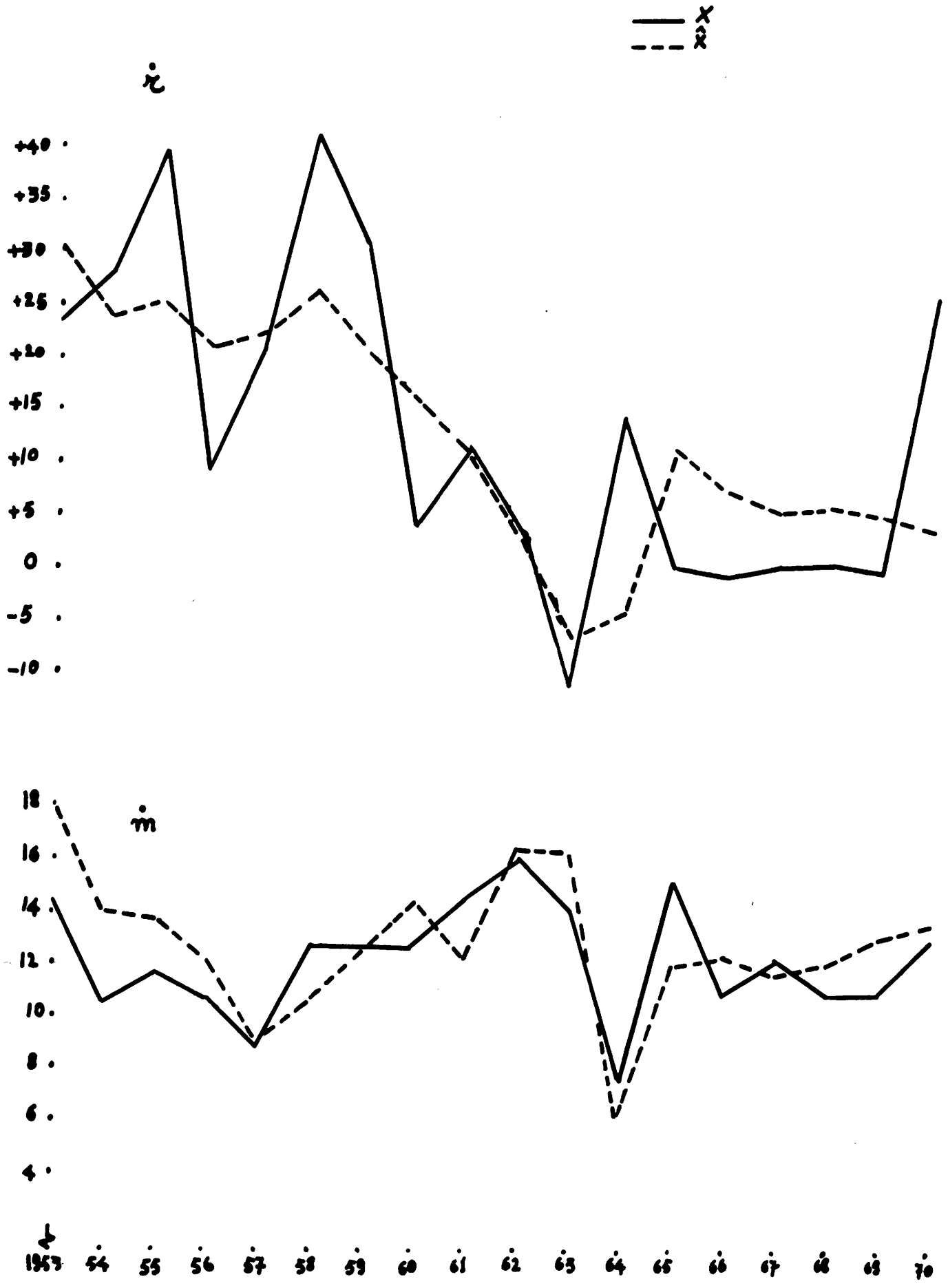
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DATA APPENDIX

	Money Supply	Government Expenditure (at 1970 Prices)	Average Tax Rate (X 100)	Income At 1970 Prices
51	4949	52.0	.115	21801
52	5910	53.1	.139	22881
53	6842	54.6	.142	24712
54	7593	58.3	.152	25596
55	8533	62.5	.157	27361
56	9497	63.9	.159	28861
57	10367	71.2	.163	30565
58	11781	74.8	.163	32030
59	13369	84.3	.168	34297
60	15145	93.5	.166	37418
61	17521	100.9	.166	40688
62	20578	112.3	.169	43565
63	23708	119.7	.170	46760
64	25632	122.6	.172	47458
65	29868	138.7	.173	48894
66	33332	149.9	.174	52183
67	37626	159.2	.174	56258
68	41961	177.4	.178	59761
69	46895	203.3	.175	64181
70	53360	202.9	.170	68368

