

## Government Size and Economic Growth in Italy: An Empirical Analyses Based On New Data (1861-2008)

Cosimo Magazzino<sup>1</sup>

### Abstract

The aim of this paper is to empirically assess the relationship between government size and economic growth. Using time series methodologies applied to annual data for Italy, the effect public expenditure, unemployment and fiscal reforms on economic activity have been analysed. The data used in these analyses have been collected and shown in Forte (2011), and they cover the very long-period 1861-2011. Our results show the presence of a non-linear relationship between the size of public sector (measured by the share of government expenditure over GDP) and the economic growth rate for Italy. In general, the presence of an inverted “U-shape” curve emerges for the last two decades, suggesting that expenditure cuts might faster GDP dynamic. This result is in line with recent empirical literature about this issue. Interestingly, for the monarchic years, it has been found that the zero budget constraint provoked a slower aggregate income variation.

**Keywords:** economic growth; fiscal consolidation; BARS curve; Italy; time series.

**JEL Codes:** C22; E62; H60; O40.

### 1. Introduction

The economic and financial crisis has been affected all European Union (EU) countries since 2008. The issue of sustainability has emerged as the key concern in the immediate post-crisis years. Soaring deficits and off-balance-sheet operations to support the financial sector have led to a large increase in debt for nearly all EU countries. Given the sequence of events outlined from the International Monetary Fund (IMF), the European Central Bank (ECB) has initiated a program of banking refinancing, also widening the pool of collateral assets, which helped to loosen significantly the freeze on the banking system, as well as to contain the default's risk in the European continent. Simultaneously, European governments (especially the Italian and Spanish ones) have contextually implemented programs of reforms aimed at containing budget deficits, to improve competitiveness, and to the banking refinancing (in the case of Madrid). Moreover, the role played by sovereign spreads in the Euro zone has increased dramatically with the onset of the crisis. In fact, prior to the crisis, there was little difference in the bond prices of the various Euro zone countries. Cyprus, Greece, Italy, Portugal, and Spain also implemented very strong measures. Overall, this group broadly overlaps with that of countries most affected by the current downturn, as well as experiencing strong rebalancing of their economy.

Italy's debt-to-GDP ratio hit the 100% threshold before the crisis; it has been continuously rising since then and is forecast to exceed 130% by 2014. Overall, the continuously rising debt-to-GDP ratios reflect the combined effect of high primary deficits, negative or very weak growth, and high interest expenditure in some Member States. In particular, the large differential between the real interest rate and the real GDP growth continued to push up debt in Italy, despite the primary surpluses recorded since 2010 (EC, 2013a). In the bargain, Belgium, Greece and Italy would conversely benefit from some declines in interest charges.

Governments tend to absorb a sizeable share of society's resources and, therefore, they affect economic

---

<sup>1</sup>Roma Tre University; Italian Economic Association; Royal Economic Society

development and growth in many countries. Throughout history, high levels of economic development have been attained with government intervention. Where it did not exist, little wealth was accumulated by productivity economic activity (Afonso and Jalles, 2011).

Contrarily to what has been advocated in the past, achieving the policy goals, the role of public sector is of crucial importance, both as regards the fiscal policies (implemented to reduce the public debt burden and to avoid a solvency crisis), and for what concerns the public politics of incentive to economic growth. In particular, if an optimal level of public expenditure share in relation to the GDP growth maximization exists, for countries with high debt (located on a hypothetical right side of that level), a reduction in public expenditure could bring about an improvement in the rate of economic growth, achieving a level of public debt sustainability.

While public expenditure, in general, is necessary to have a market economy capable of operating correctly (as well in order to foster the aggregate income growth), its expansion must not necessarily be considered consistent with the objective of maximizing the GDP growth rate in the long-run. Indeed, increases in government expenditure, beyond the optimal value, may represent an obstacle to the economic growth. The approach here proposed advocates the search of equilibrium, which should not necessarily be that in correspondence of which the GDP is maximized. A high rate of growth which is accompanied by an unequal distribution of resources could, in fact, conflict with the objective of maximizing general welfare, not reflecting the actual individual preferences.

