Pressure on the Bank of Italy in the pre-EMU era (1984-1998)

Chiara Dalle Nogare[1] and Matilde Vassalli
University of Brescia

For a long time the Bank of Italy has enjoyed a reputation as a highly independent central bank. We present here an empirical investigation assessing whether this reputation is actually confirmed by the historical record of its decisions on interest rates. Following Havrilesky's (1995) methodology, we construct a monthly index of external pressure on the Bank of Italy for the period 1984-1998. We check whether BI responded to pressure by estimating some Taylor rules, augmented with the pressure index. The main conclusion is that in some cases external pressure did affect the Bank of Italy's conduct.

1. Introduction

Nowadays there is a vast literature on political economy which argues that monetary policy is the result of the interaction between a number of players. Even in an institutional set-up such as the present one, i.e. one in which a central bank is the sole agent responsible for interest-rates moves, describing its function as merely putting into practice its priorities, gives a highly-stylised picture of what goes on in reality, as the literature shows with respect to different countries (Alesina, Roubini and Cohen (1997), Maier (2002), Maier and Knaap (2002), Maier and Bezoen (2004)). In fact, central banks do not exist in a social and political vacuum. Their conduct may be affected by various agents in their vicinity. Whether this happens or not depends on a central bank's response to the pressure these agents exert on it.

[1] Corresponding author. Dipartimento di Scienze Economiche, Via San Faustino 74/B, 25122 Brescia, Italy; dallenog@eco.unibs.it, tel. ++39-3482724052, fax ++39-0302988837. Matilde Vassalli's e-mail address: vassalli@eco.unibs.it .

We aim to verify the existence and the effect of pressure on the Bank of Italy (hereafter BI) in the pre-EMU era. The subject is interesting for several reasons. Firstly, it is puzzling to see that in the literature BI has very different positions in the rankings of central banks with regard to their degree of independence from government (Grilli, Masciandaro and Tabellini (1991), Cuckierman (1992), Alesina and Summers (1993))[2]. As for pressure from interest groups, nothing at all has been written so far. For a long time BI has enjoyed a reputation as a highly independent Central Bank in non-academic circles, but is this actually confirmed by the historical record of its decisions on interest rates? Facts count more than legal status and opinions, and they need to be investigated. We also consider whether there is anything of interest regarding the present-day monetary policy to be learned from the Italian experience in the recent past.

Following the methodology popularized by Havrilesky's (1995) seminal work and its extensions by Maier, Sturm and de Haan (2002), external pressure on Bank of Italy is evaluated by counting the number of articles in financial newspapers in which the government or different interest groups demand an easier or tighter monetary policy. The indexes of pressure on monetary policy thus constructed are based on the assumption that the financial press reports both formal and informal requests for monetary ease or monetary tightness with little bias.

The period covered in the analysis is 1984-1998 (the closing date of the period is justified by the fact that, since 1 January 1999, monetary policy has been handed over to the European Central Bank) and the indexes are constructed using the *Sole 24 Ore* on-line data bank. The

[2] According to Grilli, Masciandaro and Tabellini (1991), who consider the interaction between central banks and governments, BI ranks among the top six most politically independent central banks of the industrialized world, " is true their index of economic independence *vis-à-vis* the government shows a different picture, just as in Alesina and Summers (1993), but Cuckierman (1992), who also considers how monetary policy is operated in practice (often regardless of legal prescriptions) places Italy either in third or in fifth place (Table 19.8, page 390).

Sole 24 Ore was Italy's only financial daily newspaper until 1989 and is still by far the best selling and most influential one.[3]

As the next step, we use these indexes of pressure on BI to augment Clarida Galì and Gertler's (1997) version of the Taylor rule for Italy and see whether they are significant. It is important here to clarify a point. As pressure is not a sufficient condition for lack of independence, because a central bank can resist it, it is, in theory, not a necessary condition. In fact, lack of pressure may mean that monetary authorities just do what pressure groups want them to do. When considering pressure coming from the government, for instance, a central bank might behave cooperatively as in Weingast and Moran (1983), where, although political power does not issue directives on how to operate, the members of an agency just conform to their preferences in order to be re-appointed. This is, however, a model that does not fit the case of the Bank of Italy, since its Governor has been appointed for life until very recently. And, although it is the Cabinet's prerogative to appoint all the highest positions at BI, this has always been considered a mere formality, because BI is a hierarchical organisation which considers only internal career advancements[4]. As for the other pressure groups, the existence of a system of incentives working to get the BI to behave cooperatively is questionable. It may, then, be said that, given this institutional set-up, pressure is the only way to induce BI to conform to one's own preferences on monetary policy.

The article is structured as follows: section 2 describes the indexes of pressure on BI that we have constructed and their trends; section 3 is a brief introduction to the models and the econometrics we use for the empirical tests; section 4 illustrates data and results; section 5 concentrates on a possible interpretation of the results and section 6

[3] *Sole 24 Ore* is owned by Confindustria, Italy's most important industrial association, but it has never been just the voice of the Italian business world. The most eminent Italian economists have often been invited to write articles.

[4] In 1994 the appointment of a vice-director, one of the highest positions within BI, saw a long battle between a BI and a government candidate. This was a very unusual event, and eventually the government had to give up.

summarizes the conclusions and illustrates their relevance for the present day.

2. The pressure indexes: an overview

Presindx is an index of total pressure on BI constructed as the sum of Polindx1 (political pressure coming from the government), Ecindx (pressure from employers' organisations), Unindx (pressure from trade unions), Finindx (pressure from the financial sector), Otherindx (pressure from "others": opposition parties, journalists, economists, research institutes, supra-national or foreign organisations, unidentifiable sources). *Table 2* shows that Presindx mainly reflects the trends of Ecindx, Otherindx and Polindx1; it is correlated slightly less to Unindx and poorly to Finindx. The five subindexes do not seem to be so highly correlated to each other. Therefore, each of them contains information specific to the source to which they relate. This implies they do not simply reflect a common perception of the economic cycle and its consequences.

In what follows we express some general considerations on the trend of Presindx and of the sub-indexes. As *Figure 1* shows, though not absent in the 80s, pressure intensified strongly in the 90s and was especially heavy in 1992-1993 and 1996-1997. We consider the economic circumstances, explaining the rising of pressure from the different players, episode by episode. Before doing so, however, we take a closer look at the institutional status of BI *vis à vis* the government, a crucial issue in all democracies, and its evolution in time.

After the obligation for the Bank of Italy to buy unsold Treasury Bonds was abolished by law in June 1981, the relationship between the Italian government and BI was defined as a "divorce". That law undoubtedly changed the institutional set-up underlying the relationship between the Italian government and the Bank of Italy. Later, institutional changes were mainly introduced at the EU's request as being necessary in order to be part of the EMU project and strengthened BI's independence. The most important innovations were the fixing of the official discount rate by the Bank of Italy alone, without any ratification

by the Treasury (30 Jan 1992), and the abolition, dating 12 Nov 1993, of the use of the Treasury's account at BI to finance public deficit; originally, it was possible for the Treasury to borrow up to 14% of the deficit's amount. Furthermore, the new rules (9 Feb 1993) regarding the obligatory reserves of the banking system at the BI were of great importance. In fact, even after the "divorce", BI would use that liquidity to buy Treasury bonds at non-market conditions.

The early part of the sample was characterized, from a monetary point of view, by the strengthening of the EMS: realignments were less and less frequent, so that the external constraint began to be perceived as stringent. Inflation was successfully brought down from the double-figures data of the late-70s, but a constantly expansive fiscal policy marked the political action of all Italian governments. This, together with the global rise in interest rates and the impossibility to have recourse to inflation or to exchange-rate devaluations, determined an even stronger expansion of government debt than in the previous years. It took a while, however, before monetary policy was affected by this, because Italy's growth rates were high and so sustainability was not an issue.

