THE RECESSIVE ATTITUDE OF EMU POLICIES: REFLECTIONS ON THE ITALIAN EXPERIENCE WITHIN THE LAST TEN YEARS

By R.R. Canale and O. Napolitano[1]
Preliminary draft

Abtract

The EMU assigns a very marginal role to economic policy and relies on the leading idea that, if prices are kept constant, there is an automatic convergence toward the long-run equilibrium income. These beliefs represent the theoretical underpinnings of fiscal and monetary policy strategies in Europe. In order to highlight the weakness of these foundations the paper evaluates empirically the effects of public expenditure and interest rate setting on equilibrium income in Italy from 1998 to 2008. The analysis supports the conclusions that government spending had a positive impact on national income while inflation targeting a negative one . Moreover the empirical evidence shows that the high level of debt did not produce negative effects on GDP. Finally, at the time of financial crisis, these results appear to be reinforced for fiscal policy, while weakened for monetary policy.
The paper draws the conclusion that EMU's rigid rules for both fiscal and monetary policy have recessive attitudes and limit the use of the instruments in order to face with high level of unemployment during period of crises, in which other market forces do not work.

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1. Introduction

The policy framework of the European Monetary Union is based on the main idea that monetary and fiscal policies can be effective only if they follow rigid rules. This leads to a subordination of any other policy target to the *wider* objective of the stability of the Euro. This stability is considered to be the necessary condition for long-run convergence towards the natural unemployment rate.

The crisis occurred has dramatically shown that sometimes this convergence does not happen automatically and brought economists to consider that policy interventions could be necessary to sustain development. The strategy of allowing market forces - which, in the long run could lead to steady growth, regional convergence and sound public budgets - to free operate has apparently failed.

The European policy framework relies on the conclusion that – following the rational expectation hypothesis – "only unanticipated money matters" (Lucas 1972, Sargent and Wallace 1975, Kydland and Prescott 1977) and that public expenditure just creates expectations for greater future taxation and public debt (Barro 1974). These analytical results have been reinforced by studies underlining the immoral behaviour of politicians. They rarely aim to serve the public interest, but often just to be re-elected: therefore they subordinate decisions on the optimal policy to the consensus mechanism (Buchanan and Tullok 1962).

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[1] University of Naples "Parthenope" Dept. of Economic Studies "Salvatore Vinci" e-mail: Rosaria Rita Canale:rorita.canale@unipartbenope.it and Oreste Napolitano; napolitano@uniparthenope.it;

Central Banks and National Governments are denied any active role in influencing equilibrium income because:

1. short-term policies are not desirable. Even if they could have positive effects in the short-run, the final result is just an increase of inflation;
2. inflation is a monetary phenomenon. It is possible to control the quantity of money in circulation to control the inflation rate;
3. gross domestic product and unemployment fluctuate around their long run value. The latter is independent from active fiscal and monetary policies;

These principles are the theoretical foundation of Maastricht Treaty and Stability and Growth Pact, whose general content is to assure that monetary variables do not disturb the spontaneous convergence toward the NAIRU and to help the European Central bank to reach the task of price stability (Arestis and Sawyer 2003 and 2005 and Arestis, McCauley and Sawyer 2001).

National governments belonging to the European monetary Union are obliged to respect rigid parameters and cannot use freely fiscal policy to increase growth and employment, or they can use it when not needed[2].

However, income and employment are not just supply-side determined even in the long run[3]. Current events renovate the interest for the effectiveness of economic policy, both fiscal and monetary one: of monetary policy because the Central bank, moving interest rates is able to influence private demand through its effects on both investment and consumption. An inflation targeting, could be under this respect very counterproductive because of its indirect influence on aggregate demand[4]; of fiscal policy because it still could have an active role - through the Keynesian multiplier - in influencing the output growth

In order to highlight the weakness of the EU policy foundations, the paper evaluates empirically the effects of public expenditure and interest rate setting on equilibrium income in Italy from 1998 to 2008. The empirical analysis supports the conclusions that government spending has a positive impact on national income, while interest rates movements opposite sign's effects. Moreover the empirical evidence shows that the high level of debt – in contrast with Barro's (1974) conclusions - did not produce negative effects on the level of GDP. Finally, over financial crisis-time, these results appear to be reinforced for fiscal policy, while weakened for monetary policy.

The paper uses OLS techniques in order to capture the value of the coefficients expressing the relevant relations between dependent and independent variables, rather than the much more diffused VAR analysis. The vectorial auto-regressive time-series technique in fact evaluates the response to shocks of e.g. aggregate equilibrium income, while the OLS is able to capture the measure of contribution to income of the independent variables.

The paper finally - considering the empirical results of the Italian experience - reflects on the fact that EMU's rigid rules for both fiscal and monetary policy have recessive attitudes and, during period of crises, in which other market forces do not work, limit the use of the instruments able to face with high levels of unemployment.

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[2]This blind limit imposed to fiscal policy weakens the monetary union and undermines the possibility of its existence in the long-run. This position is deepened in a dedicated number of the "Eastern Economic Journal" winter (1999), see in particular Kregel (1999) and Parguez(1999). See also Krugmann (2009a)

[3] The NAIRU (non accelerate inflation rate of unemployment) is generally viewed as supply-side determined equilibrium rate of unemployment. In most presentations of the NAIRU, aggregate demand plays no essential role in the determination of such an equilibrium rate of unemployment. In those macroeconomic models from which a NAIRU is derived as an appearance, the nature of the models is such that the level of aggregate demand has to adjust to the level of unemployment as set by the supply-side factors" Sawyer (2002).

[4]"According to the conventional inflation targeting approach in order to achieve long-run price stability the CBs need to respond to any change in the current or expected rate of inflation, […] by raising the real interest rate, hence curbing the aggregate demand and current output. But what if current output is also affected by the level and time path of aggregate demand?". Fontana, Palacio-Vera (2005) p.1. The theoretical foundation of this statement is that money is endogenous and therefore dependent on current output: any manoeuvre to control money – in order to be effective – must have effects on current output. See Symposium (2002).

