Società italiana di economia pubblica
XVI CONFERENZA

POLITICHE PUBBLICHE, SVILUPPO E CRESCITA

Pavia, Università, 7 - 8 ottobre 2004

THE DETERMINANTS OF ITALIAN PUBLIC DEFICITS BEFORE AND AFTER MAASTRICHT

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Draft, 4/9/2004

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pubblicazione internet realizzata con contributo della COMPAGNIA di San Paolo

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ABSTRACT

This paper analyzes how the determinants of the creation of public deficits in Italy evolved in the years following the Maastricht Treaty and how this evolution shaped the development of the Italian public finances, by comparing the results of a cointegration-vector error correction model on two sample periods: a "pre Maastricht" (1950-1991) and a "post Maastricht" (1950-2002) one. While the determinants of the Italian public deficits have by and large remained the same before and after Maastricht, the way in which fiscal policy reacts to each of these determinants has changed considerably. Debt creation is much more sensitive now than before 1991 to external constraints, chiefly the numerical rules imposed by the Maastricht Treaty itself, institutional factors, such as the budget approbation rules and the relative political power of the Minister for the Economy and pressures to spend in deficits coming from such groups as retired workers. Conversely, Italian public deficits seem less sensitive now to traditional "sustainability" criteria, such as the differential between output growth rates and interest rates.

JEL classification: H62, E62.

KEYWORDS: public deficits, Maastricht Treaty, comparative test, cointegration.

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1. *Introduction*

This paper analyzes 1) how the determinants of the creation of public deficits in Italy evolved in the years following the Maastricht Treaty and 2) how this evolution shaped the development of the Italian public finances.

The theoretical literature on the determinants of public deficits point at factors such as the deviation of economic indicators (like output, public expenditures and unemployment levels) from their usual dynamics, the internal cohesion governments facing adverse fiscal shocks, the struggles between spending and finance ministers within the cabinet, the binding force of the budget approbation procedures, the demands for intra and intergenerational redistribution triggered by demographic developments, and the participation to international agreements that constrain the country's monetary and fiscal policies (Alesina and Perotti, 1999).

In Italy, all these factors underwent dramatic changes in the post-Maastricht years. As the following diagrams show, real output growth came to a substantial standstill during the 1990s (figure 1). Unemployment reached a peak in the second half of the 1990s and then started to decrease for the first time after several years (figure 2). Political and institutional equilibria, which had lasted more or less unchanged since the end of World War II, were upset by the combined effects of the change of the electoral system from proportional representation to majority rule and of the judicial inquiries that led to the disappearance of the old parties and to the birth of new ones; in turn, these new or renovated parties are slowly aggregating in two coalitions that, for the first time in the country's history, alternate in government. More recently, a series of institutional reforms has more than halved the number of spending ministers (from 25 to 10) and concentrated the government's financial choices in the hands of a "Superminister" of the Economy. Budget rules became much more stringent after the "constitutionalization" of the fiscal provisions of the Maastricht Treaty and the adoption of a budgetary reform that restricted the possibility of the legislature to amend the government proposals. On the other hand, demands for income redistribution and government spending coming from the demographic evolution of the country (figure 3) have probably become more pressing, as the combined effects of a negative balance between births and deaths and the smoothing of the social impact of firms' restructuring through early retirement schemes increased the share of the population dependent on the income-producing individuals. Finally, the Maastricht Treaty itself strengthened the "external constraint" that historically has driven all the major policy choices in Italy during the last decades.

Figure 1
Italy. Growth of GDP (1950-2003)

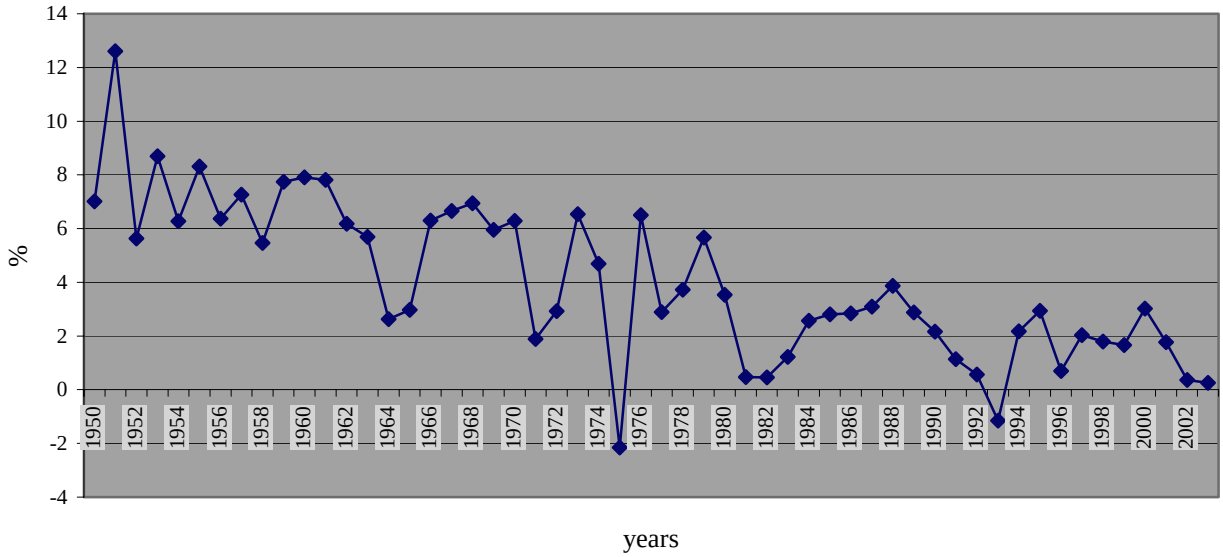


Figure 2
Italy. Unemployment (1950-2003)