To what kind of pressure was BI subject in the 80s? One should not overestimate the effect of the *divorce*: for all its formal relevance, it did not induce the government to refrain from expressing its views on monetary policy in the years immediately following. Polindx1 well represents this situation: in fact, it is often different from 0, especially in the mid-80s. In August 1986 the demand for lower interest rates, justified by decreasing inflation, was also supported by financial pressure and pressure from other sources.

Looking at the political index in general, it is quite evident that when its value is not 0, it is (almost) always negative (*Figure 6*). This contrasts with the evidence from other countries in the same period, especially the U.S. (Havrilesky (1995))[5], and is entirely due to the Italian fiscal anomaly.

The index of economic pressure (Ecindx) is also always negative

[5] In the period 1959-1991 Havrilesky records 207 ease signals and 134 tightness signals.

when not equal to 0 (*Figure 2*). This, however, is in line with results also reported by Maier, Sturm and de Haan (2002) for Germany. It is also consistent with what one would expect, given the bias of the business sector for low interest rates. Part of the trend of Presindx in the 80s is due to this kind of pressure.

In 1989, due to the upturn of the economic cycle, there was a strong increase in bank credit (5 points over BI's target Credito Totale Interno); during the same period the central banks of Germany, France and the UK tightened monetary policy. In March 1989 capital movements would be liberalized. During 1988 and the beginning of 1989 we record an unusual situation: Presindx is positive, meaning BI was invited to increase interest rates. This is the effect of a similar upturn of the financial index; banks feared a strong outflow of capital.

The 1989 upturn is, however, short-lived. The revaluation of the lira exchange rate due to foreign capital inflows justified the request for lower interest rates from all sectors, including the financial one, in May 1990.

In general, however, Finindx moves very little (*Figure 3*), which indicates that Italian banks were very cautious in giving BI any kind of advice.

Apart from this episode, the second half of the 80s appears as a period of relatively low pressure, if compared to the previous and the next one. This is mainly due to the fact that Polindx1 moves little. It was a time of frequent cabinet change: four governments alternated in office in between 1986 and 1989. The small pressure is probably the effect of two facts. Firstly, it used to take a while before a new government could confront BI, given its well-known and recognised competence in economic and financial analysis. Secondly, 1986-1989 is the period with the highest, veto players scores, for Italy according to Tsebelis (2002). The members of the governments alternating in office would not agree upon what pressure to exert.

As *Figure 1* shows, pressure intensified strongly in the 90s, and was especially heavy in 1992-1993 and 1996-1997.

During the second part of 1992 there were strong speculative attacks on the lira and the EMS agreement forced BI to respond strongly to

them. The official discount rate was increased from 12% in July 1992 to 15% in September 1992. It became increasingly evident that the situation was unsustainable. Italy abandoned the EMS on 17 September, 1992. The request to ease monetary policy was especially strong afterwards: the economic, financial and other sources' demands for monetary easing were all relevant. Since the autumn of 1992 strong fiscal stabilisation policies started, in order to catch the EMU train again.

1993 was the year when Mr. Fazio became Governor of the Bank of Italy after Governor Ciampi's long reign.[9] This was quite a change. Under Governor Fazio BI began to show a more sceptical attitude towards Italy's chances of joining the EMU. Consequently, the official discount rate would be lowered cautiously, in view of a possible scenario in which Germany would not accept the participation of the Italian Lira. The government exerted pressure for an accommodating monetary policy. The aim was to reach a smaller deficit figure by reducing interest payments on public debt.

Trade unionists' interpretation of the economic stance after the 1992-93 slump as a classical Keynesian case, in which a fall in interest rates would raise employment but not inflation, justifies their activism since 1994, which is new with respect to their silence in the 80s.

The reason why Unindx moves little in the 80s is that wages were almost fully indexed until 1985. In 1985 a referendum refused the abolition of a new law forbidding the indexation mechanism (*scala mobile*), but it was not until 1993 that an agreement with the government was sealed through which the wages' anchor was calculated in target, not actual inflation. As expected, when not equal to 0, Unindx is always negative in the whole period of interest (*Figure 4*).

In May-June 1995 the increase in inflation and the weakness of the lira exchange rate led to a new demand for monetary tightness, which was also supported by the government (it is the only positive peak in Polindx1). But it was only temporary.

[9] Ciampi was appointed as Prime Minister of a transition government which lasted from April 1993 to May 1994.

After 1995 it appeared even more evident that Italy would not easily fulfil the Maastricht criteria in time, a must for Prodi's Centre-Left government, and so strong invitations to follow the international trend of falling interest rates were addressed to a prudent Governor Fazio.

During the years 1996-1997, all indexes but the financial one contributed to the negative values of the overall index; in absolute terms, the highest values of the whole sample period. There was a wide consensus about the fact that Italian participation in the upcoming EMU would imply the convergence of interest rates and therefore BI was criticized for being prudent in lowering the official discount rate. Admission to the EMU was eventually obtained.

3. Model and econometrics

While the literature on Central Bank reaction functions has almost exclusively considered the role of economic variables, such as inflation and output gap, several studies, pioneered by Havrilesky (1995), have estimated models focusing solely on external pressure measures. As stressed by Froyen, Havrilesky and Waud (1997), however, it is likely that within this literature the statistical significance of pressure measures is caused by both the monetary authority and pressure groups responding to the same omitted economic variables.

Our approach takes into account the possible importance of economic as well as extraeconomic influences determining BI's conduct. In fact, we include both sets of variables in the reaction function. We follow Maier *et al.* (2002) in considering not only political pressures but also influences coming from different interest groups. In constrast to them, however, we specify a more theoretically-based reaction function drawing from the increasingly popular literature focused on Taylor rules.

Clarida, Galì and Gertler (1997) (hereafter CGG) provide a useful model of monetary conduct, which enriches Taylor's (1993) original "rule" with a forward-looking dimension. Svennson (1996, 1997) proves a model totally similar to CGG's to be compatible with sound theoretical foundations, given as basic assumptions a quadratic loss function over inflation and output for the Central Bank and an economic environment

where nominal wage and price rigidities are widespread. This stream of literature has found wide success and numerous econometric applications.

CGG's model may be synthesised as follows. The monetary authority is assumed to set a nominal interest, rate target in the following way:

$$i^*_t = \bar{i} + \beta[E(\pi_{t,k} \mid \Omega_t) - \pi^*] + \gamma E(x_{t,q} \mid \Omega_t) + \lambda E(g_t \mid \Omega_t) \qquad \textbf{[1]}$$

where $\bar{i}$ is the long-run nominal equilibrium interest rate, $\pi_{t,k}$ is the annualised percent variation of prices between t and $t+k$, π^* is the Central Bank's target for inflation, $x_{t+q} \equiv y_{t+q} - y^*_{t+q}$ is the output gap at $t+q$ (CGG assume q=0), g_t may be any variable other than inflation and output which a Central Bank considers relevant when setting a value for the interest rate, E is the expectation operator and Ω_t is the information set at t.

When considering Italy, g_t may be interpreted as the exchange rate. This allows us to account for the external constraint which, being part of the EMS before the 1992 crisis, and wishing to be part of the EMU afterwards, imposed on monetary policy.