The paper is organized as follows: section two briefly reviews the theoretical foundations and the empirical evidence about the inefficacy of fiscal and monetary policy; section three tells the policy events occurred in Italy in the pre-EMU and after having joined the single currency area. Section four contains the empirical analysis of some indicators of policy interventions from 1998 to 2008 and is divided into two parts: the first one in which, through the OLS technique, we evaluate the contribution of government spending and interest rate setting to GDP and a second part in which we estimate – through the Kalman filter – the measure of this contribution within these ten years. Section five derives policy implications from the results

2. Do policy interventions increase growth?
The ineffectiveness of economic policy in changing the value of equilibrium income has been widely maintained in the economic literature, and to make an exhaustive review would require much more than a paragraph. Here we'd like just to make the point of differences
On the side of monetary policy the mainstream literature can be divided into two stream of thought: 1) the first referred to Lucas critique, that extends very old classical conclusions about long-run neutrality of money, according to which expansive monetary policies have neither short nor long period effects. It could be, on contrary destabilizing through the influence on the process of formation of prices expectations. All a Central Bank has to do is to set - as the Taylor rule suggests – the interest rate in order to counterbalance any inflationary pressure coming from the market. This strategy would assure the automatic convergence toward the level of full employment.
The second stream of thought can be referred to New Keynesian Macroeconomics (also known as New consensus macroeconomics; see Fontana 2009), according to which monetary policy colud be effective because of labour, goods and real rigidities (Blachard 2008). These rigidities anchor expectations and monetary policy "can be more activist in the short term"
The Empirical analysis of the European Central Bank for the Euro area (ECB *Working papers* from no.91 to no.114) supports these conclusions because a) monetary policy decisions appear to have temporary effects; b) these effects reduce as long as time goes on; c) prices effects are lasting even if reduced at the beginning; d) apparent initial real effects are due to prices and wages stickiness.
Despite the well-known Lucas' (1977) conclusions that "only unanticipated money matters" there's a relevant not consistent empirical literature even among consensus economists: Cochrane (1998) finds out that monetary policy has real effects even if it is expected. This result is reinforced by the famous contributions of Clarida, Gali and Gertler (1999 and 2000) and Galì and Gertler (2007) who find that - because of imperfect competition - it can be effective to reduce unemployment, without leading to higher inflation.
Benhabib, Schmitt-Grohé e Uribe (1999) show that the practice of setting the interest rate could have recessive influences when the inflation rate, actual and expected, is very low. This result depends on the fact that Central banks cannot fix negative interest rates.
On the side of fiscal policy, the theoretical underpinnings of its inefficacy relies on: 1) the crowding-out effect; 2) the Barro's reinterpretation of the Ricardian equivalence; 3) the inflationary effect.
Governments are said to cause interest rate increase to convince public to buy bonds. The increase in interest rates would crowd-out private investment, and cause a reduction in the equilibrium income. The final result would be a total or partial offsetting of the effects of the increase in public expenditure.
As final point Robert Barro (1974), revisiting Ricardian conclusions about the intertemporal equilibrium between income and expenditure, concluded that public expenditure in the present causes expectation of greater future taxation, higher interest rates and greater public debt. These expected effects – joined with the circumstance that government bonds do not represent wealth – reduce current consumption and offset the increase in income generated by the increase in autonomous demand.

In synthesis, any government borrowing to finance public expenditure must be done at expenses either of investment or of consumption (Fama 2009 and Cochrane 2009).

As Krugman (2009) says this is "one of the most basic fallacies in economics – interpreting an accounting identity as a behavioural relationship [...]. An increase of G [public expenditure] continues Krugman doesn't reduce I [or C] on for one, it increases GDP which leads to higher S and T" Krugmann (2009). (Reich 2009 shares the same point of view)

In all these cases the monetary policy strategy results of the utmost importance: in fact the Central Bank setting the interest rate influences the macroeconomic performance of fiscal policy and the intertemporal equilibrium between present and future consumption through the effects on the rate of actualization of future revenues. (Canale 2008)

The policy rate, set by the monetary authority, is in fact the reference value for the all the other interest rates, including the treasury bill rate. The latter in turn could diverge from the average of the market according to the country's rating. The point is therefore if and in which cases the debt-financed public expenditure can reduce the country's rating.

Therefore - even given for overcome the other limits of these contributions[5] - whether or not the crowding out effect or the Barro-Ricardo theorem work depends for the great part on the action of monetary policy (Canale, Foresti, Marani, Napolitano 2008)

As final point if fiscal policies increase private demand are said to cause inflation because of the so called real-balance effect.

However, in order to state that an increase in demand causes an increase in prices, it has to be that: a) the supply curve has a positive slope and if so b) the increase in public expenditure does not cause a shift in the supply curve as well. However very often, especially when government intervention is requested, there are a lot of unexploited resources, fixed investment underutilized and there would be many cases in which the relation between wages and productivity remain constant. The supply curve could be, therefore, horizontal and demand increase does not create inflation, but just income increase.

Despite the extensive empirical literature, an unambiguous conclusion has not yet been found even in this field. Following the theoretical assumptions, the literature concentrates on the long run possible effects of un-predicted policy interventions and uses different versions of VAR approaches. However many difficulties in examining the effects of governments interventions arises (Perotti 2007):

a) the impossibility of separating the fiscal policy from monetary policy effects;
b) the endogenity of fiscal policy effects
c) the identification of the structure of the economy

The most famous contributions are Ramsey and Shapiro (1999 dummy variable approach), Fatas and Mihov (2001) and Blanchard and Perotti (2002). They all try to identify the fiscal stimulus separately from the monetary one, and the unexpected interventions from expected ones. In fact they all assume – following the intertemporal approach with perfect foresight - that anticipated public policy interventions are off-set by private agents.

Fatas and Mihov (2009) document the evolution of fiscal balances in the euro area. They find that because of the absence of discretionary interventions and the use automatic stabilizers) the fiscal policy appears to be counter cyclical (i.e. having opposite sign of output growth) and public accounts not to deteriorate, but to help convergence toward full employment rate. (for the same point of view see also Alesina, Campante and Tabellini (2007))

Following a different perspective Monacelli and Gali (2005) provide an analysis of the effects of an exogenous change in government spending in a small open economy belonging to a monetary union: an increase in government spending always raises output and the price level in the short run. Many critiques to the approach denying the positive effects of fiscal policy interventions can be found on a special number of Oxford Review of Economic Policy (vol.21 n°4, 2005) entirely

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[5] There are in fact many shortcomings to be considered: they are related to life-term, wealth effects, to the general limits of intertemporal choice in conditions of underemployment when it is not possible to choose whether or not to work.

dedicated to the macroeconomic role of government spending (Allsopp and Vines (2005), Krugmann (2005), Solow (2005).