	Price Level	World Prices (Logs)	Exchange Rate (Logs)	Official Reserves	Domestic Credit
51	.55	-.451	.024	292	3889
52	.57	-.444	.036	276	4765
53	.58	-.436	.035	350	5612
54	.60	-.430	.036	462	6370
55	.61	-.424	.034	682	7197
56	.64	-.404	.034	749	8040
57	.64	-.377	.034	921	8646
58	.66	-.344	.024	1389	9418
59	.66	-.331	.013	1910	10538
60	.67	-.314	.011	1988	12150
61	.69	-.300	.013	2222	13760
62	.72	-.275	.012	2259	16515
63	.77	-.253	.011	1987	20042
64	.82	-.232	.011	2298	21594
65	.86	-.204	.011	2416	24345
66	.88	-.170	.011	2313	27811
67	.91	-.142	.010	2386	31530
68	.93	-.103	-.001	2426	41328
69	.95	-.054	-.002	2408	41328
70	1.00	0	0	3142	48029

DATA SOURCES

Real Income at 1970 Prices:	ISCO, Conti Economici Trimestrali, for the period 1960-1973; ISTAT, Sommario di Statistiche Storiche, V. T. 140, for the remaining years.
Retail Price Index:	ISTAT, Bollettino Mensile, New Series.
World Prices:	a GDP weighted average of the consumer prices of seventeen western industrial countries. The countries used were: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Ireland, Israel, Japan, Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, United Kingdom, United States, West Germany. Data on GDP prices and exchange rates for these countries were obtained from International Financial Statistics, May 1977.
Exchange Rate:	a GDP weighted average of foreign currency values. International Financial Statistics, May 1977.
Money Supply:	sum of currency plus all sorts of deposits. ISTAT, Sommario di Statistiche Storiche, T. 94 and 95.
Official Reserves:	ISTAT, Sommario di Statistiche Storiche, T. 94.
Domestic Credit:	International Financial Statistics, various issues, line 32.
Government Expenditure:	ISTAT, Sommario di Statistiche Storiche, T. 121, 124, 126, 129.
Taxes:	ISTAT, Sommario di Statistiche Storiche, T. 121, 124, 125, 129.

FOOTNOTES

[1]For a description of the work done by this extraordinary economist see Cesarano (1976).

[2]The reader should take a look at the articles written for The Economist.

[3]Baffi (1975) is also particularly interesting.

[4]In his comments on the Italian monetary policy Hodgam (1974) writes: "Clearly formulated monetary theories appear to have exerted a substantial influence on the approach taken by the authorities to monetary policy in certain countries...Until recently this has not been the case in Italy. Whether this has been due to the absence of a strong tradition in monetary theory in the Italian economic literature or to the lack of relevance of monetary theory generally to policy goals selected by the authorities is not clear." Of course we do not have similar doubts. The Italian economic history is also rich in events which stress the potency of monetary policy. Let's take for instance the major inflations which accompanied the end of the two world wars and which have been brought under control thanks to the restoration of monetary discipline. Or let's take the great 1926 deflation and revaluation of the Lira which once again were the product of a dramatic and irrational use of the monetary restraint.

[5]There are few exceptions; see Battara (1967) and Fiaccavemto (1971).

[6]Perhaps it is symptomatic the fact that the OECD (1973) itself writes "Although it can be shown that the Italian authorities have systematically offset a considerable part of the monetary base impact of the balance of payments a full understanding of the financial mechanism cannot be obtained by a model which is basically applicable to a closed economy." (Page 48.)

[7]In his interview Brunner (1978) mentions Germany and Britain but of course Italy could be put at the top of the list.

[8]Of course one might also say that the IS curve is vertical but this would be inconsistent with a set of studies which points to the interest or liquidity response of investment and consumption expenditure. See for example Fazio-Vicarelli (1966), Sylos-Labini (1967), Filippucci-Gardini (1974) and the more recent versions of the model of the Bank of Italy.

[9]The study by Tullio (1979b) represents a first and major step in this direction. However it already belongs in the class of medium scale models.

[10]These two assumptions are well supported by the empirical evidence; see Spinelli (1979a).

[11]Three considerations are in order. First of all this is a temporary omission which will be taken care of in the next paragraph. Second, the extent to which the presence of transitory income translates into a revised Y* value makes this variable capture part of the effects which should be attributed to the rate of interest. Third the very fact that we are going to allow people to be 'off' the LM curve makes monetary policy one of the instruments we can turn to to affect the level of output.