The actual interest rate is adjusted to the target according to:

$$i_t = (1-\rho)i^*_t + \rho i_{t-1} + u_t \qquad \textbf{[2]}$$

where $\rho \in [0,1)$ is the smoothing factor and u_t, i.i.d., may reflect a Central Bank's technical inability to keep the interest rate to the desired level, the random decision to temporarily deviate from it, the desire not to disrupt the financial markets (Clarida *et al.* (1997), Woodford (1999)), or to stabilise the private sector's expectations about future monetary policy (Rudebush (2002)).

If we define $\alpha \equiv \bar{i} - \beta\pi^*$, and substitute (2) into (1) we obtain:

$$i = (1-\rho)[\alpha + \beta\pi_{t,k} + \gamma x_{t,k} + \lambda g_t] + \rho i_{t-1} + \varepsilon_t \qquad \textbf{[3]}$$

where

$$\varepsilon_t \equiv -(1-\rho)\{\beta[\pi_{t,k} - E(\pi_{t,k} \mid \Omega_t)] + \gamma[x_{t,q} - E(x_{t,q} \mid \Omega_t)]\} + u_t$$

(3) is CGG's "Taylor rule". It expresses the nominal interest rate as a function of future inflation at a given target horizon k, the current output gap, the exchange rate or any other target a Central Bank considers important and the last period's interest rate. Estimates of β and γ provide an indication of a Central Bank's monetary conduct. In particular, given the relationship between nominal and real interest rates, β>1 (Taylor's principle) represents a monetary conduct aiming at stabilising inflation, while with β<1 the nominal rate does not increase sufficiently to keep the real rate from declining, thus making monetary policy accommodating. If *g* is the nominal exchange rate λ is expected to be positive, as its devaluation usually triggers a rise in interest rates as a reaction. CGG's Taylor rule is here augmented as follows:

$$i_t = (1-\rho)[\alpha + \beta\pi_{t,k} + \gamma x_{t,q} + \lambda g_t + \eta INDX_{t-1}] + \rho i_{t-1} + \varepsilon_t \qquad \textbf{[4]}$$

where *INDX* is the overall pressure index or any of its components. The idea is, in fact, to check through regression analysis for their significance. By so doing, we implicitly test whether BI included its "popularity" in its preference function.

Note that we take the pressure index of interest lagged one. We do so in order to avoid the possible reverse causation problems. Given that a Central Bank does not always change the interest rate at the end of the month, using contemporary pressure as a regressor may highlight a relation between interest-rate changes and pressure which appeared in the press after these changes had taken place.

Two features of the model we consider, namely non-linearity in the parameters and a composite disturbance term, which is correlated to the explanatory variables[7], suggest to CGG the use of Generalised Method of Moments as the best choice for conducting their econometric analysis. The latter problem must be taken particularly seriously: all dynamics are relegated in the error term here, and the choice of an estimation technique

[7] This comes from its being a linear combination of the expectation errors for inflation and output plus the exogenous disturbance itself.

disregarding this would end up producing inconsistent estimates. We make the same choice here, but qualify it in a different way.

In the two-step procedure involved, the first step consists in estimating the asymptotic covariance matrix. This is done according to procedures known to produce heteroskedasticity-autocorrelation consistent estimates, or HAC estimates. Unlike CGG, we use the HAC matrix first suggested by Andrews (1991). In fact, simulation proves that his method performs slightly better than all previously proposed estimates for finite samples. We have also adopted the "pre-whitening option" suggested by Andrews and Mohanan (1992). In fact, Andrews (1991) finds that all GMM estimators perform rather poorly when the moments involved are I(1) or AR(1) with a correlation as high as 0.9. The estimation technique proposed by Andrews and Mohanan, instead, is applicable also in those cases.

4. Regression analysis

We estimate (3) and (4)[8]. Details about the economic series we use and their sources are in *Appendix 2*[9]. We adopt two different time horizons for inflation: +3 and +6. Given that we are using monthly data, we think this is reasonable[10].

[8] We have also tried with two other specifications. In the first one the interest rate is simply a linear function of all the considered regressors. ρ is, in this case, just the coefficient of the interest rate lagged once and does not interact with the other coefficients as in the CGG non-linear model. In the other specification, only the pressure index does not interact with ρ, while the other parameters do. Significance and relative magnitude of the estimated coefficient did not seem to be affected in most of the cases. These results are available upon request.

[9] We added two dummies controlling for strong speculative attacks to the lira: one takes value one in 1992:10 and one in 1995:4. Both turn out to be significant in all regression results.

[10] CGG use a one-year time horizon for inflation. We have experimented a little in this sense, finding in most cases meaningless results. The dramatic change in the quality of results by considering a shorter horizon has been interpreted as the reflection of the fact that by using +3 or +6 we were actually capturing BI's actual target. More extensive work was tried on even shorter horizons (actual or next month's inflation). Here the problem was sometimes convergence, and at other times robustness of the estimates.

As for the output gap, we calculated it as the deviation of the Industrial Production Index from a trend obtained by the use of the Hodrick-Prescott filter[11].

In order to account for the external constraint on monetary policy, one should ideally have a series of the deviations of the lira-ECU exchange rate from the lira's parity (or BI's target after 1992) at any given point in time, but no such series is readily available, nor is it easily constructed. The use of the exchange rate *tout court* is an easy alternative. We report estimates with the lira-German mark exchange rate here.[12]

Finally, the choice of instruments (12 lags of inflation, output gap, exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate) is rather standard.[13]

Let us come to the regression results. *Table 3* reports a preliminary check with a model not yet including any pressure index, and the estimates when the index of overall pressure Presindx is included.

Overall, the estimates are consistent with economic theory and seem quite robust to the choice of the inflation horizon. BI seems to have adopted a non-accommodating reaction function in the period of interest, since $\beta>1$ and is significant. On the contrary, γ is not significant. The choice to smooth the impact of any news on the value of the current

[11] We have also experimented with two alternatives: a linear trend and a quadratic trend. In both cases, our pressure indexes are almost always insignificant, and the output gap parameter estimate is sometimes significant, sometimes not. The final part of this paragraph reports results obtained using an alternative measure of the output gap.

[12] CCG consider also the German nominal interest rate. We have tried with the German fibor and the German call money rate but they almost always turn out to have an insignificant estimated coefficient. These results are available upon request. Notice they are in contrast with CGG's estimate on the 81:6-89:12 sample.

[13] Orphanides (2001) criticizes the use, in regression analysis, of data that were not available to the monetary authority at the time it took its policy decision. Taking account of this, Taylor's rules for the Fed have been recently estimated using data better approximating the FOMC's information set at time of its decisions. Froyen *et al.* (2002) extend Froyen *et al.* (1997) using forecasts for the relevant economic variables taken from the Greenbook. We could not follow this approach, since similar forecasts are not available for Italy.

interest rate, avoiding big jumps, seems to be confirmed by the fact that the estimates for ρ are high and significant at 1%. The coefficient for the exchange rate is also highly significant and has the right sign. In *Table 4* we report previous results of similar analyses for comparison.

Notice that all previous analyses including the Nineties find $\beta>1$, just like ours does. However, the significance of γ is more controversial; we will come to this point again at the end of the paragraph.

Presindx does seem to play a role, as its coefficient has the right sign, reasonable magnitude and is significant. The only relevant effects on the other estimated coefficients are a higher value for the constant and a lower value for the parameters of inflation and the exchange rate.

The adjusted R-squared is good and Hansen's test shows there is not a problem with the specification nor with the instruments. Dropping the output gap when insignificant does not make any relevant difference. *Figure 7* shows the actual and the fitted interest rate; the latter is constructed starting from the estimate of column 3, *Table 3*.