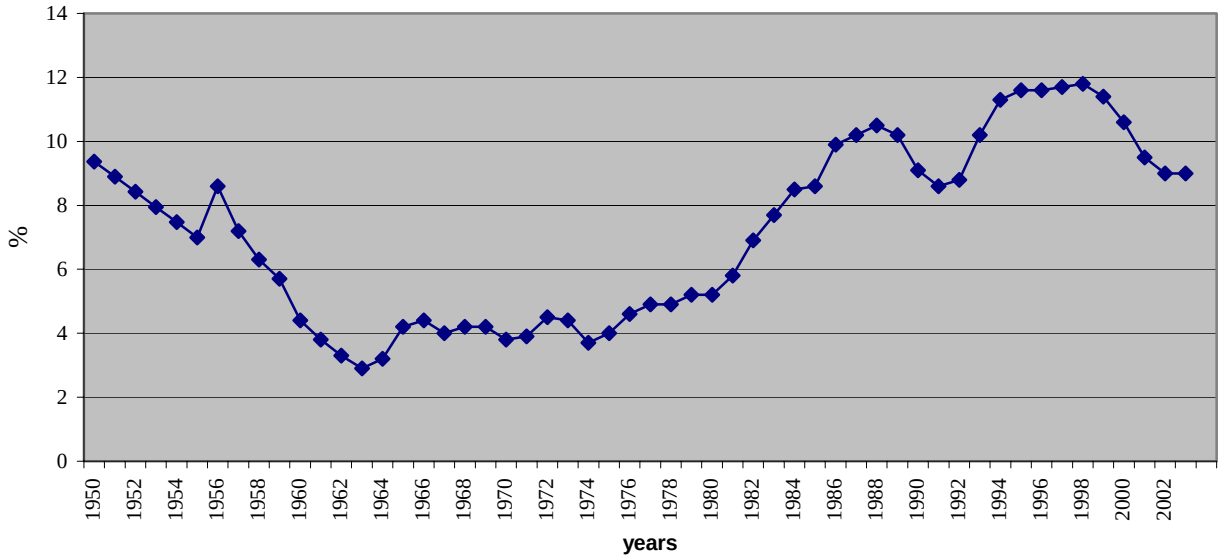


Figure 3
Italy. Share of individuals over 65 (1950-2002)

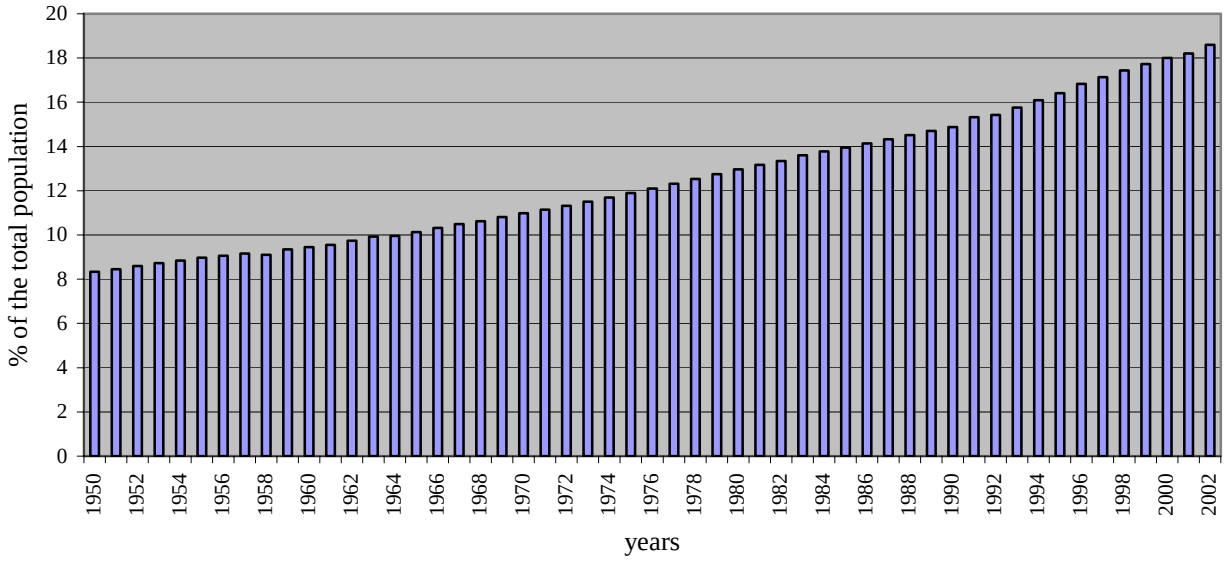
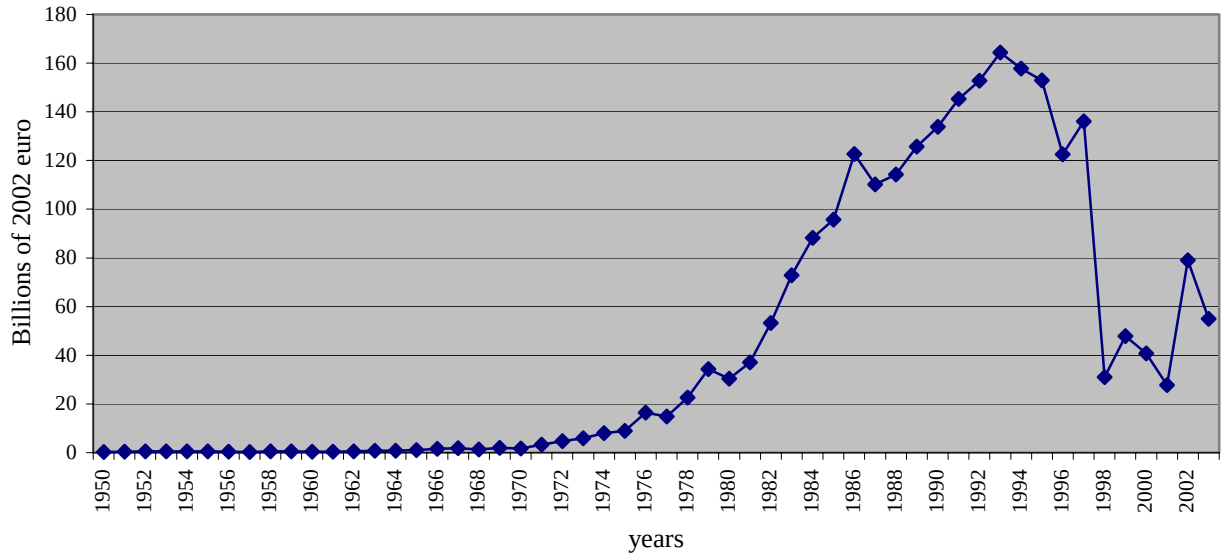