Furthermore Kirsanova, Stehm and Vines (2005) find that in modern policy regimes under which fiscal and monetary policy are independent - economic policy in a single country gives better results if both authorities cooperate to reach their goals.

3. Policy actions in Italy before and after the EMU (1992-2008)

The period from 1992 to 2008, was characterised by independent monetary policies and fiscal strategies oriented to the reorganization of public accounts in order to respect Maastricht parameters and the Stability and Growth Pact. However the entire period can be divided into two parts – before and after the 1998 – in relation to the adoption of the single currency. The first period policies, despite autonomous, were in accordance to the objective of joining the Euro area, while the second period ones were - as it is well known – qualified by the passage of monetary sovereignty to the European Central Bank and by a fiscal policy action inside strict limits due to the pre-existence of fiscal imbalances.

3.1 Fiscal and monetary conditions in Italy after the ERM crisis: 1992-1998

In the 1970s and the early 1980s, Italy experienced high inflation rates but by 1992 inflation remained stable approximately at 5% for many years due to the disinflationary policy of the central Bank. In fact in 1981 the Bank of Italy started its "divorce" from the Italian Treasury (it was no longer forced to act as a residual claimant of unsold Italian Treasury debt securities) and monetary authority behaviour used interest rate to preserve the participation of Italy to the ERM

At the beginning of 1990's, the process of German unification, the effects on internal income of interest rate increase policy, brought to the 1992 currency crisis (Canale, Montagnoli, Napolitano 2008). Unfortunately the higher rates of discount of preceding years, despite the progress in terms of inflation, caused an ever increasing deterioration of fiscal accounts.

If the debt was 100% of GDP in 1992 it continued to grow rapidly; interest payments generated a vicious spiral and an ever-increasing burden on the budget. The large fiscal adjustment of 6% of GDP, approved by the government after the 1992 crisis, was only able to slow down the growth rate of debt.

During 1996, it became increasingly clear that a strict adherence to the limit of a 3% deficit-to-GDP ratio in 1997 would be required of countries to be admitted to the European Monetary Union. To steer markets toward favourable expectations, the Government (Prodi's government) in 1996 increasingly stressed a commitment to the fiscal discipline needed to enter the EMU, and in the fall of 1996, a carefully crafted fiscal package of spending cuts and tax increases was approved. The size of the fiscal adjustment of 1996 was much smaller than the one that was approved in the wake of the 1992 crisis, and it was just enough to tip the markets into believing that Italy would have been able to join the EMU.

Figure 1 . Macroeconomic performance of fiscal and monetary policy in Italy from 1992 to 1998
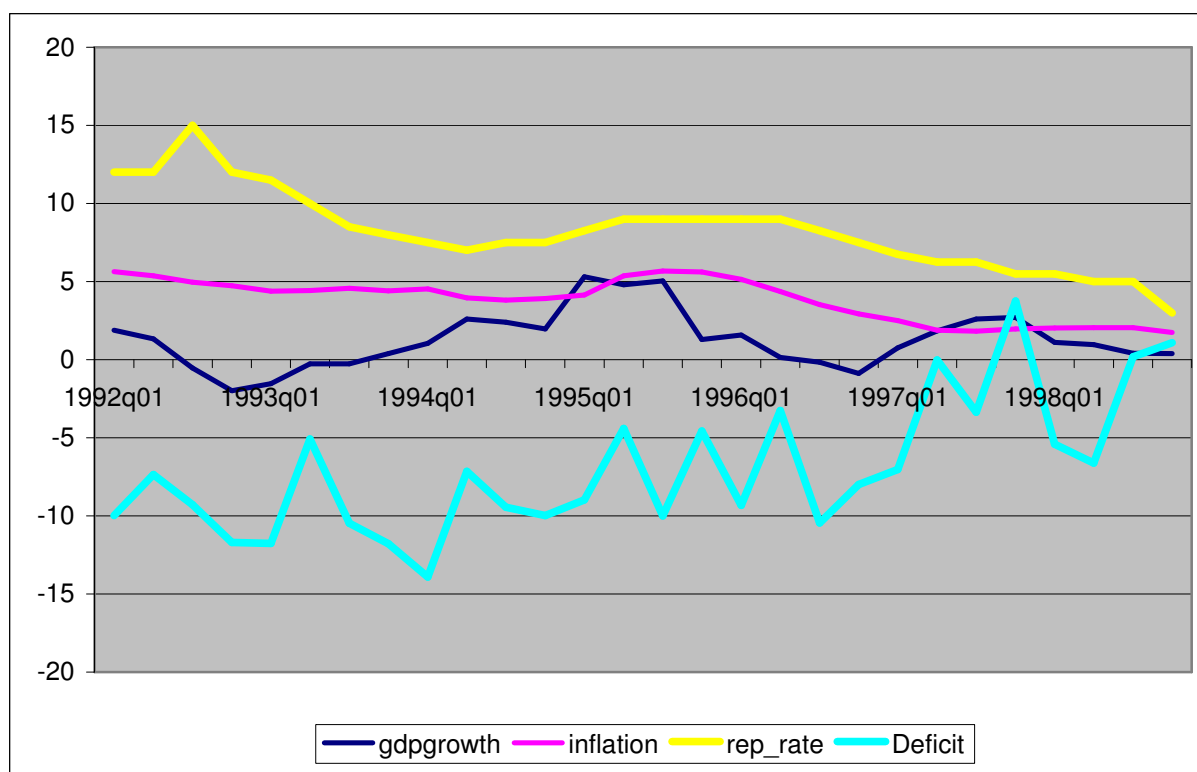
Source: IFM-Financial Statistics, ECB