[12]Basically we have to make the demand for <u>real</u> money balances equal to permanent income and equal to one.

[13]This variable captures part of the current account as well as part of the capital account. We will come back to this point.

[14]Our dependent variable is the annual rate of change of the retail price index. Somebody may be struck by the absence of a wage equation and indeed to a Keynesian this may be intolerable. It is simply due to the belief that in the market for labour market forces dominate and that domestic inflation is the principal force behind money wages. The Italian reader may also be surprised to see one single price equation, one equation for international reserves (rather than specific equations for imports, exports, capital movements) and one equation for output (rather than consumption expenditure, investment expenditure, exports, imports...). This is simply due to the fact that monetarists, unlike Keynesians, being aware of the naivity of their analyses prefer to work an aggregate variable and avoid modelling the behaviour of their specific components.

[15]We have in mind annual data.

[16]See Johnson (1972a) on this.

[17]These are few exceptions. According to the first model of the Bank of Italy (1970) consumption expenditure depends, among other things, upon the stock of money while in the Bologna Model (D'Adda (1976)) it depends upon the discrepancy between desired actual bank deposits.

[18]Around the mid sixties there has been some debate and disagreement between the Bank of Italy which maintained that wage inflation drove aggregate demand up and caused a worsening in the balance of payments and Modigliani-La Malfa who argued that the causation was going from wage inflation to price inflation to a worsening in the balance of payments.

[19]To see this we simply have to rewrite (5'') as follows:

$$\mu \hat{\dot{r}} = -(1 - \mu)\hat{\dot{c}} + \hat{\dot{\pi}}$$

The reader will also notice that our expression is easy to reconcile with Johnson's (1972b) own well known results which are simply based on a slightly different set of initial assumptions, namely that the demand for money is a function of actual income, that there is a positive growth rate and that the world rate of inflation is zero.

[20]We have to use geometric weights so that the product $\pi \cdot e$ is the price of foreign goods expressed in terms of domestic currency units. I thank David Laidler for supplying me with these data.

[21]e, π and p are the natural logarithms of E, Π and P.

[22]We experimented both with the TSP and the Wymer version of the FIML technique. We obtained the same results. If there is any difference between the two versions that has to do with the sensitivity of the final results to the set of initial wild estimates which have to be chosen by the operator and to the value of the t-statistics. Usually with the Wymer programme it is more difficult to reject the H_o hypothesis. This made us opt for it.

[23]If we take the ratio of the stock of reserves to the money supply we get a ratio which, on average, over the period 1953-1970, is equal to 8.6 percent, well within two standard errors of the point estimate.

[24]Apparently there is a contradiction between the small economy assumption and the great efficacy of monetary policy; however, it should be pointed out that it is one thing to say that world prices are given, it is another to say that in the short run monetary disequilibrium does not affect domestic output.

[25]Somehow these results undermine Johnson and Taylor's (1978) intuition that there is no point in estimating one single equation.

[26]See for instance Modigliani and Tarantelli (1973).

[27]For the term 'gentle' see the article in The Times, Thursday, April 29, 1975; the term 'soft' has been used by Brunner (1978); Kaldor (1970) in describing the British monetarists says "...they write in muted terms and make more modest claims...".

[28]The reader may find it interesting to take a look at the articles by Friedman (1977) and Vrooman (1979) that show that even on the basis of the St. Louis equations fiscal policy proves to play a significant role.

[29]We simply took the ratio of taxes to actual income and government spending and regress them on time. The residuals are our t and g. Notice that the procedure amounts to imposing a 100 percent long-run crowding out effect.

[30]The problem of course is to define a domestic rate of interest which is allowed to deviate from the world rate in the short run.

[31]Lack of data prevented us from taking this problem into consideration.

[32]The reader should also be aware of the following two experiments that we have conducted. The first involved adding the lagged dependent variable on the right-hand side of the output equation; we did so in an attempt to capture sluggish responses on the part of output to monetary and fiscal shocks but the system never converged. Secondly we also added monetary disequilibrium to the price equation in order to capture the information content that this variable inevitably carries. The variable did turn out to be strongly significant but it also captured the effects of the remaining two regressors, namely aggregate demand and the standard price expectations variable. The result is hardly surprising in view of the high correlation between monetary disequilibrium and excess demand and, of course, of the results put forward by Jonson (1979) himself. It seems to us that the initial formulation is 'neat' and therefore we decided to stick with it.

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