The following tables report regression results in the spirit of the second part of *Table 3*, where, however, Presindx is substituted each time by the pressure sub-indexes of which it is made up. The aim is to see which pressure groups were the most successful in having their requests listened to by BI.

In *Table 5* the model is augmented with either Ecindx or Finindx.

All parameter estimates are in line with those in *Table 3* as far as significance and magnitude are concerned. Monetary policy advice from the business sector does not seem to have been disregarded by BI when it came to deciding on interest rates. This contrasts with the idea of its working in perfect isolation. Alternatively, we may interpret BI's consideration of pressure coming from the business sector as the inclusion in its Taylor Rule of what was considered as extra information on business-cycle perspectives. As for the financial sector, the results are less clear-cut.

In *Table 6*, Presindx is substituted by Unindx and Otherindx respectively.

Unindx is never found to be significant. This is hardly surprising: it is common sense to think that a Central Bank does not pay too

much heed to trade unionists' opinions on interest rates. On the contrary, the pressure coming from the all-comprehensive "others" sector has significant estimates.

Finally, the results obtained in the left part of *Table 7*, where Presindx is substituted by Polindx1, are not in accordance with each other.

Column 1 shows a very good result in terms of significance and magnitude of the coefficients of all regressors considered. It seems the government, too, was able to influence BI's conduct. Yet Column 2 tells a different story.

In order to see if these puzzling results are dependent on the way Polindx1 was constructed, we decided to calculate political pressure in a different way, namely giving weights to declarations about monetary policy according to the rank of their source[14]. The right side of *Table 7* shows the results using a new political index, named Polindx2.

The comparison between the left and the right of *Table 7* highlights the fact that the problem does not lie in the construction of the index of political pressure. In fact, the two parts of *Table 7* are very similar. Weighted or not, political pressure is significant in just one version of the model, namely the one with a time horizon of 3 months for inflation.[15]

[14] Here are the weights we decided to apply. Prime Minister: 2; Treasury Minister and Vice Prime Minister: 1.5; "government": 1.25; Minister of Finance, Minister of the Budget: 1; other ministers: 0.75; under.secretaries (sottosegretari): 0.5; representatives of parties forming the government: 0.25. In the late 1990s there was a merging of the Treasury, the Budget and later also the Finance ministers' offices in what was named "Ministero dell'Economia". This new minister's declarations have been weighted 1.5.

[15] An anonymous referee has pointed out that this puzzle may be related to the fact that there were two goals of monetary policy pursued in Italy in the period here considered: price stability and exchange-rate targets (in the first part of the sample the Italian government could call for a currency realignment within the ECU system, and from 1992 till 1996 the lira was out of the EMS). This analysis adds an extra dimension to the Italian monetary policy of the time, but it is questionable, in our view, whether this dimension is relevant. Most works on the subject consider only a basic Taylor rule specification (see *Table 4*). It is also questionable whether it should have an effect on the significance of the parameter associated with political pressure. Formally, it was the government who could ask for a realignment (and it did so on three occasions: 20 July 1985, 19 Jan 1987 and 7Jan 1990), but this was a formality, and it always acted in accordance with BI. Things did not change after 1992.

In order to see if the analysis is robust, we have replicated all estimates using a different measure for the output gap. This has been constructed starting from a quarterly GDP series, using the Kalman filter to obtain potential output and applying the cubic spline method, as in Eleftheriou, Gerdesmeier and Roffia (2006), to generate a monthly series. This is also meant to check whether the non-significance of γ is possibly due to the use of industrial production as a proxy for output. Some of the results are summarized in *Table 8*.

Indeed, the parameter associated with output gap is significant here, while the rest of the economic variables retain significance and the right sign. As for Presindx, it is significant at 10% when the time horizon for inflation is +3. This is due to the fact that Ecindx and Polindx1 are significant at the 10% and 5% level respectively. Contrary to the evidence found earlier, Finindx and Otherindx are not significant[16]. We can therefore confidently say that the Bank of Italy disregarded pressure coming from the trade unions, but did not disregard pressure from the economic sector and the political sector, although in this case the +6 horizon is not so clear-cut.

5. Response to political pressure: an interpretation

How can we explain the significance of the Polindx1 and Polindx2 parameters? How can we reconcile it with the reputation of BI as a central bank enjoying a high degree of independence from political power?

Let us start from the basic idea lying behind price stability as *the* goal of a Central Bank. One of the reasons why price stability is thought to be the best objective for a Central Bank is that it fosters economic growth through stability of the financial market. And yet, when monetary and fiscal policy are not co-ordinated, and the latter is very expansive, the link between monetary stability and growth is

[16] When the time horizon is +6, Ecindx and Polidx1 keep their significance. These results are available upon request.

put at risk (Sargent and Wallace (1981)). Fiscal policy was almost literally out of control in a large part of the sample considered here. BI was therefore trapped into a situation in which price stability and fiscal expansion would sooner or later determine an exchange-rate crisis.

Italy had joined the EMS project, and so BI was forced to pursue price stability (with still little margin for deviations from it). The government was not determining fiscal policy coherently with its European commitment, and BI could not but come to terms with that. It did so in two ways: on the one hand, its Governor would try to bring the government to fiscal discipline by means of his appeals[17]; on the other, BI would now and then accommodate fiscal policy somewhat in order to delay the inevitable disruption of the financial market. This is probably what we catch here with the significance of the political pressure parameters.

6. Conclusions

In this paper we present an index of the overall pressure exerted on the Bank of Italy's monetary policy from 1984 to 1998. It is constructed as the sum of five sub-indexes, each of which reports pressure from a particular interest group. These indexes are constructed following Havrilesky's approach. Their values are often different from 0: they are almost always negative, signifying pressure for a looser monetary policy. This reveals that the Bank of Italy did not operate in a social and political vacuum in the last 13 years before the EMU era.

As a next step we consider whether that pressure had an effect on BI's conduct, i.e. whether interest-rate movements did respond to it. We conduct an econometric analysis using a forward-looking augmented

[17] BI is entitled to refer to Parliament regarding its opinion about the budget law. BI has extensively used this prerogative. Moreover, the Governor gives a speech to BI's stakeholders once a year presenting the Relazione Finale, the Bank of Italy's document on the economic situation. This is, in fact, a speech to the nation, with major media coverage.

Taylor's rule, in the spirit of Clarida, Galí and Gertler (1997). If the presence of pressure on BI is no surprise, it is much more surprising to discover that this pressure was sometimes successful.

The most robust result we obtain is that BI deviated from its own monetary target to please the business sector. This may, however, be read in a different way: BI paid attention to the business sector's appeals because it considered them relevant extra information on the business cycle.

As for political pressure, there is evidence that this has played a role in shaping monetary policy. In spite of its commitment to price stability implied by joining the EMS, from time to time BI would lower interest rates as a response to political pressure. Indeed, the fact that fiscal and monetary policy non-coordination would sooner or later lead to trouble could not be disregarded, and BI tried to delay the inevitable exchange-rate and financial crisis. The latter eventually took place in 1992.

What is the lesson we can draw for the present from Italy's past? The European Central Bank is in many ways different from BI in the 1980s and the 1990s. The deviation from the Stability Pact experienced since 2003 and the following year cannot be interpreted as giving up fiscal discipline altogether. In spite of the early fears of many economists, the pact is still there and there has been no political intention to change it so as to empty it of its contents. This probably reflects a general knowledge of the risks such a choice would entail, which European public opinion has acquired. If the benefits of stable financial markets will continue to be perceived as an essential element of a country's economic well-being, then there is probably no risk that such an attitude will change. Hence, the Italian experience in the pre-EMU era has little to teach ECB nowadays. Other present-day central banks, however, and especially those of countries wishing to join the EMU in the future, may benefit from it. The lesson for them is that monetary and fiscal policy coordination is essential for a smooth path towards the euro.