Figure 1 shows the behaviour of the monetary policy instrument (*rep_rate*), inflation rate (*inflation*), the growth rate of income (*gdpgrowth*) and fiscal balance (*deficit*) in the period considered. The behaviour of the line representing the GDP path clearly illustrates the periods of recession (1992) and slow down of the economy (1995). It also shows that, starting from the 1998, the growth of Italian economy declined reaching almost the value of zero.
 Except for the years 1995-96, were the economy was growing at 5% due to the increasing of the exports via devaluation of the exchange rate Italy experienced very low rates of growth; inflation rate depicts e negative trend that, in 1998, reached the value of about 2.5 %. The interest rate converged towards the value of 3% at the end of 1998 as requested for joining the EMU by the prescriptions of the Maastricht Treaty.
Finally deficit had non negative values just at the beginning of 1998, but its trend during the all period is guided by the target of fiscal balance

3.2 Fiscal and monetary conditions in Italy after the ERM crisis: 1999-2008

In 1998 Italy joined the EMU and the Bank of Italy was reflected by EMI first and then at the launch of the Euro by the European Central Bank. The years coming after can be divided into two parts: the first section goes from 1999 till the end of 2001 where Italy experienced a relative high rate of growth; the second was characterized by two global shocks, the first in 2001 whose symbol is September the 11th and the second started with the financial crisis of the US housing bubble a the end of 2007.

Figure 2. Output growth in Italy from 1999 to 2008
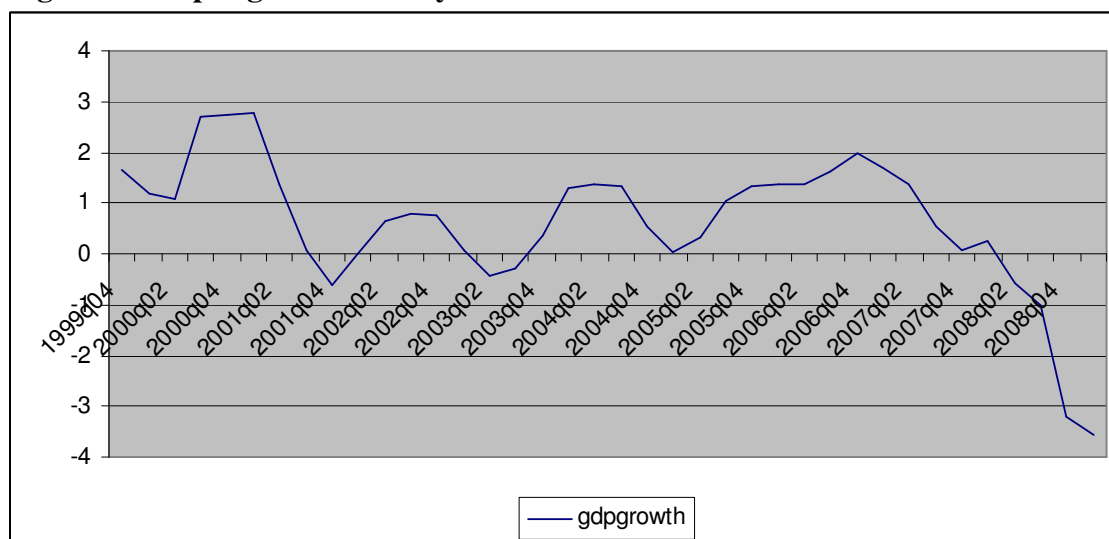

Source: IFM-Financial Statistics

Figure 2 illustrates the growth rate of income for Italy after the EMU. The average rate was about 0.6% with picks of 2.5 and -3.2. However, much below the 5.26% consistent to the optimistic expectations of the European Commission when they fixed the ceiling level of 3% of ratio deficit/GDP in order to ensure a convergence towards a stable public debt management. [6].

This condition of instability has been shared by many other EMU countries. In figure 3 we plot the general government primary balance as percentage of GDP for Ireland, Italy, Greece, Netherlands, Belgium, Spain, Germany and France. Except for Ireland, all the EU countries experienced difficulties in managing the ratio deficit/GDP. In Italy (tick yellow line), the ratio remains always negative, despite the hard fiscal policy retrenchments set in the periods 1999-2000 and 2006-2007[7].

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[6] The Maastricht fiscal parameters were built so as in order to have a debt/GDP ratio of 60% and preserve the deficit/GDP ratio to 3% it is required a growth rate of GDP equal to 5%. De Grauwe (2008)
[7] These retrenchments were surprisingly conducted by Left-side governments.

Figure 3 Public deficit in the Euro Area
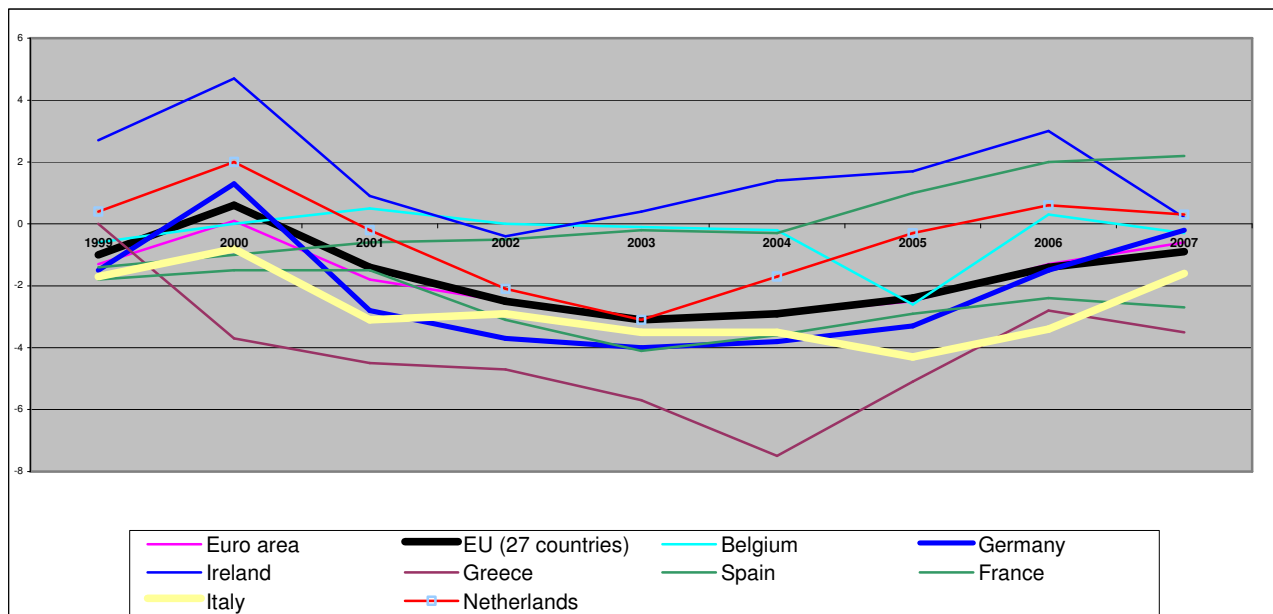
Source: Eurostat