As noted by EC (2013b), while important reforms have been adopted to foster fiscal sustainability and to spur growth, their full implementation remains a challenge and there is scope for further action. Several key measures proposed have not yet been approved or still require enacting legislation and there are risks that their concrete application is not consistently followed up through all levels of government. Public-administration efficiency in terms of the regulatory and procedural framework, quality of governance and administrative capacity continue to suffer from significant weaknesses that affect implementation of reforms and the business environment.

Besides this Introduction, the remainder of the paper is organized as follows. Section 2 is devoted to present and discuss recent results concerning the government size-economic growth nexus. In the following section, the data used in our empirical analyses are shown, with its results and some comments. Finally, Section 4 concludes, giving useful policy implications.

## **2. Recent Empirical Findings on the Relationship between Government Size and Economic Growth**

The massive spending programs and new regulations adopted by many countries around the world in response to the economic crisis of 2008 have drawn renewed attention to the role of government in the economy (Kahn, 2011).

A recent approach to the effects on the size of government on economic growth is centred on the BARS curve (Barro, 1989; Armev, 1995; Rahn and Fox, 1996; Scully, 1994, 1995), which relates the rate of economic growth with government expenditure (as a percentage of GDP), considered as a peculiar proxy of the State dimension in the economy.

The theoretical foundation of what we are affirming dates back to the concept of “optimal size of the government” theorized by Armev, who proposed the homonym curve. Analogous to the Laffer’s curve (which outlines, using a graph of an “inverted U”, the relationship between tax revenue and the average tax rate), the Armev’s curve shows the relationship between public expenditure (expressed as share of GDP) and the change in the general welfare of the country (expressed as a rate of economic growth), showing the same shape of a parabola with the concavity facing downwards.

According to Armev (1995), with very low levels of public expenditure, the State would fail to ensure contract compliance and protection of property rights, and it would result in a zero rate of economic growth. On the contrary, with very high shares of public expenditure, citizens would have little incentive to invest and

produce, since the levels of fiscal burden would be exorbitant, but also in this case the growth would suffer. Consequently, expenditure increases at low levels of intervention in the economy generate a strong boost to economic activity, while fiscal expansions, at high expenditure levels, result in a slowdown economic activity. There is, thus, an optimal value of public expenditure share.

Countries can be thought of as either in a “balanced growth” state, in which per capita GDP growth fluctuates around the normal long-term rate of about two percent annually, or in transition – meaning sustained growth at an above or below normal rate until they reach the balanced growth state (Kahn, 2011).

The analysis conducted by Forte and Magazzino (2011) revealed that, for the EU-27 member States, the peak of the BARS curve is attained for an expenditure of 37.29% of GDP, while the average ratio is 47.90%: i.e. 10 p.p. more. For the twelve EU countries for whom an individual time series analysis was meaningful (because of the availability of data), they found that the peak of the BARS curve ranges from 35.39 for Belgium and 35.52 for The Netherlands to 43.50 for UK and 44.47 for Ireland. The minimum deviation from the level of the public expenditure that coincides with the peak of the BARS curve is that of Ireland with only 2.27%, followed by UK with 7.67 p.p. in excess. The maximum deviation is that of Belgium (of about 18%), followed by Denmark (with a percentage of about 17%). As for the 27 EU member countries, a country having a public expenditure/GDP ratio above 10% the peak, on average, suffers a diminution in the GDP growth rate of 2.1%. Moreover, an increase of 1 percentage point in the variation of public expenditure approximately corresponds to a 0.04% reduction in the acceleration rate of economic activity. However, the considered European countries are very heterogeneous in terms of the peak of the BARS curve.