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Appendix

Pressure on the Bank of Italy
in the pre-EMU era (1984-1998)

APPENDIX 1

Construction of the pressure indexes

The indexes are built using the "Sole 24 Ore on-line data bank", which collects all articles published by the most important Italian financial newspaper, *Il Sole 24 Ore*, from September 1984 until today. Their closing date is justified by the fact that, since 1 January 1999, monetary policy has been handed over to the European Central Bank. Construction was done using the keyword search-engine available in the data bank. Using the keyword method allowed us to find some articles probably not classified as dealing with monetary policy, but relevant for our purpose. In fact, we found reports of demands for a modification in interest rates in articles whose title was not, even marginally, related to monetary policy. We used many different keywords: all details on the subject and methodological issues are available upon request. Research results were classified along two dimensions:

1) Each request to the monetary authority for a reduction in interest rates (monetary expansion) was counted as -1, while demands for higher interest rate (monetary restriction) were counted as +1;
2) Each request for monetary ease or tightness was then classified into the following five categories based on the source of the request:
   a) Political pressure: reports of demands for a change in monetary policy coming from any government representative: Prime Minister, ministers, under-secretaries (sottosegretari), and from representatives of parties which were part of the government.
   b) Financial pressure: requests for looser or tighter monetary policy coming from commercial banks; bank organisations (ABI, ATIC, ACRI, ASSBANK, ISTBANK); financial-market associations (ASSOBAT, FOREX).
   c) Economic pressure: requests for a modification of monetary policy coming from industrial associations (CONFINDUSTRIA, ASSOLOMBARDA, CONFAPI) or single industries and producers; trade and retail organisations (CONFCOMMERCIO, CONFESERCENTI); agricultural associations (CONFAGRICOLTURA, CNA, CONFCOLTIVATORI); artisan organisations (CONFARTIGIANATO); Chambers of Commerce; co-operative associations (CONFCOOPERATIVE).
   d) Trade-union pressure: invitations to a looser or tighter monetary policy coming from the main trade unions (CISL, CGIL, UIL)
   e) Pressure from others: requests for a change in interest rates coming from opposition parties; journalists; economists; research institutes; supra national organisations (IMF, WORLD BANK, EUROPEAN COMMISSION) or foreign organisations (FOREIGN CENTRAL BANKS); unidentifiable sources ("others", "market").

For each category the corresponding index of pressure on monetary policy consists of the sum of pluses and minuses totalled in each month. A 0 may then represent two different situations: either we found no articles reporting pressure on BI, or we found some, but the requests they reported were in both directions and they netted out. This was, however, a very rare circumstance.

APPENDIX 2

The economic data set

Domestic interest rate: 3-Month Interbank Deposits rate; OECD Main Economic Indicators, code165225d ***Outputgap:*** log difference in the seasonally-adjusted Industrial Production Index from an Hodrick-Prescott trend; OECD Main Economic Indicators, code 162027ksa. In *Table 8* we use the OECD quarterly GDP series at constant prices, seasonally adjusted, for Italy (code 161021 WSA), apply the Kalman filter to obtain potential output and the cubic spline method to generate a monthly series. ***Inflation:*** 12-month log difference in the all items CPI; OECD Main Economic Indicators, code165241k, 1995=100 ***Lira-German Mark exchange rate:*** 1-month log difference of Lira-Dmark exchange rate, obtained from Morgan Stanley Capital International code MSERDEM (DM to 1 USD) and code MSERITL (Italian lira to USD) ***Price of energy inflation:*** 12-month log difference in the energy CPI; OECD Main Economic Indicators, code165251k, 1995=100 ***World price index of raw materials excluding fuel:*** Datastream, IMF data, code wdi76axdf, 1995=100 ***Foreign interest rate:*** 3-month German Fibor; OECD Main Economic Indicators, code126225d.