Table 1 summarize the main stability programmes proposed by the Italian governments after the launch of the Euro. In the light of the considerations made above it is clear that they failed in their proposals. In fact moving on the table from the left to the right and from the top to the bottom we observe that the programmed debt and deficit is never respected and that there was a progressive deterioration of public accounts.

[Table 1 about here]

Confirming the initial strategy of fiscal discipline set in the Maastricht Treaty, and guided by the idea that a sound public finance is a precondition for economic development, in the year 2000 the European Commission recommended the Italian Government saying:
"the Council urges Italy firmly to commit itself to respect the programme's objectives. Primary surpluses should remain at the high levels projected in the programme. Any deviation from the planned deficit and primary surplus outcomes should be promptly addressed and corrective measures taken. This should be ensured through a tight control of current primary expenditure. The Council encourages Italy to accompany the reduction in the ratio of current primary expenditure to GDP with a more effective and more comprehensive rationalisation of public spending, aimed at improving the supply-side conditions of the economy. Moreover, even though Italy fulfils the requirements of the Stability and Growth Pact, it should take every opportunity to improve future budgetary targets and speed up the consolidation process, in order to accelerate the reduction of the government debt ratio. The Council recommends that future decisions to reduce the tax and social security contributions burden should be matched by offsetting expenditure cuts"[8].

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[8] European Economy. European Commission. Directorate General for Economic and Financial Affairs. Public Finance in EMU, n. 3, page 148, 2001.

The reorganization of fiscal accounts is explicitly considered an objective to be reached as soon as possible as a precondition for economic development. The latter sentence explains that, for the European Commission, the reduction of the taxation and social security contributions via cuts in the government's expenditure could have a positive effect on the economy.

Unfortunately, the macroeconomic performance of the past 10 years, dramatically worsened relative to the average of the other members of the euro area. In the early nineties, the vigorous increase in exports compensated the weakness of the domestic demand, while after 1995, the fiscal adjustment required for admission to the single currency and inflation targeting of the centralized monetary policy might explain the evolution of domestic demand.

Figure 4. Macroeconomic performance of fiscal and monetary policy in Italy
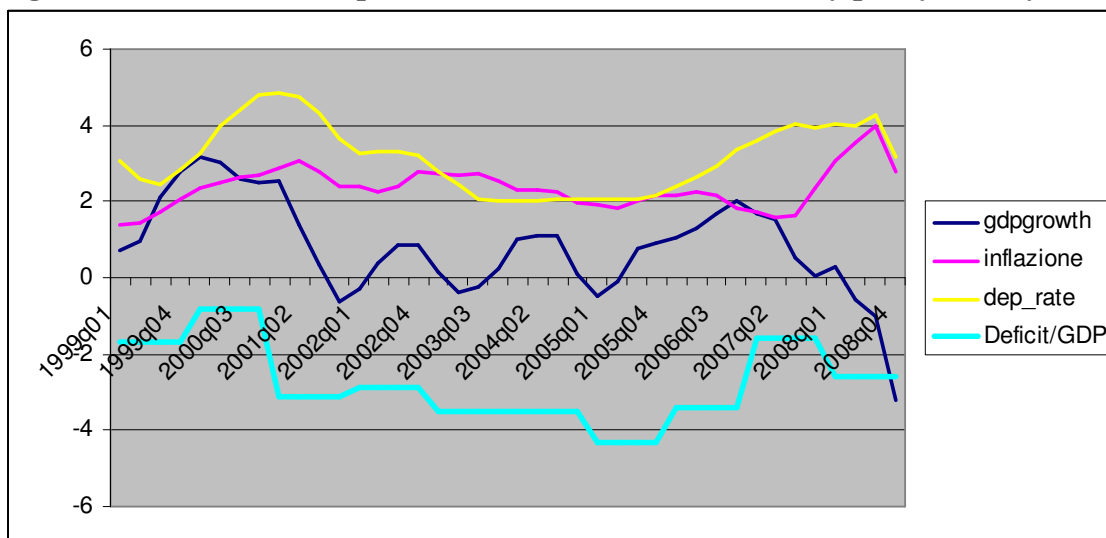
Source: IFM-Financial Statistics, ECB

Figure 4 depicts undoubtedly this period of stagnation. The average growth rate of income was about 0.8% with picks of 3.2 and -3.5. It was a bit higher than the pre- EMU period but still below the 5.6% required to make the debt converge to 60% of GDP.

The discount rate, the main instrument of monetary policy appears having been growing from 1991 to 2001, while decreasing in the years after. At the end of 2005 it starts growing again in response to the average inflation dynamic in the EMU.

The entire period is also characterized by a low level of inflation (2.3 on average) which starts increasing again at the end of 2007.

Finally as already shown in figure 3, the dynamic of public deficit was ever guided by the attempt to respect the Stability and growth pact, without taking care of its effects on output growth.

Giving a global look to the macroeconomic performance of Italy in these years, we can say that, despite the initial positive influence derived from the gain in credibility for having joined the EMU, from 2001, the increase in the discount rate is accompanied with a decrease – with some time of delay - in output growth and vice versa. Furthermore in the period 2006-2008, the tight ECB policy was associated to a restrictive fiscal policy.

Furthermore the reduction of public funds for education, scientific research, innovation, business support, investment materials, and so on resulted in significant social tensions and increased economic decline, triggering a perverse cycle with further negative effects on public accounts[9].