Figure 4
Italy. Real deficit (par value).



These historical developments warrant an empirical analysis "before and after" Maastricht in order to assess how the Stability and Growth Pact affected not only the deficit levels (figure 4) and therefore the sustainability of the Italian financial situation, but also the processes that determine the Italian fiscal choices. To this end we estimate an econometric model of the determinants of public deficits first on a sample period from 1950 to 1990, one year before the signing of the Maastricht Treaty, and then on a sample period from 1950 up to 2002, the last year for which the complete data set are available. By comparing the results we highlight structural changes in the processes of debt

creation related to the need to converge to the Maastricht criteria. It is important to stress that the convergence process has influenced the fiscal performance both directly, through the adoption of restrictive policies, and indirectly, e.g., by forcing the adoption of institutional reforms and by conditioning the electoral results and political equilibria, which in turn affected fiscal choices. These indirect effects require that the econometric model allow for a comprehensive consideration of the various determinants of public deficits. We estimate a cointegration-vector error model, which identifies the dynamics of the relationships that theoretical models often leave unspecified. As dependent variable we prefer public deficit to primary deficit since the reduction of the expenditures for the service of the debt was a constant feature of the Italian governments of the 1990s. Moreover, the accounting definition of the variable "primary deficit" has changed too frequently during the sample of interest for the series to be reliable in econometric estimates. In addition, we focus on deficits rather than on debt, as variations of the stock of the debt derive from changes in the flux of deficits.

The empirical literature on the evolution of Italian public deficits can be divided in two different strands. An extensive body of literature follows an historical approach based mainly on descriptive statistics. The *Storia Monetaria d'Italia* (Monetary History of Italy) by Fratianni and Spinelli (1991) is one of the most outstanding works within this line of research; Brunila, Buti and Franco (2001) and Giudice and Montanino (2003) are recent contributions focussing on the Stability and Growth Pact. The second approach is based on econometric estimates of models of the determinants of Italian public deficits (Balassone and Giordano, 2001; Galli and Padovano, 2002; Padovano and Venturi, 2001). Specifically, Balassone and Giordano (2001) find evidence that compromise between different ideological motivations within multiparty governments results in a bias toward running budget deficits even if all parties within the coalition prefer balanced budgets. Padovano and Venturi (2001) instead show that measures of ideological polarization loose their explanatory power once estimated alongside indicators of political fragmentation of government coalitions. They thus conclude that Italian parties members of government coalitions tend to behave opportunistically rather than ideologically. Finally, Galli and Padovano (2002) open the analysis to the comparison of a larger set of economic, demographic and politico-institutional theories of the determinants of Italian public deficits. In a sample that covers the 1950-1998 time interval, they find that deficits are sensitive to interest groups' preferences (especially those of the elderly), government fragmentation, changes in the degree of stringency of budget rules and external economic constraints. Data instead provide a weak or no support to the hypotheses that deficits respond to output growth and electoral events. In this paper we exploit the availability of a longer time span after the Maastricht Treaty to reconsider and extend the analysis of our 2002 work.

The rest of the paper is organized as follows. Section 2 reviews the main theories of the determinants of public deficits. Section 3 illustrates the data eyeing at the description of the economic, financial and political history of Italy during the last years. Section 4 describes the empirical analysis, and confronts the results of the pre and post Maastricht samples. Section 5 concludes.

2. Short survey of the theories under investigation

2.1. The Keynesian theory. While there is a tendency to consider Keynesian macroeconomics as a falsified and outdated theory, at least in Italy it still constitutes *the* cultural background of economic policymakers. Furthermore, as Buchanan and Wagner (1977) have pointed out, when it did represent the scientific mainstream, Keynesianism provided the theoretical justification for debt financing. Hence, whatever its current standing in economics, Keynesian macroeconomic policy holds an explanatory potential of both past and present Italian fiscal policy choices.