FIGURE 1. Presindx: index of overall pressure on BI

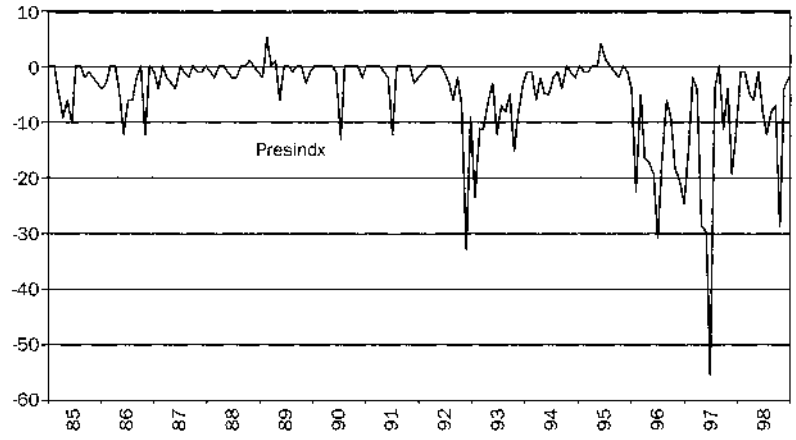

FIGURE 2. Ecindex: index of economic pressure on BI

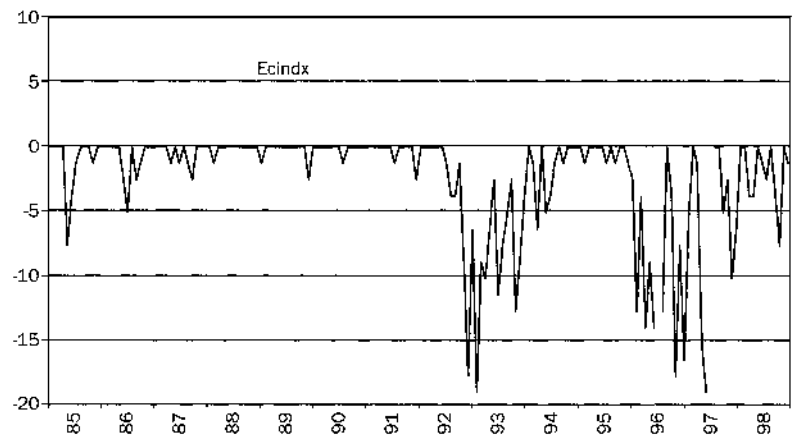

FIGURE 3. Finindx: index of financial pressure on BI

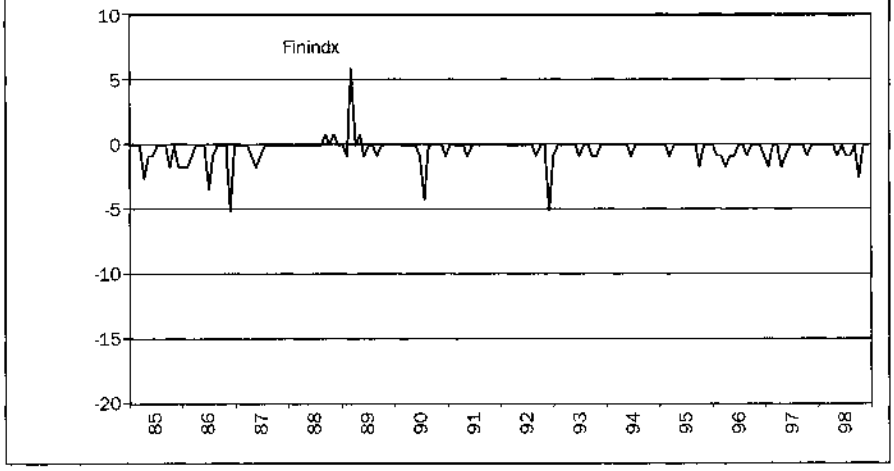

FIGURE 4. Unindx: index of trade unions' pressure on BI

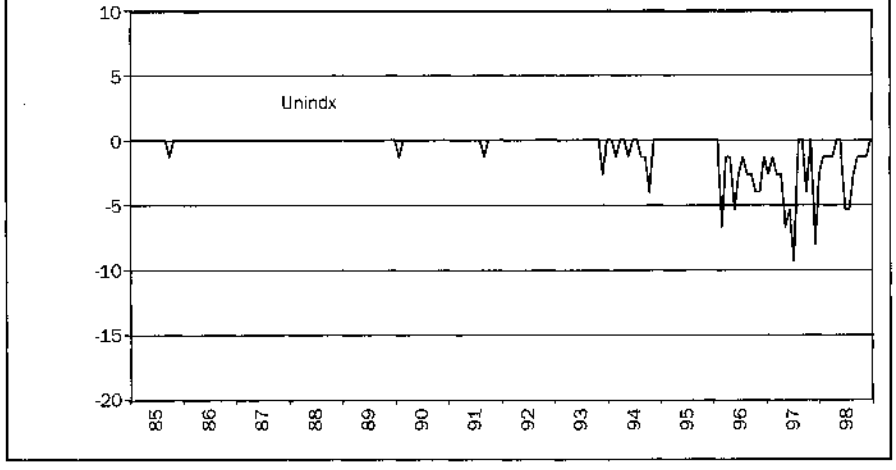

FIGURE 5. Otherindx: Index of pressure from "others" on BI

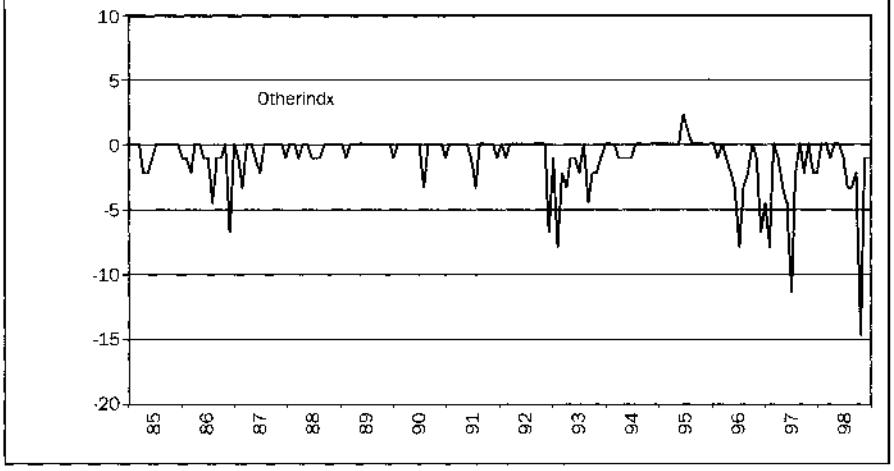

FIGURE 6. Polindx1: Index of political pressure on BI

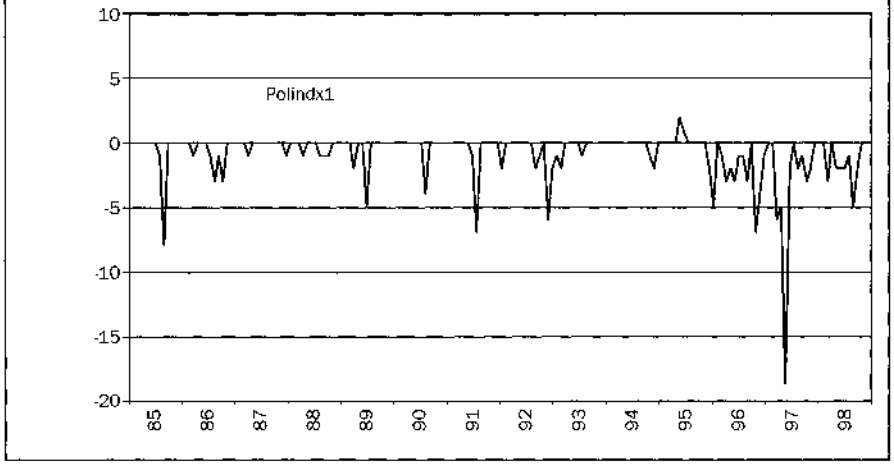

FIGURE 7. Interest rate: actual and fitted values

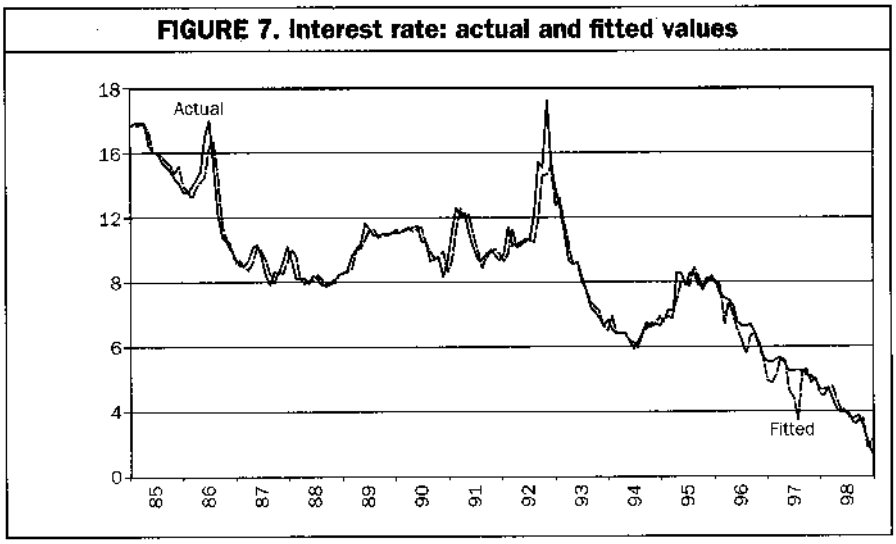

TABLE 1. Pressure indexes

Month	PolIndx1	FinIndx	EcIndx	UnIndx	OtherIndx	PresIndx
Sept-84	0	0	0	0	0	0
Oct-84	0	0	0	0	0	0
Nov-84	0	0	0	0	0	0
Dec-84	0	-3	0	0	-2	-5
Jan-85	0	-1	-6	0	-2	-9
Feb-85	-1	-1	-3	0	-1	-6
March-85	-8	0	-1	-1	0	-10
April-85	0	0	0	0	0	0
May-85	0	0	0	0	0	0
June-85	0	-2	0	0	0	-2
July-85	0	0	-1	0	0	-1
Aug-85	0	-2	0	0	0	-2
Sept-85	0	-2	0	0	-1	-3
Oct-85	-1	-2	0	0	-1	-4
Nov-85	0	-1	0	0	-2	-3
Dec-85	0	0	0	0	0	0
Jan-86	0	0	0	0	0	0
Feb-86	-1	0	-2	0	-1	-4
March-86	-3	-4	-4	0	-1	-12
April-86	-1	-1	0	0	-4	-6
May-86	-3	0	-2	0	-1	-6
June-86	0	0	-1	0	-1	-2
July-86	0	0	0	0	0	0
Aug-86	0	-6	0	0	-6	-12
Sept-86	0	0	0	0	0	0
Oct-86	0	0	0	0	-1	-1
Nov-86	-1	0	0	0	-3	-4
Dec-86	0	0	0	0	0	0
Jan-87	0	-1	-1	0	0	-2
Feb-87	0	-2	0	0	-1	-3
March-87	0	-1	-1	0	-2	-4
April-87	0	0	0	0	0	0
May-87	0	0	-1	0	0	-1
June-87	0	0	-2	0	0	-2
July-87	0	0	0	0	0	0
Aug-87	-1	0	0	0	0	-1
Sept-87	0	0	0	0	-1	-1
Oct-87	0	0	0	0	0	0
Nov-87	0	0	-1	0	0	-1