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[9] Moreover, among the various economic fundamentals that contributed to the degradation of the Italian capacity of exports there is also the labour productivity. For Italy and Spain that productivity has remained essentially unchanged going from 1999 to 2008. It, conversely, increased considerably in France (+9.6%) and Germany (+9.5%), which contributed to increase the average level of the EMU (+7.7%)

These combined policies determined, in our opinion, lacking the private demand, the sharp decrease of the growth rate of income from 2007 till these days.

4. Empirical analysis

4.1 The theoretical model

The model we use for the empirical analysis follows the theoretical assumption that current income is the result of the effects of the components of aggregate demand. Because we do not suppose that current income is simultaneously determined by its components, our model is represented by the following:

$$Y_t = f(Z_{t-i}) \tag{1}$$

Where Z_{t-i} synthesizes the lagged variables influencing gross domestic product.

The value of the index $t-i$ varies in relations to the lags considered to be relevant in influencing current income:

$$Z_{t-i} = \begin{bmatrix} z_{1t-i} \\ z_{2t-i} \\ z_{3t-i} \\ .... \\ .... \\ z_{nt-i} \end{bmatrix}$$

Where the first index indicates the independent variable, while the second the time lag considered, so that it can be i = 1, 2, 3 ……
We can rewrite our model as:

$$Y_t = \beta_0 + \beta_1 z_{1,t-i} + \beta_2 z_{2,t-i} + \beta_3 z_{3,t-i} + ... + \beta_n z_{n,t-i} \tag{2}$$

In order to study the influence of monetary and fiscal policy separately and avoid problems of autocorrelation – very difficult to over come in these cases - we consider one variable at a time so that we estimate the value of each coefficient:

$$\beta_1 = \frac{\partial Y_t}{\partial z_{1,t-i}} \text{ or } \beta_2 = \frac{\partial Y_t}{\partial z_{2,t-i}} \text{ or } .... \beta_n = \frac{\partial Y_t}{\partial z_{n,t-i}}$$

or as one would say *ceteris paribus*..

As affirmed in the introductory section we use the OLS technique, convinced that it better captures the effects of the components of aggregate demand on equilibrium income in the short run, taking into account, not only the deviation from the original path, but especially the overall contribution to equilibrium income.

As final step we examine the variation of the coefficients weight over time. Using the Kalman filter technique we evaluate during the time interval considered, the way in which fiscal and monetary policies action has influenced the value of GDP.

4.2 Empirical results

The time interval is ten years, from 1998 to 2008, and data are quarterly adjusted. The time choice depends on the effective launch of the EMU which took place in January, 1998 with the creation of the European Central Bank.
Our first estimate regards the effects of public expenditure on gross domestic product (Table 2)
The dependent variable, GDP*1* represents the nominal index number of gross domestic product, while *Tex* represents the nominal index number of total government expenditure.

[Table 2 about here]

We consider a one-period time-lag. The empirical results show that the public expenses in Italy of the previous period had a positive correlation with nominal current income from 1998 to 2008.
In order to overcome the critique that the effect is just nominal, the regression is repeated using as dependent variable the real index of GDP -*GDP2* – built dividing *GDP1* for the consumer price index.

[Table 3 about here]

Table 3 shows that – despite the reduced effect- nominal government expenditure produces real effects.
Results do not change significantly if we consider the effects of total expenditure and total revenues on GDP. We consider three-lags for total revenues in order to avoid problems of correlations. Table 4 contains the effects on nominal GDP of monetary expenses of previous period and monetary value of revenues of three periods before. While table 5 studies the real effects.

[Table 4 about here]

The results show that introducing total revenues as control variable the positive effects of government expenditure do not change and that the fiscal pressure is positively linked to GDP both in nominal and in real terms. Furthermore independent variables do not show autocorrelation. Therefore public expenditure appear to have had effects of the same sign.

[Table 5 about here]

Tables 6 and 7 evaluate the effects of the European Central Bank monetary policy strategy on internal income expressed in terms of real index. The dependent variable is the real index of GDP – *GDP2* while the independent variable in the discount rate in table 6 and the Euro overnight index average in table 7.
The discount rate – set by the central bank - is the lowest rate it is possible to find in the market, i.e. the floor of the interest rate corridor and represents the reference value of all the re-financing operations of the economy. We see in table 6 that the sign of the coefficient is negative.

[Table 6 about here]

Looking at the Euro overnight index average effect on real GDP we observe negative effects. So that we can affirm that – because of the direct proportionality between interest rates the central bank sets and the average rates the monetary and financial institutions apply – monetary policy had in the years considered a negative effect on GDP.

[Table 7 about here]

Finally, despite all the suggestions coming from the theoretical literature about public debt, evidence emerging from Italian data shows that the level of debt has effects of the same sign on real GDP index (table 8)

[Table 8 about here]

These results appear to operate in a sense opposite to the Barro's theoretical conclusions about the public bonds wealth effect.

4.3 Policies' incidence through time (the Kalman filter)

In this final section we implement the Kalman filter methodology. This algorithm, which provides the recursive estimation of unobserved, time varying parameters or variables in the system contingent on all available information, will allow us to further investigate the behaviour of coefficients of the policy variables.

The reason to apply at this stage the Kalman filter is that this time varying methodology is able to recover unobservable factors related to fiscal and monetary policy that could have affected Italian GDP from 1998 to 2008, i.e. to detect how the respective coefficients have changed over time[10].

Assuming that $\beta i,t$ is determined by an autoregressive process AR(n), we apply the following time varying parameters model:

$$y_t = \beta_{0,t} + \beta_{1,t} Z_t + \mu_{it} \qquad (3)$$

Where y_t is the GDP at time t, μ_{it} is an independent white noise, the vector of coefficients $\beta_{i,t}$ is assumed to be random walks. This can be written in state space form where the observation equation is given by the expression in (3) above and the state equations are given by:

$$\begin{bmatrix} \beta_{0,t} \\ \beta_{1,t} \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} \beta_{0,t-1}, \cdots \beta_{0,t-n} \\ \beta_{1,t-1}, \cdots \beta_{1,t-n} \end{bmatrix} + \begin{bmatrix} \mu_{0,t} \\ \mu_{1,t} \end{bmatrix} \qquad (4)$$

The above eq. (4) is the measurement equation in which β_{it} and μ_{it} are *[n×1]* vectors[11]. The relevant results and estimates are reported in table 9 and in figure5 and 6.