The recent economic and financial crisis led to a very remarkable deterioration of the Euro Area countries fiscal positions, with high public deficits and debt. The exit strategy should include at least three dimensions: (1) the gradual elimination of the financial assistance to the banking sector; (2) the withdrawal of tax incentives to restore sustainability of public finances, and (3) the implementation of structural reforms that promote growth.

The criterion used to define an episode of remediation is the value of the variation in Cyclically Adjusted Primary Balance (CAPB). As clarified in Barrios *et al.* (2001), a “fiscal consolidation” corresponds to an improvement of CAPB of at least 1.5% implemented in a single year (so-called “cold shower”) or within three years (so-called “progressive consolidation”).

Alesina and Ardagna (2009), studying the reduction in public debt/GDP ratio in previous episodes of consolidation, have found that in the past, large public debt has been reduced in rapid way thanks to sustained growth. This was the case for the reduction of huge public debts of the belligerent countries after World War II and for the U.S. in the Nineties, when, substantially without any increase in tax rates or significant cuts in public expenditure, the large deficit has been turned into a great surplus. A different example is represented by UK consolidation at the end of the World War II, with a debt/GDP equals to 200%. Yet, the country did not suffer a financial crisis due to debt unsustainability, thanks to confidence given by markets to UK fiscal authorities (historically believed to be reliable) and subsequent consolidation realized during the period of the Thatcherian reforms (Magazzino, 2010a).

The econometric evidence has shown, in time, that the “progressive consolidation” processes tend to have more likely to succeed than a consolidation with “cold shower”. Some of these results are probably justified by the introduction of structural reforms that alongside the gradual consolidation and which constitute a determinant of its successful.

However, countries with higher levels of indebtedness that are facing serious problems of sustainability, should opt for a “cold shower” consolidation, in order to re-establish credibility as well as market confidence, so as to contain the “snowball effect”, which otherwise would aggravate their already precarious situation. Empirical results show that the difference in success rates between the two alternative types of consolidation becomes much lower than the average in the case of consolidations implemented because of a strong increase of debt.

The Barrios *et al.* (2011) analysis has been focused on 14 European countries and two dimensions. The

first dimension concerning the challenges that individual countries must face, and it was based on five variables, each weighted differently: i. the level of debt relative to GDP and to government revenue (with a weight of 30% and 10% respectively); ii. the level of the deficit-to-GDP ratio (weight: 25%); iii. pressures on bond markets, with a distinction between the yields on government bond (10%) and the share of debt held by foreign investors (10%); iv. the expected GDP growth (10%); v. the indebtedness of private sector-to-GDP (5%).

The second dimension, regarding the stance of manoeuvre for each country, is composed of five variables, with different weights: i. the possibility to raise revenues, feasible in countries with a contained fiscal pressure or that have significant differences between revenue and expenditure (weight: 25%); ii. The ability to implement expenditure cuts, feasible in countries with a relatively large and inefficient public sector or in states with high levels of social transfers (35%); iii. The possibility of increasing the participation to work by, for example, age retirement (30%); iv. The possibility of privatizing public assets (5%); v. the possibility of pursuing an expansive monetary policy, where the country does not belong to a monetary union (5%).

The results of the econometric analysis conducted allowed dividing the analysed countries in four groups: 1) the first group (consisting of Greece, Ireland, Portugal, and Italy) represent countries that face the greatest challenges in fiscal consolidation. Italy and Greece, however, have more leeway than Ireland and Portugal. Italy, in fact, may act both on revenue side (raising taxes on black economy, estimated at 22% of GDP) and on labour participation; 2) the second group, which includes France, Germany, Netherlands, Spain, and the United Kingdom, faces a fiscal threat moderately high, with a lower room for manoeuvre. Worthy of note is the case of Spain, for which the results show a largely tax challenge lower than that perceived by the markets until 2011. While the country has registered deficits very high in recent years, is also true that before the crisis, between 2004 and 2007, had achieved budget surpluses and, despite the rapid increase in debt, has sufficient room for manoeuvre (increasing the tax rate, relatively low, or both increasing retirement age and occupation); 3) Poland and Hungary form the third group, which is characterized by small fiscal challenges and medium-large room of manoeuvre; 4) the fourth group includes Sweden, Denmark, and Finland, without any budget threat.