continues

continued

1. Pressure indexes

Month	PolIndx1	FinIndx	EcIndx	UnIndx	OtherIndx	PresIndx
Dec-87	-1	0	0	0	-1	-2
Jan-88	0	0	0	0	0	0
Feb-88	0	0	0	0	0	0
March-88	0	0	0	0	-1	-1
April-88	-1	0	0	0	-1	-2
May-88	-1	0	0	0	-1	-2
June-88	-1	1	0	0	0	0
July-88	0	0	0	0	0	0
Aug-88	0	1	0	0	0	1
Sept-88	0	0	0	0	0	0
Oct-88	0	0	-1	0	0	-1
Nov-88	0	-1	0	0	-1	-2
Dec-88	-2	7	0	0	0	5
Jan-89	0	0	0	0	0	0
Feb-89	0	1	0	0	0	1
March-89	-5	-1	0	0	0	-6
April-89	0	0	0	0	0	0
May-89	0	0	0	0	0	0
June-89	0	-1	0	0	0	-1
July-89	0	0	0	0	0	0
Aug-89	0	0	0	0	0	0
Sept-89	0	0	-2	-1	0	-3
Oct-89	0	0	0	0	-1	-1
Nov-89	0	0	0	0	0	0
Dec-89	0	0	0	0	0	0
Jan-90	0	0	0	0	0	0
Feb-90	0	0	0	0	0	0
March-90	0	0	0	0	0	0
April-90	0	-1	0	0	0	-1
May-90	-4	-5	-1	0	-3	-13
June-90	0	0	0	0	0	0
July-90	0	0	0	0	0	0
Aug-90	0	0	0	0	0	0
Sept-90	0	0	0	0	0	0
Oct-90	0	-1	0	0	-1	-2
Nov-90	0	0	0	0	0	0
Dec-90	0	0	0	0	0	0
Jan-91	0	0	0	0	0	0
Feb-91	0	0	0	0	0	0

continues

continued

1. Pressure indexes

Month	Polindx1	Finindx	Ecindx	Unindx	Otherindx	Presindx
March-91	0	-1	0	0	0	-1
April-91	-1	0	0	0	-1	-2
May-91	-7	0	-1	-1	-3	-12
June-91	0	0	0	0	0	0
July-91	0	0	0	0	0	0
Aug-91	0	0	0	0	0	0
Sept-91	0	0	0	0	0	0
Oct-91	0	0	-2	0	-1	-3
Nov-91	-2	0	0	0	0	-2
Dec-91	0	0	0	0	-1	-1
Jan-92	0	0	0	0	0	0
Feb-92	0	0	0	0	0	0
March-92	0	0	0	0	0	0
April-92	0	0	0	0	0	0
May-92	0	0	-1	0	0	-1
June-92	0	0	-3	0	0	-3
July-92	-2	-1	-3	0	0	-6
Aug-92	-1	0	-1	0	0	-2
Sept-92	0	0	-7	0	0	-7
Oct-92	-6	-6	-14	0	-6	-32
Nov-92	-2	-1	-5	0	-1	-9
Dec-92	-1	0	-15	0	-7	-23
Jan-93	-2	0	-7	0	-2	-11
Feb-93	0	0	-8	0	-3	-11
March-93	0	0	-5	0	-1	-6
April-93	0	0	-2	0	-1	-3
May-93	0	-1	-9	0	-2	-12
June-93	-1	0	-6	0	0	-7
July-93	0	0	-4	0	-4	-8
Aug-93	0	-1	-2	0	-2	-5
Sept-93	0	-1	-10	-2	-2	-15
Oct-93	0	0	-7	0	-1	-8
Nov-93	0	0	-3	0	0	-3
Dec-93	0	0	0	-1	0	-1
Jan-94	0	0	-1	0	0	-1
Feb-94	0	0	-5	0	-1	-6
March-94	0	0	0	-1	-1	-2
Apr-94	0	0	-4	0	-1	-5
May-94	0	-1	-3	0	-1	-5

continues

continued	1. Pressure indexes					
Month	**Polindx1**	**Finindx**	**Ecindx**	**Unindx**	**Otherindx**	**Presindx**
June-94	0	0	-1	-1	0	-2
July-94	0	0	0	-1	0	-1
Aug-94	0	0	-1	-3	0	-4
Sept-94	0	0	0	0	0	0

TABLE 2. The correlation matrix between pressure indexes

	Presindx	**Polindx1**	**Ecindx**	**Unindx**	**Otherindx**	**Finindx**
Presindx	1.0					
Polindx1	0.78	1.0				
Ecindx	0.89	0.53	1.0			
Unindx	0.68	0.59	0.54	1.0		
Otherindx	0.82	0.59	0.62	0.38	1.0	
Finindx	0.39	0.16	0.19	0.05	0.39	1.0

TABLE 3. Bank of italy reaction functions: baseline and with Presindx

	Baseline		g=Presindx	
	Infl(+3)	Infl(+6)	Infl(+3)	Infl(+6)
α (const)	1.03	0.04	5.10***	3.15***
	(1.26)	(1.60)	(1.72)	(1.09)
β (exp. inflation)	1.89***	2.10***	1.26***	1.54***
	(0.24)	(0.30)	(0.25)	(0.18)
γ (output gap)	0.08	-0.11	0.18	-0.11
	(0.18)	(0.21)	(0.28)	(0.19)
ρ (int. rate t-1)	0.92***	0.93***	0.93***	0.90***
	(0.02)	(0.02)	(0.03)	(0.02)
λ (exchange rate)	1.80***	1.91***	1.42**	0.87***
	(0.59)	(0.68)	(0.68)	(0.33)
η (pressure index)	–	–	0.55**	0.18*
	–	–	(0.28)	(0.10)
J test p-value	0.999	0.999	0.996	0.996
Adjusted R-squared	0.954	0.954	0.961	0.964

Sample: 1984:9-1998:12. Dependent variable: interest rate. Specification: (4) in the text. Estimates are obtained by GMM. Standard errors of coefficients in parenthesis.
*,** and *** denote significance at 10%, 5% and 1% levels, respectively. The instruments used for the baseline specification are: a constant, 12 lags of inflation, output gap, Lira - German Mark exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate.