The coefficients have the correct signs and are highly significant. Overall, the patterns of the coefficients β_{it} (see figures 5 and 6) seem to add insightful elements to the analysis of the dynamics of the fiscal and monetary variables over the period.

[Table 9 about here]

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[10] "[...] when the disturbances and the initial state vector are normally distributed, it enables the likelihood function to be calculated via what is known as the prediction error decomposition. This opens the way for estimation of any unknown parameters in the model" Harvey (1989, p. 10).

[11] For a more complete explanation of the Kalman filter approach, the state space form and the measurement and transition equations, see Harvey (1989).

Figure 5. Monetary policy coefficient behaviour

b coefficient rep_rate
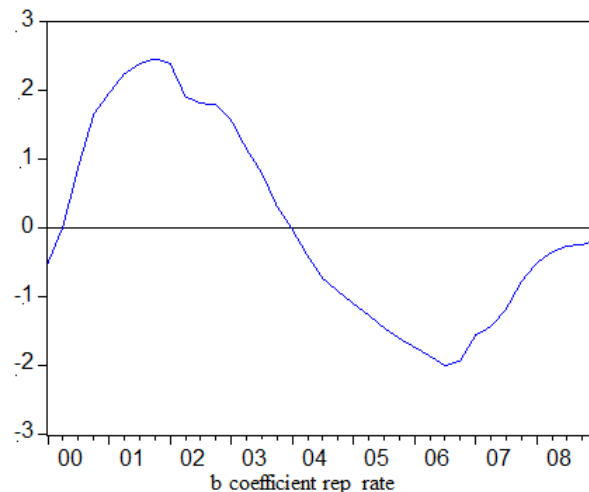
Indeed, it is interesting to observe (figure 5) that a significant change in the pattern of the coefficients b (the interest rate) occurs few years after the introduction of the Euro. The coefficient on government expenditure, which has been steadily increasing over time, becomes stable around the end of the period.

Another change in the pattern around the 2006, is also shown by the coefficient on the interest rate moving from negative to positive trend. This change and the value of this coefficient suggest that the effect of the monetary policy instrument started to adjust in anticipation to the financial crises. The adjustment took place well before the crisis was officially accepted. Not surprisingly the coefficient on the interest rate does not show a positive value. It moves to a value close to zero at the end of 2008. This represent a kind of proof of the fact that in crisis time monetary policy is unable to stabilize output. The lowering of interest rates cannot inject money in private markets if it cannot be used productively.

Figure 6. Fiscal policy coefficient behaviour

b coefficient Government Expenditure
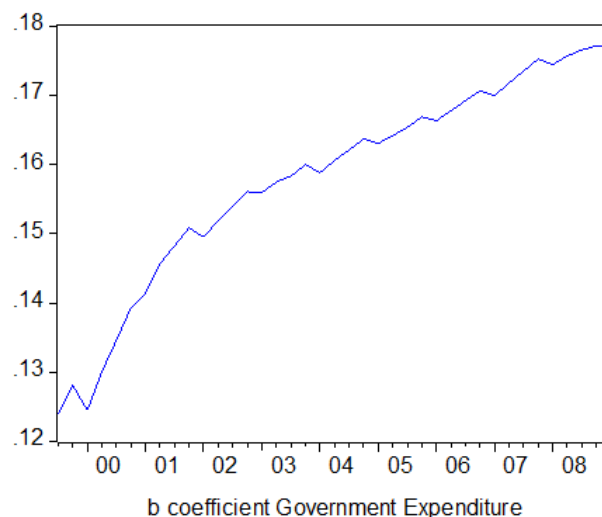
To the other extreme, the coefficient on the government expenditure shows positive dynamics over the whole period (figure 6). To a more careful interpretation this pattern should not be surprising since the β_1 coefficient captures the effect on GDP of actual government expenditure.

The analysis shows that the introduction of the Euro has implied a more strong impact of fiscal variable and less stable coefficients for the monetary variable.

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5. Policy structure and the future of EMU

European policy framework relies on two pillars: 1) a monetary policy with the final aim of stable inflation and 2) rigid fiscal rules relegating government action to a very marginal role. While these two pillars appeared to be of benefit for Italy in the period preceding the Euro in the second phase, especially during the last five years they seem to have weakened the Italian economic growth.
From our empirical analysis it emerges that fiscal policy in this last ten years had effects of the same sign on growth and that the centralized monetary policy was not neutral in relation to the effect on GDP. These effects appeared to be reinforced when the components of aggregate demand linked to private choices lacked, i.e. over financial crises time. In particular examining the public expenditure influence on growth through time we observe an increasing value, demonstrating that government spending had a central role in sustaining demand.
Examining then the effects of monetary policy, it is possible to conclude that the interest rate setting practice had not only anti-inflationary effects, but also real effects. However the power of influencing the economic performance of Italy in period of crisis appeared to be very weak, because of the impossibility to inject money in the market when it is not desired, i.e. when aggregate demand was lacking.
Our conclusion is therefore that the European policy framework was not built to contrast recent depression because it relies exclusively on the action of the market. We can further add the observation that the absence of fiscal instruments and the centralized monetary action cultivate the seeds of a further recession because of the non neutrality of monetary policies. In few words the European policy framework subordinates employment and growth to the sound public finance and price stability.
However the experience of the global economic crisis has shown that containing inflation, deficit and public debt is not enough to fight unemployment.
On contrary, the unique objective of the internal stability of the currency ultimately weakens the existence of the United Europe. Like any fixed exchange rate system, if the costs of preserving the parity are too high the existence of the agreements appear to be at risk (Krugman 2009a).
The Euro's future, therefore, should be accompanied by the creation of a common fiscal policy authority to act side by side the Central Bank, and identify tools to support shared growth. But this result can be achieved only if Europe becomes politically united.
The drafters of the Maastricht Treaty and the Stability and Growth Pact - in our opinion - have forgotten that it was a final link in a chain starting from the Treaties of Paris and Rome, whose underlying motivations are political. The mainstream prescriptions on contrary relies on the belief that the political union is the natural result of converging economies..
However income growth and full employment is not the spontaneous result of the market, but rather of the economic policy action, both fiscal and monetary policy: of monetary policy because Central Bank, changing interest rates, acts on demand through both investments and consumption, and fiscal policy since it has an active role though the Keynesian multiplier, whose ineffectiveness has never found an evidence-based proof.
From this point of view, the experience, both past and present of the U.S. economy, in which the Federal Reserve – while remaining independent – coordinates his work with the central government provides us with important guidelines about the role of political unity.