Keynesian macroeconomic policy sees deficits as a tool for counter cyclical policy. The unemployment level and/or the output growth rate are generally considered the relevant indicators of the state of the economy. The prediction is that budgets deficits be positively correlated with the unemployment level and negatively correlated with the growth rate of real output. In the analysis we choose three state variables: 1) The deviations of the unemployment rate around a time-varying trend, approximated as a Hodrick-Prescott filter of the annual series: this variable (labeled *TRU*) is consistent with the standard Keynesian-Phillips curve interpretation of unemployment, which implies that politicians respond only to its cyclical component. 2) The level of unemployment (*U*): this specification presupposes that, whatever the position of the economy through the cycle, policy makers try to reduce the social and political problems that high unemployment engenders, irrespective of the cycle or of the structural component of *U* overwhelming the cyclical one. 3) The output growth rate (*GY*), calculated as the first differences of the logs of real gross domestic product: a significant coefficient on this variable suggests that fiscal policy is essentially aimed to stimulate output.

2.2. The optimal finance theory. The fundamental difference between the Keynesian and the optimal finance approach to public debt is that, in the neo-Ricardian framework, individuals do not consider government bonds as net wealth. According to Barro (1974, 1979), whenever government chooses to deficit finance a given level of expenditures, individuals save the debt issues (and their rates of return) to meet the taxes levied to pay the interest and eventually retire the principal. As debt issues do not impact on aggregate consumption, deficits are no longer a useful tool to ease out of recessions. Still, deficits can be used to smooth tax rates over time, despite fluctuations in

government expenditures and GDP (tax base). A constant fiscal pressure requires budget deficits when government spending is above its trend value (such as in wartimes) and budget surpluses when it is below it (such as in peacetimes). Similarly, business cycle-induced fluctuations of the tax base require deficits in downturns and surpluses in upswings to keep the tax rate and government expenditures constant. We measure deviations of public expenditures from their normal level (labeled *TREXP*) and of income from its normal level (labeled *TRY*) as the ratio of their current value and trend value at time *t*. The trend value is obtained as an Hodrick-Prescott filter of the annual series.

2.4. The special interest group explanation. A class of public choice models explains the choice of financing public expenditures through debt rather than taxation by evaluating the political influence of interest groups that stand to gain from deficit spending (Rowley, Shughart and Tollison, 1988). While some controversy exists over which group fits in this characterization, Cukierman and Meltzer (1988), Rowley, Shughart and Tollison (1988) and Goff (1993), among others, conclude that elderly people who do not leave bequests to future generations are the most obvious candidate. The political influence of this group is supposed to increase with its percentage share of total population. This "special interest group theory" predicts a positive correlation between percentage of the population represented by elderly people and deficit levels.

2.5. Wars of attrition. A line of research (Alesina and Drazen, 1991; Kontopoulos and Perotti 1999) identifies coalition or divided governments as an explanation for the creation and persistence of fiscal disequilibria. After an exogenous fiscal shock, coalition governments tend to delay stabilization and accumulate debt because each member of the coalition seeks to transfer the political costs of the adjustment onto the others. Padovano and Venturi (2000) argue that it is important to control for the fragmentation of the opposition coalition too, as it may affect the costs for the government coalition to delay fiscal stabilization and, by that, the equilibrium deficit level. A government coalition of, for instance, three parties will find it easier to stabilize the budget when it has to overcome the opposition of several poorly coordinated political forces than when it is confronted by a single monolithic party. Several power indices exists that measure political fragmentation (Huber, Kocher and Sutter, 2003) but there is no clear reason to prefer one over the others. We choose the standard Herfindhal index, because it shows the higher variability when applied to Italian government data. On the other hand, measures of ideological polarization do not seem convincing; Padovano and Venturi (2001) show that the impossibility of the Communist Party and of the parties on the extreme right to go into the government (at least until the 1990s) made it rational for the other parties to behave opportunistically rather than ideologically. We measure the Herfindhal index of the parliamentary seats of the parties that did not vote against the government

in the initial confidence debate and term this variable *GOVFRAG*. Similarly, we estimate the concentration of the opposing coalition - *OPFRAG* - as the Herfindhal index of the parliamentary seats of the parties that voted against the government in the initial confidence. The values of these indices are distributed in the (0, 1] interval. They equal 1 when there is one single party in the coalition (minimum fragmentation), while approach 0 when the number of parties tends to infinity (maximum fragmentation). According to the logic of war of attrition models, more fragmented coalitions tend to delay stabilizations more; *GOVFRAG* should then be negatively related with budget deficits. Conversely, since more fragmented opposing coalitions can be more easily used to solve struggles inside the government majority, we expect a positive partial correlation between *OPFRAG* and the dependent variable.

A variant of this model suggests that debt is created as a by product of a war of attrition between finance and spending ministers (Alesina e Perotti, 1999), as they hold opposite objective functions within the government and become increasingly opposed when the government must stabilize the economy. The ratio of the spending ministers to the finance ministers (*SPENDMIN*) indicates the intensity of this type of war of attrition within the government.