The study identified four factors that can increase the chances of achieving an effective and sustainable recovery:

- The presence of a strong government, represented by a strong Prime Minister, which may rely on external pressures as well in order to obtain the consensus necessary to approve the ambitious reforms essential for recovery. A newly elected government tends to be in a better position to start a major change, especially if has a clear mandate from the voters, because can act without having to worry about an imminent re-election. The stability of the political system is important because requires cooperation between different ministries, agencies and various levels of government;
- The availability of a plan of medium term that is comprehensive, addressing to all areas of the object consolidation and that it is able to fully exploit the room for manoeuvre available to the country;
- The development of solid institutional abilities of the offices and the other agencies cooperate with the government for the elaboration of recovery plan. The tax agencies need a composite pool of economists, statisticians, project managers, risk managers, political experts and public relations experts;
- A sound fiscal framework that extends through all levels of government.

Most of the “first generation” empirical literature (prior to the late 90’s-early 00’s) on the relationship between government size and economic growth has been based on the linear formulation of the link between public expenditure (as a proxy of the size of the public sector) and GDP growth. The evidence provided by this first generation literature is not conclusive, although the number of papers in support of a negative relationship between public expenditure and growth is slightly larger.

Empirical findings in Dalena and Magazzino (2012) on the relationship between public expenditure and revenue in Italy between 1862 and 1993 showed that the “Tax-and-Spend” argument received empirical support from the liberal period data. In contrast, the interwar years are in line with the “Spend-and-Tax” hypothesis. Finally, the “Fiscal Synchronization” hypothesis emerges in the republican ages.

A relevant branch of literature related to the optimal Government size deals with fiscal consolidation, the “tolerable” tax burden, or the nexus between GDP and public debt. Successful fiscal adjustments are often rooted in reform of social programs and reductions to the size and pay of the government workforce rather than in other types of spending cuts (Biggs *et al.*, 2010). Alesina *et al.* (2012) looked at this issue and found no evidence that governments which quickly reduce budget deficits are systematically voted out of office. While Brender and Drazen (2006) showed that increasing deficits before an election has a (mildly) negative consequence on the chance of re-election of the incumbent. Guajardo *et al.* (2011) studied 173 fiscal consolidations in rich countries and found that nations that mostly raised taxes suffered about twice as much as nations that mostly cut spending. Findings in Engen and Skinner (1996) suggest modest effects on the order of 0.2 to 0.3 percentage point differences in growth rates in response to a major tax reform. Nevertheless, even such small effects can have a large cumulative impact on living standards.

As underlined in Alesina and Ardagna (2012) and in Perotti (2011) spending-based fiscal adjustment accompanied by supply-side reforms, such as liberalization of markets for labour, goods, and services, readjustments of public sector size and pay, public pension reform, and other structural changes tend to be less recessionary or even to have positive economic growth. Moreover, as pointed out by Alesina and de Ruy (2013), while austerity-based spending cuts can be costly, the cost of well-designed adjustments plans will be low. Besides, it is not clear that the alternative to reducing spending is more economic growth. In fact, the alternative for certain countries could be a very messy debt crisis. The evidence in Ardagna (2004) suggests that the probability that tight fiscal policies lead to a decrease in the debt-to-GDP ratio increases the larger cut in the deficit. In addition, successful and expansionary fiscal contractions are not the result of expansionary monetary policies or of exchange rate devaluations. Giavazzi and Pagano (1990) showed that while the Danish experience based on cuts in government spending associated with increases in consumption even after controlling for wealth and income, and even in the presence of a substantial increase in current taxes worked, the Irish case, however, highlighted the potential importance of liquidity constraints for the operation of this mechanism. Giavazzi *et al.* (2000) illustrated how only sizable and persistent fiscal impulses trigger non-linear responses via models of regime changes: only large and politically costly fiscal actions can signal a regime change, and thus have a non-linear impact on private sector expectations and behaviour. Non-linear effects are larger and more precisely estimated for changes in net taxes than for changes in public consumption. As explained in Pitlik and Schratzenstaller (2011), based on several measures capturing the expenditure and the tax side of the budgets, as well as regulatory policies, the size and the structure of public sectors differ markedly across countries.