TABLE 4. Previous estimates of taylor rules for Italy

	Sample	Series frequency	Estimation technique	Inflation	Other variables	β	γ	λ
Clarida, Gali and Gertler (97) (1)	1981:6 1989:12	Monthly	GMM (with correction for MA(12) autocorrelation)	forward	-	0,9	0,22	-
Clarida, Gali and Gertler (97) (2)	1981:6 1989:12	Monthly	GMM (with correction for MA(12) autocorrelation)	forward	German interest rate Lira/ECU rate	0,59 0,91	non sign.	0,59 non sign.
Angeloni and Dedola (96) (1)	1980:1 1987:12	Monthly	GMM	forward and backward	German interest rate	0,96 b, -0,76 f	-0,11	1,03
Angeloni and Dedola (96) (2)	1980:1 1987:12	Monthly	GMM	backward	German interest rate	0,45	-0,32	0,84
Angeloni and Dedola (96) (3)	1988:1 1997:4	Monthly	GMM	forward and backward	German interest rate	1,1 f	0,22	0,35
Angeloni and Dedola (96) (4)	1988:1 1997:4	Monthly	GMM	forward	German interest rate	1,12	0,25	0,4
Muscatelli, Tirelli and Trecroci (2003)	1980:1 1997:2	Quarterly	Recursive least squares	forward	German interest rate and long term yield spread vis-à -vis German rate	0.70	non sign.	non sign. non sign.
Eleftheriou, Gerdesmeier and Roffia (2006)	1993:1 1998:12	Monthly	GMM with contemporaneous HAC matrix		-	2,2	0,87	-
Eleftheriou, Gerdesmeier and Roffia (2006)	1993:1 1998:12	Monthly	GMM with contemporaneous HAC matrix		German rate, exchange rate or money stock	1,52 1,88 2,33	1,03 0,61 1,19	0,51 0,46 -2,91

TABLE 5. BI reaction functions augmented with EcIndx and FinIndx

	g=EcIndx		g=FinIndx	
	Infl(+3)	Infl(+6)	Infl(+3)	Infl(+6)
α (const)	2.77 **	2.98 ***	2.46***	1.84 **
	(1.39)	(1.02)	(0.80)	(0.93)
β (exp. inflation)	1.58 ***	1.62 ***	1.64***	1.73 ***
	(0.24)	(0.18)	(0.17)	(0.19)
γ (output gap)	0.09	-0.08	-0.09	-0.18
	(0.27)	(0.22)	(0.16)	(0.17)
ρ (int. rate t-1)	0.93 ***	0.91 ***	0.89***	0.90 ***
	(0.02)	(0.03)	(0.03)	(0.03)
λ (exchange rate)	1.55 **	0.97 ***	0.67**	0.73 **
	(0.71)	(0.38)	(0.31)	(0.33)
η (pressure index)	0.64 **	0.52 **	1.32**	0.71
	(0.33)	(0.21)	(0.62)	(0.49)
J test p-value	0.996	0.999	0.999	0.999
Adjusted R-squared	0.963	0.961	0.964	0.964

Sample: 1984:9-1998:12. Dependent variable: interest rate. Specification: (4) in the text. Estimates are obtained by GMM. Standard errors of coefficients in parenthesis.
*, **, and *** denote significance at 10%, 5% and 1% levels, respectively. The instruments used for the baseline specification are: a constant, 12 lags of inflation, output gap, Lira - German Mark exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate.

TABLE 6. BI reaction functions augmented with Unindx and Otherindx

	g=Unindx		g=Otherindx	
	Infl(+3)	**Infl(+6)**	**Infl(+3)**	**Infl(+6)**
α (const)	-2.70	-3.45	4.93***	3.92***
	(4.69)	(3.70)	(1.21)	(1.11)
β (exp. inflation)	2.37***	2.67***	1.22***	1.39***
	(0.72)	(0.65)	(0.21)	(0.19)
γ (output gap)	0.42	0.03	0.17	0.01
	(0.51)	(0.30)	(0.19)	(0.18)
ρ (int. rate t-1)	0.95***	0.95***	0.91***	0.90***
	(0.03)	(0.02)	(0.02)	(0.03)
λ (exchange rate)	2.89	2.56**	0.71**	0.60*
	(1.94)	(1.21)	(0.33)	(0.32)
η (pressure index)	-1.04	-0.97	1.34**	1.03*
	(1.15)	(0.79)	(0.58)	(0.53)
J test p-value	0.998	0.999	0.985	0.998
Adjusted R-squared	0.962	0.952	0.964	0.963

Sample: 1984:9-1998:12. Dependent variable: interest rate. Specification: (4) in the text. Estimates are obtained by GMM. Standard errors of coefficients in parenthesis.
*,** and *** denote significance at 10%, 5% and 1% levels, respectively. The instruments used for the baseline specification are: a constant, 12 lags of inflation, output gap, Lira - German Mark exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate.

TABLE 7. BI reaction functions augmented with PolIndx1 and PolIndx2

	g=PolIndx1		g=PolIndx2	
	Infl(+3)	**Infl(+6)**	**Infl(+3)**	**Infl(+6)**
α (const)	2.98 ***	-0.78	2.63***	-0.52
	(0.82)	(1.90)	(0.87)	(1.80)
β (exp. inflation)	1.53 ***	2.24 ***	1.57***	2.20 ***
	(0.16)	(0.35)	(0.17)	(0.33)
γ (output gap)	-0.08	-0.13	-0.06	-0.12
	(0.16)	(0.22)	(0.17)	(0.21)
ρ (int. rate t-1)	0.89 ***	0.93 ***	0.90***	0.93 ***
	(0.03)	(0.02)	(0.03)	(0.02)
λ (exchange rate)	0.87 ***	1.95 ***	1.01***	1.91 ***
	(0.29)	(0.73)	(0.34)	(0.70)
η (pressure index)	0.54 **	-0.17	0.42**	-0.08
	(0.25)	(0.32)	(0.21)	(0.23)
J test p-value	0.999	0.999	0.999	0.999
Adjusted R-squared	0.962	0.952	0.963	0.953

Sample: 1984:9-1998:12. Dependent variable: interest rate. Specification: (4) in the text. Estimates are obtained by GMM. Standard errors of coefficients in parenthesis.
*,** and *** denote significance at 10%, 5% and 1% levels, respectively. The instruments used for the baseline specification are: a constant, 12 lags of inflation, output gap, Lira - German Mark exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate.

TABLE 8. BI reaction functions: output gap constructed starting from quarterly GDP

	Baseline	Presindx	Ecindx	Polindx1
α (const)	4.17 ***	5.33 ***	4.58***	4.68 ***
	(0.83)	(1.34)	(0.91)	(0.86)
β (exp. inflation+3)	1.26 ***	1.09 ***	1.25***	1.25 ***
	(0.16)	(0.23)	(0.16)	(0.15)
γ (output gap)	0.61 ***	0.60 ***	0.48***	0.41 ***
	(0.19)	(0.23)	(0.18)	(0.16)
ρ (int. rate t-1)	0.90 ***	0.92 ***	0.90***	0.88 ***
	0.90 ***	0.92 ***	0.90***	0.88 ***
λ (exchange rate)	(0.23) (0.38)	(0.25) (0.20)		
	0.66 ***	0.96 ***	0.68***	0.55 ***
η1 (presindx)	–	0.171	–	–
	–	(010)	–	–
η2 (edindx)	–	–	0.23*	–
	–	–	(0.13)	–
η3 (polindx1)	–	–	–	0.47 **
	–	–	–	(0.21)
J test p-value	0.991	0.983	0.991	0.991
Adjusted R-squared	0.965	0.966	0.965	0.964

Sample: 1984:9-1998:12. Dependent variable: interest rate. Specification: (4) in the text. Estimates are obtained by GMM. Standard errors of coefficients in parenthesis.
*,** and *** denote significance at 10%, 5% and 1% levels, respectively. The instruments used for the baseline specification are: a constant, 12 lags of inflation, output gap, Lira - German Mark exchange rate, CPI energy, world price index of raw materials excluding fuel and lags -2 to -12 of interest rate.

problems

STEFANO BAIETTI AND GIOVANNI FARESE

Sergio Pininfarina and the Italian economy between the industrial reconstruction of the 1930s and the reconstruction of Italy in the 1940s