2.6. Political budget cycles. The rational political budget cycles literature argues that, inasmuch as it ensures a boom, an expansionary fiscal policy before the elections raises the probability for the incumbent government majority to win the elections. That because voters perceive the boom as a sign of competence and reward it accordingly (Rogoff, 1990; Alesina, Roubini and Cohen, 1997).

We use a dummy variable to test the hypothesis that governments manipulate fiscal policies before the elections in order to maximize the probability of re-election. The standard specification in the literature (Alesina, Roubini and Cohen, 1997) is a variable (labeled *ELE*) which equals 1 in the election year if the elections occur in the second half of that year; 1 in the election year and in the year *before* the election if the polling day lies in the first half the year; and 0 in all other years. Alternatively, we construct a variable *ELC* which takes the value of 1 in the election year if the elections occur in the first half of that year; 1 in the election year and in the year *after* the election if the polling day lies in the second half the year; and 0 in all other years. This variable takes into account the time interval (roughly one year) that the Italian budget rules open between the moment when funds for a given expenditure are appropriated ("*bilancio di competenza*") and the moment when they are actually spent ("*bilancio di cassa*"). The electorate is likely to respond to the appropriation of funds (first moment) but data on deficits are registered only after expenditures are made and revenues collected (second moment).

2.7. Budgetary procedures. Recent contributions to the literature on the determinants of public deficits focus their attention on the procedures that discipline the approbation of the budget bill to

explain the considerable cross country differences in fiscal performances within highly interconnected and similarly developed economies (Alesina and Perotti, 1999). The general idea is that democratic institutions allow policymakers to partially internalize the political costs of their spending decisions, with consequent deficit. Different budget procedures, however, put similarly deficit-biased policymakers under different sets of constraints. Budget outcomes thus vary according to the degree of stringency of these constraints (von Hagen, 1992; von Hagen and Harden, 1996). During the sample period, Italy has reformed its budgetary rules twice. In 1978, the introduction of the *Legge Finanziaria* ("Financial Bill") has effectively circumvented the original provision for a budget balanced on a yearly basis enshrined in article 81 of the Constitution. The law 362/1988 introduced two corrections that limit the "deficit drift" engendered in the *Legge Finanziaria*. First, it breaks the set of provisions of the original *Finanziaria* into a plurality of financial bills to be approved in different times of the year, by that limiting the possibilities of logrolling - and the associated tendencies towards deficit spending - that the comprehensive structure of the *Finanziaria* allows. Second, it imposes to vote on the budget totals at the beginning of the approbation of the budget rather than at the end, as foreseen in the original *Finanziaria*. In this way the deficit is set at the beginning and cannot be increased by the parliamentary struggles that occur during the budget session. The literature (da Empoli, de Ioanna and Vegas, 2000) agrees to interpret the reform of 1978 as a major reduction of the degree of stringency of the Italian budget rules; the reform of 1988 is evaluated as a partial correction, which failed to fully restore the constraining power of the pre-1978 procedures. We capture the different binding forces of the Italian budget rules by means of a qualitative variable *BUDRULE* that takes the value of 2 between 1950 and 1977, 0 between 1978 and 1987 and 1 between 1988 and 2002.

2.8. Economic constraints. Changes in economic conditions may place more or less binding constraints on the tendency of fiscal decision makers to go into debt. We use two different regressors to control for the effects of the state of the economy on the wars of attrition: a) the budget costs of high interest rates; b) the external constraints imposed on discretionary fiscal policies. a) In a high public debt country like Italy, interest rate shocks, even of relatively small magnitude, imply a significant rise in the cost of servicing the debt. It has been observed that policymakers may decide to finance this higher cost of servicing the debt through new debt, rather than taxes (Alesina, 1988). Unexpectedly high levels of interest rates should then be positively correlated with deficits. Following Alesina, Roubini and Cohen (1997) we measure the budgetary costs of higher interest rates as the debt to GDP ratio multiplied by the change in the differential between real interest rates and the output growth rates. We call this variable *COSTDEBT*. b) Multilateral exchange rate agreements may force governments to stabilize the economy to avoid the

budget costs and crowding out effects of high interest rates. The provisions of the Maastricht Treaty are a case in point. We represent the effects of these external constraints on the fiscal choices of the government by means of a qualitative variable *EXTCONST*. The higher the potential of the external constraint to restrain discretion in fiscal policy is, the larger the value of the variable (Obstfeld, 1997). Specifically, *EXTCONST* takes the value of 0 in the years when the exchange rate of the Lira is totally flexible (1972-73), 1 if the currency abides a somewhat loose exchange rate regime (like the "Snake-in-the-Tunnel" from 1973 to 1979), 2 if the exchange rate system has a well developed set of rules (like Bretton Woods until 1971 and the European Monetary System from 1980 to 1991) and 3 if the regime sets explicit limits to deficits and debt levels in the way towards the creation of a single currency, as in the Maastricht Treaty (from 1992 on). The expected sign on this variable is negative.

3. Empirics

3.1. Tests for nonstationarity. The analysis of the stochastic properties of the series allows to establish whether the deficit and each explanatory variable share a long or a short run relationship and to identify the appropriate lag structure. This information enables to correctly specify a structural model of the determinants of public deficits devoid of spurious regression problems.