The theoretical discussion whether or not the expansionary austerity might work involves also the implementation of structural reforms. In fact, as stated in Bini Smaghi (2013), austerity has certainly caused low growth but may itself be the result of the poor and unbalanced growth performance before the crisis, due to the lack of reform. The postponement of reforms to improve growth potential has left countries with only one solution, austerity, which is the result of policy makers’ past inability to take timely decisions.

In particular, Rubinson (1977), Ram (1986), and Grossman (1988, 1987) found evidence of a positive relationship between public expenditure and growth; Landau (1983), Grier and Tullock (1987), Barro (1990b), and Engen and Skinner (1992) provided evidence in line with a negative relationship; instead, Kormendi and Meguire (1985), and Hsieh and Lai (1994) found no significant relationship.

### 3. Methodology, Data and Empirical Results

In our applied analyses, the ARIMAX (AutoRegressive Integrated Moving Average with Exogenous Variables) models were used, together with Newey and West’s correction regarding heteroscedasticity and

autocorrelation.

We used the data recently reconstructed by Forte (2011) for Italy. In Table 1 are presented some descriptive statistics of the relevant public finance' variables: the rate of economic growth ( $y$ ), the share of government expenditure over GDP ( $G$ ), the share of public revenue/GDP ( $T$ ), the public ( $B$ ) and fluctuating debt as a GDP ratio, and the effective deficit/GDP.

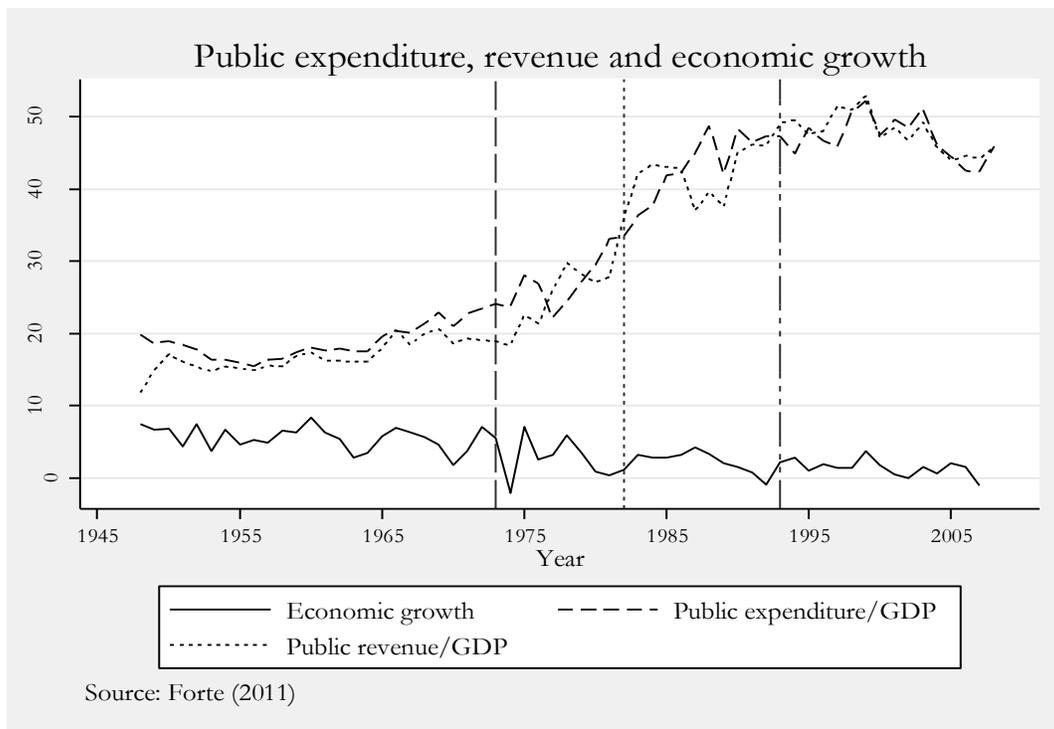
**Table 1 –Descriptive Statistics of Relevant Public Finance Variables (Italy, 1861-2008)**