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Tables

Table 1 Key figures of Italy's stability programmes (2000-2008)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Italian stability programme (2001–04)											
General government balance	− 0.8	− 0.5	0	0.3							
Primary balance	5.3	5.5	5.6	5.5							
Government debt	106.6	103.5	99.6	94.9							
Real GDP growth (%)	2.9	3.1	3.1	3.1							
Italian stability programme (2002–06)											
General government balance		-2.1	-1.5	-0.8	-0.2	0.1					
Primary balance		3.8	4.5	5	5.3	5.5					
Government debt		109.4	105	100.4	98.4	96.4					
Real GDP growth (%)		0.6	2.3	2.9	3	3					
Italian stability programme (2004–08)											
General government balance				− 2.9	− 2.7	− 2.0	− 1.4	− 0.9			
Primary balance				2.4	2.5	3.3	4	4.7			
Government debt				106	104.1	101.9	99.2	98			
Real GDP growth (%)				1.2	2.1	2.2	2.3	2.3			
Italian stability programme (2006–11)											
General government balance						-4.4	-2.4	-2.2	-1.5	-0.7	0
Primary balance						0.1	2.5	2.6	3.4	4.2	4.9
Government debt						106.8	105	103.5	101.5	98.5	95.1
Real GDP growth (%)						1.9	1.9	1.5	1.6	1.7	1.8
Italian stability programme (2007–11)											
General government balance								-2.6	-3.7	-3.3	-2.9
Primary balance								2.5	1.3	1.9	2.6
Government debt								105.9	110.5	112	111.6
Real GDP growth (%)								-0.6	-2	0.3	1

Source: European Commission

Table 2. Public expenditure effects on nominal GDP

Dependent Variable: *GDP1 (nominal index of GDP)*

Variable	Coefficient	*t*-statistic
C	76.18828***	7.038606
Tex(-1)	0.491754***	5.899669

R^2 0.484723

Obs.: 39, Sample (adjusted): 1999:02; 2008:4

D-W stat: 1.400407; **AIC** 7.566932; **F stat** 34.80610***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 3. Public expenditure effects on real GDP

Dependent Variable: *GDP2 (real index of GDP)*

Variable	Coefficient	*t*-statistic
C	106.0451***	28.53820
Tex(-1)	0.163956***	5.729890

R^2 0.470514

Obs.: 39, Sample (adjusted): 1999:02; 2008:4

D-W stat: 1.3988210; **AIC** 5.428578; **F stat** 32.83164***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 4. Joint effects of public expenditure and revenues on nominal GDP

Dependent Variable: *GDP1 (nominal index of GDP)*

Variable	Coefficient	*t*-statistic
C	71.36942***	6.310181
Tex(-1)	0.321952***	3.514355
Rev(-3)	0.198156***	2.704307

R^2 00.530097.797115; Adjusted R^2 0.502455

Obs.: 37; Sample (adjusted): 1999:04; 2008:4

D-W stat: 1.969720; **AIC** 7.400598; **F stat** 19.17764***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 5. Effects on real GDP of public expenditure financed through taxes

Dependent Variable: *GDP2 (real index of GDP)*

Variable	Coefficient	*t*-statistic
C	105.6890***	27.75564
Tex(-1)	0.104996***	3.404221
Rev(-3)	0.059835***	2.425457

R^2 0.498782

Adjusted R^2 0.469298

Obs.: 36; Sample (adjusted): 2000:01; 2008:4

D-W stat 1.835883; **AIC** 5.223311; **F stat**
616.91736***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 6. Real effect of monetary policy strategy I

Dependent Variable: *GDP2 (real index of GDP)*

Variable	Coefficient	*t*-statistic
C	10.62128***	3.430827
GDP2(-1)	0.924243***	38.34049
Rep_rate(-2)	-0.317137**	-2.338799

R^2 0.977134; Adjusted R^2 0.975827

Obs.: 38; Sample (adjusted): 1999:03 2008:4

D-W stat 1.936779; **AIC** 2.234471; **F stat** 747.8319***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 7. Real effect of monetary policy strategy II

Dependent Variable: *GDP2 (real index of GDP)*

Variable	Coefficient	*t*-statistic
C	10.89945***	3.492447
GDP2(-1)	0.924399***	38.31560
Eonia(-2)	-0.303109**	-2.321781

R^2 0.977089; Adjusted R^2 0.975780

Obs.: 38; Sample (adjusted): 1999:03 2008:4

D-W stat 1.957125; **AIC** 2.236432; **F stat** 746.3319***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 8. Real effects of public debt

Dependent Variable: *GDP2 (real index of GDP)*

Variable	Coefficient	*t*-statistic
C	19.96988***	7.230646
GDP2(-1)	0.772619***	17.88903
Debt(-1)	0.078703***	2.755561

R^2 0.9839600; Adjusted R^2 0.983158

Obs.: 43; Sample (adjusted): 1998:02 2008:4

D-W stat 1.634168; **AIC** 2.482092; **F stat** 1226.903***

*significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

Table 9. The Kalman estimations

(rep_rate)	$\beta_{1,t}$	$\beta_{2,t}$
AIC=7.03	127.03**	-0.2865**
Schwarz=7.07		(-11.29)
Obs. 38(Q)	(76.59)	[0.003]
	[0.000]	
(Govern. Expenditure)	$\beta_{1,t}$	$\beta_{2,t}$
AIC=8.61	73.81**	0.50111**
Schwarz=8.65	(6.687)	(6.054)
Obs. 39 (Q)	[0.000]	[0.000]

*significant at the 0.05 level;

**significant at the 0.01 level ;

z-statistics in brackets; p-value in squared brackets

Legenda

GDP1 (nominal index of GDP)

GDP2(real index of GDP)

Tex (nominal index of total expenditures)

Rev (nominal index of total revenues)

Rep_rate (repurchase rate)

Eonia (Euro overnight index number)

Debt (nominal index of public debt)