Table 1 reports the results of the Augmented Dickey-Fuller (*ADF*) and Phillips-Perron (*PP*) test of nonstationarity of the series. A significant test statistic rejects the null hypothesis of nonstationarity of the series in their levels. The test specification is with a constant, a trend and a constant or none of the two, as appropriate for each series**.** Finally, the test is performed for the 1950-1990 and 1950-2002 sample period to consent the appropriate specification of the estimating equations for the pre and post-Maastricht models. Nonstationarity can be rejected at the 1% level in both periods for *TRU, GY, TREXP, TRY*, as one would expect from growth rates and series that capture deviations from a trend. Also for *GOVFRAG* and *OPFRAG* nonstationarity can be rejected, consistently with the erratic nature of Italian government coalitions. As for *COSTDEBT*, nonstationarity can be rejected only for the 1950-1990, while it cannot for the sample including also the Maastricht years. This is first evidence that joining the EMU has stabilized both the interest rate and the output growth rate component of the variable. For all the other series – the dependent variable included - the null hypothesis of nonstationarity cannot be rejected at the 1% level for both periods[1].

[1] Though it is a war of attrition variable, *SPENDMIN* is much less erratic, as the number of spending ministers relatively to the finance ministers rose steadily from the 1950s to the mid-1990s, to decrease only recently.

TABLE 1

TESTS OF NONSTATIONARITY OF THE SERIES

Sample period		*1950-1990*			*1950-2002*	
Variable	*ADF test statistic*	*Phillips Perron test statistics*	*Test specification*	*ADF test statistic*	*Phillips Perron test statistics*	*Test specification*
DEF	-0.099	-0.10	Trend and constant	-0.6164	-0.9103	None
d(DEF)	-4.25***	-6.54***	Trend and constant	-3.6951***	-8.4880***	None
POP65	-3.15	-3.32*	Trend and constant	-0.518	-0.687	Trend and constant
d(POP65)	-4.183***	-6.08***	Trend and constant	-3.1328*	-4.4273***	Trend and constant
U	-1.71	-1.597	None	-2.3406	-2.2830	Trend and constant
d(U)	-3.07***	-4.4***	None	-3.7107***	-4.6184***	Trend and constant
TRU	-3.403***	-3.185***	None	-4.3086***	-3.3438***	None
GY	-4.759***	-6.665***	Trend and constant	-5.232***	-7.04***	Trend and constant
TREXP	-2.924***	-2.518**	None	-4.0223***	-3.5944***	None
TRY	-3.682***	-3.122***	None	-4.785***	-4.009***	None
GOVFRAG	-4.527***	-7.17***	Trend and constant	-3.9104**	-5.3614*	Trend and constant
OPFRAG	-3.12***	-4.704****	Trend and constant	-2.5953*	-4.7481***	None
d(OPFRAG)	-	-	Trend and constant	-6.9155***	-12.2654***	None
SPENDMIN	-2.617	-2.458	Trend and constant	-0.1242	-0.0358	Trend and constant
d(SPENDMIN)	-4.633***	-5.89***	Trend and constant	-4.8787***	-7.6235***	Trend and constant
COSTDEBT	-1.728*	2.134**	None	-2.2399**	-4.7418***	None
d(COSTDEBT)	-5.45***	-7.11***	None	-	-	

Note: *, ** and *** indicate a 10%, 5% and 1% significance level, respectively. The operator *d* indicates first differences.

3.2. Tests for cointegration. Since the dependent variable is nonstationary in its levels, the next step is to test the dynamic nature of its relationship with each nonstationary independent variable: *POP65, U, SPENDMIN* and *COSTDEBT* for the 1950-1990 period and the former three for the 1950-2002 sample. Table 2 presents the results of the Johansen cointegration tests. The null hypothesis is that there is no cointegration, namely, that the two series have no equilibrium condition which keeps them in proportion to each other in the long run. The lag structure of the series and the assumption about the presence of an intercept and/or of a deterministic trend in the cointegrating equation are as the dynamics of the series suggest.

The likelihood ratio test statistics indicates one cointegrating equation between deficits and the size of the elderly population at the 5% level. This result is plausible given the long run implications stemming from demographic trends. As expected, *U, SPENDMIN* and *COSTDEBT* do not result cointegrated with public deficits, consistently with the short run dynamics implied by the Keynesian, war of attrition and economic constraint models, respectively.

TABLE 2

JOHANSEN COINTEGRATION TEST

Sample			*1950-1990*					*1950-2002*		
Variable	*Lag structure*	*Eigenvalue*	*Likelihood Ratio*	*5% critical values*	*1% critical value*	*Lag structure*	*Eigenvalue*	*Likelihood Ratio*	*5% critical values*	*1% critical value*
POP65	1	0.327	26.323	25.32	30.45	1	0.4652	34.016	19.96	24.60
U	1	0.235	16.677	25.32	30.45	1	0.2443	16.95	25.32	30.45
SPENDMIN	1	0.291	20.4	25.32	30.45	1	0.1269	6.9756	18.17	23.46
COSTDEBT	1	0.302	23.819	25.32	30.45	-	-	-	-	-

3.3. Vector error correction. The assessment of the stochastic properties of the series and the identification of one cointegrating equation between deficits and elderly population allows us to specify and estimate a vector error correction model. We regress the first difference of the endogenous variable *DEF* on a one period lag of the cointegrating equation and on all the other independent variables.

Table 3 reports the estimates of the vector error correction model, where the best fitting models (evaluated stepwise on the basis of the Schwarz criterion) are estimated for the 1950-90 "pre-Maastricht sample" and for the 1950-2002 "post-Maastricht sample"[1].

TABLE 3

REGRESSION RESULTS

Variable	*Sample 1950-1990*		*Sample 1950-2002*	
	Cointegrating Equation		*Cointegrating Equation*	
Dependent Variable	DEF_{t-1}		DEF_{t-1}	
Variable	*Coefficient*	*t-stat*	*Coefficient*	*t-stat.*
DEF_{t-1}	1.00		1.00	
$POP65_{t-1}$	5.92^{-06}	8.44	6.11^{-06}	5.53
	Vector Error Correction		*Vector Error Correction*	
Dependent Variable	$d(DEF_t)$		$d(DEF_t)$	
Variable	*Coefficient*	*Prob.*	*Coefficient*	*Prob.*
$ECTPOP65_{t-1}$	-0.348	0.03	-0.873	0.00
$TREXP_t$	0.0003	0.02	0.0004	0.00
TRY_t	-0.0001	0.04	-0.0001	0.3
$EXTCONST_t$	-0.439	0.8	-4.126	0.05
ELE_t	-1.302	0.5	3.641	0.4
$BUDRULE_t$	-13.634	0.00	-16.25	0.00
$SPENDMIN_t$	0.605	0.00	0.834	0.00
$d(U)_t$	-1.04	0.58	-1.317	0.7
$COSTDEBT_{t-1}$	-173.41	0.00	-142.93	0.00
Adj. R^2	0.44		0.511	
S.E. of regression	5.47		14.79	
Log likelihood	-110.0		-196.56	
Schwarz criterion	6.837		8.737	
N. obs.	40		52	

Note: The operator *d* indicates first differences.

The first result that deserves attention is the coefficient on *EXTCONST*. While it is not significant in the 1950-90 sample, it becomes so and with the expected negative sign in the 1950-2002 sample. This evolution captures the direct effect of the Maastricht Treaty on the deficit. Previous exchange rate agreements were not so binding on the country fiscal choices; the "Maastricht numbers" are.

Other indirect effects of the Maastricht Treaty are captured by the evolution of the coefficients on *BUDRULE* and *SPENDMIN*. While significant and with the expected negative sign in both samples, the coefficient on *BUDRULE* is greater in the full sample. The reforms to the budget approbation procedures introduced after the constitutionalization of the Maastricht Treaty to further increase the constraints on policymakers' bias for deficit spending have indeed proved effective. Similarly, the greater political weight of the Minister of the Economy relative to the spending ministers ensuing the reduction of their number has a distinct impact on fiscal imbalances; the size of the coefficient on *SPENDMIN* increases by 25%. This regressor proves multicollinear with *GOVFRAG* and *OPFRAG*, but holds a greater explanatory power than the latter two variables, which have thus been excluded from the final specification of the regression model. We infer that the relevant locus of war of attritions within Italian government coalitions is within the Cabinet more than within the Parliament. The reunification of the previous three financial ministries (Treasury, Finances and Budget) into one Ministry for the Economy implies that only one party holds such a Ministry and, consequently, that the other government coalition members hold spending portfolios. Hence, the Council of Ministers is where the parties fight and find deals over fiscal choices.

Keynesian variables do not seem to play an important role, as neither the rate of growth of real output nor the various specifications of unemployment never turn out significant. While it would be excessive to infer that Italian fiscal authorities never targeted economic growth or unemployment, they did not do so in the countercyclical manner postulated by the functional

finance. The political conveniences of deficit spending outweighed the welfare maximization logic of Keynesian fiscal policy, in line with the arguments of Buchanan and Wagner (1977).

As for the optimal finance variables, in all regressions *TREXP* shows the correct sign and is strongly significant, whereas the coefficient on *TRY* is significant only in the pre-Maastricht sample. The erratic behaviour of Italian public expenditure mainly depends on the large share of entitlement programs in the budget outlays. A negative fiscal shock thus is automatically transmitted to public expenditures and deficits must be raised to keep the fiscal pressure constant; this explains the steady significance of *TREXP*. Conversely, the loss of significance of *TRY* when the 1990-2002 years is also considered may be due to the lower distortionary effect of the Italian tax system in the 1990s with respect to the previous years, which makes the fundamental hypothesis to the Barro (1979) model less plausible in the full sample period. The 1970s and 1980s saw a dramatic increase of the deadweight costs of taxation due to reforms that raised the effective progressivity of the system and to the fiscal drag resulting from the high inflation rates of those years; the 1990s, instead, witnessed tax reforms that slowly made the rates more proportional and a sharp decline of inflation with lower fiscal drag. In this scenario, shocks to the tax base affect the excess burden of taxation less, with a lower need to intervene by issuing debt.

Elections do not seem to have a significant direct effect on the dynamics of budget deficits, in neither periods, though the coefficient acquires the correct sign and becomes closer to being significant once the recent years when two coalition alternate in government is considered. Nevertheless, the lack of explanatory power of the *ELE* regressor (as well as on *ELC*, though the results on this variable were not reported) is largely due to the fact that elections did not occur at regular, thus predictable intervals, thus reducing the possibility to organize an expansion of the budget before, and a contraction after, the polls.

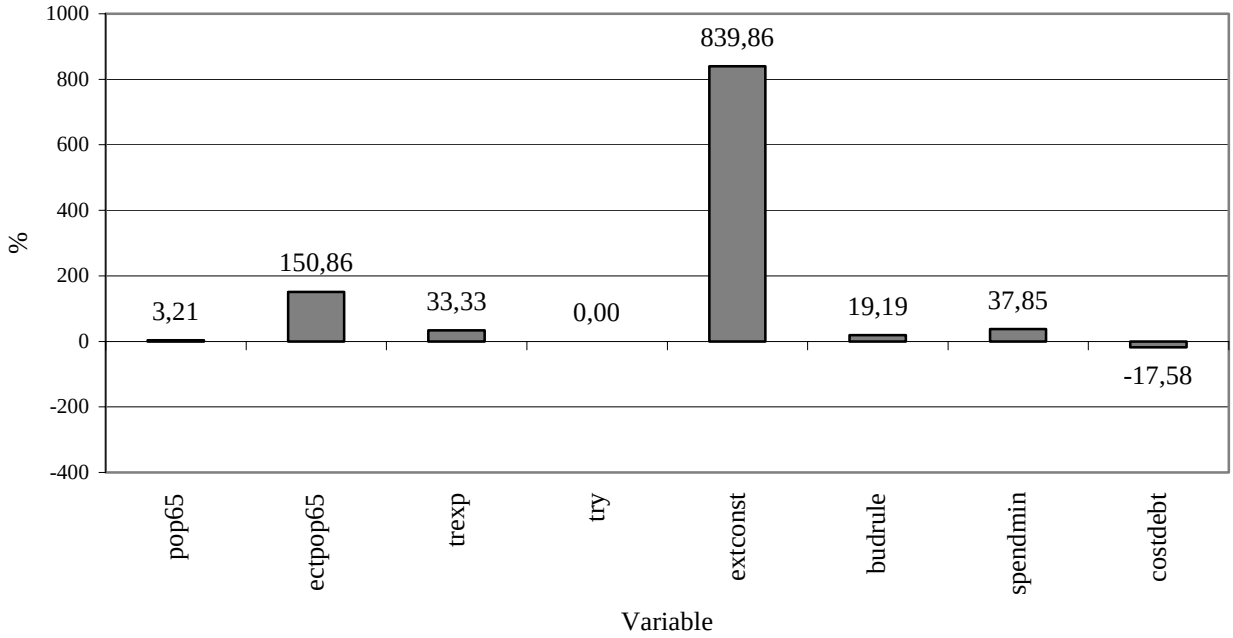
COSTDEBT, which measures the budgetary cost of high interest rates, is always significant and present the expected negative sign. The appropriate lag structure is *t-1*; current governments react to past cost levels, probably because of the high volatility of the monthly assessments of this

indicator. The size of the coefficient is smaller for the full sample, a sign that the stabilization of the interest rate on the Italian public debt after joining the EMU has made public deficits less sensitive to the financial costs of servicing the debt.

Finally, the percentage of the elderly on the total population has the expected positive sign and is always significant. The coefficient grows in the overall sample, in line with the larger and rising share of the expenditures for pension and social security on the Italian budget. The error correction term is negative and significant and shows a faster return to normal values once the 1990s are taken into account, probably because of the effects of the pension reforms that have been introduced in 1993, 1995 and 1997.

Figure 5 illustrates the percentage variations of the size of the significant coefficients from the 1950-90 sample to the 1950-02 one.

Figure 5.
Percentage change of the estimated coefficients



Overall the models explain approximately 44% (1950-90) and 51% (1950-02) of the total variation of the dependent variable, with considerable precision.

4. Conclusions

The analysis described in this paper indicates that, while the determinants of the Italian public deficits have by and large remained the same before and after Maastricht, the way in which fiscal policy reacts to each of these determinants has changed considerably. Debt creation is much more sensitive now than before 1991 to a) external constraints, chiefly the numerical rules imposed by the Maastricht Treaty itself; b) institutional factors, such as the budget approbation rules and the relative political power of the Minister for the Economy; c) pressures to spend in deficits coming from such groups as retired workers. Conversely, Italian public deficits seem less sensitive now to traditional "sustainability" criteria, such as the differential between output growth rates and interest rates.

The long run sustainability of Italian public finances thus appears mainly tied to the resilience of these institutional constraints. If the procedures to approve the budget are slackened, the power of the Minister for the Economy reduced, and most of all, the SGP is rewritten and softened, Italian deficits will soar more than in the case of an increase of the interest rates. Instead, if these institutional reforms are applied by a sequence of alternating coalitions and supported by the public opinion, and new reforms in this direction are introduced, Italy will slowly cease to be a financial case within Europe.

These results of this analysis are quite similar, and therefore corroborate, the findings of previous analyses based on similar explanatory techniques but on a more limited time span, in which the effects of the Maastricht Treaty were not completely manifest. The Maastricht years have produced a wealth of new facts to the economic, political and fiscal history of the country, but the driving forces behind Italy's public deficits by and large remain the same. This suggests that the investigation of the determinants of the Italian public deficits is probably complete, and the potential of the explanatory approach pursued in this paper has been exhausted.

The main limit of this analytical approach is that it may explain the dynamics of fiscal *totals*. Yet, as budget deficits are the difference between total expenditures and total revenues, and these two totals often result from a bottom-up processes of aggregation of single expenditures programs and tax instruments, we believe that progresses in the explanation (and control) of the dynamics of the fiscal performance of a country will come from the investigation of the determinants of the *composition* of public expenditures and of taxation, i.e., from more disaggregated analyses based on models of the political economy of public spending and of taxation.

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