Variable	Mean	Median	Inter-Quartile Range	Standard Deviation
Economic growth rate	2.37	2.27	5.00	6.90
Public expenditure/GDP	22.87	17.92	21.62	13.51
Public revenue/GDP	21.14	16.14	15.56	13.01
Effective deficit/GDP	-4.98	-2.23	7.57	6.73
Public debt/GDP	77.51	80.90	41.96	29.31
Fluctuating debt/GDP	32.07	21.39	36.79	21.78

Source: our elaborations on Forte (2011) data.

As can be also noted in Figure 1, from the second post-war years the expenditure pattern has been rather dissimilar to that of economic growth. In fact, the coefficient of correlation ( $r$ ) is equal to -0.73. The mean of GDP change, which had been equal to 5.92% between 1948 and 1959, in the Sixties it went down to 5.56%, to 3.84% in the Seventies, to 2.41% in the Eighties, 1.59% in the Nineties, while between 2000 and 2008 it collapsed to 0.88%. Instead, the mean variation of public expenditure/GDP was equal to -0.65% between 1948 and 1959, to 1.63% in the Sixties, 3.96% in the Seventies, 5.34% in the Eighties, -0.02% in the Nineties, and to -0.27% between 2000 and 2008.

**Figure 1 – Public Expenditure, Revenue and Economic Growth (% , Italy, 1948-2008)**



**Table 2 – Public Expenditure and Economic Growth (Italy, 1861-2008, Mean)**

Variable	1862-1914	1915-1947	1993-2008	1948-2008
y	0.0122	0.0112	0.0127	0.0348
G	10.6914	26.2133	47.0899	31.6457
T	10.7387	20.4654	47.8112	30.5514
B	81.6937	92.2497	111.2603	65.8966

Interestingly, as could be noted in Table A (in Appendix) dividing the entire sample period on the basis of the war years, a result *à la* Peacock and Wiseman (1961) seems emerge. In fact, the ten war years exhibit a greater statistically significant mean of public expenditure/GDP ratio (37.62%) in respect of the rest of the time span (21.79). Moreover, the public expenditure share mean for low export countries is equal to 22.19 for years in which have been implemented fiscal reforms, while it increases to 29.92 for the other sub-sample. Therefore, fiscal reforms appear to accelerate the size of Government.

The correlation between output growth and public expenditure during the whole period is almost absent (-0.06, which, moreover, is the same value assumed by the correlation coefficient in the years 1862-1914), while the negative association is also confirmed in the interwar period (-0.25).

In the three sub-periods here considered, the variation in economic activity on average was equal to 1.35% between 1862 and 1914, 1.90% between 1915 and 1947, and 3.53% between 1948 and 2008. The variation in public expenditure/GDP ratio, however, was equal respectively to 3.51%, 0.93%, and 1.65%. Therefore, in the post-unitary and up to the First World War were recorded the highest increase in expenditure/GDP and the lowest growth rate. For what concerns the average expenditure levels, in the years of Historical Right (1862-1876) the government size was equal to 9.40%, then grew to 11.09% with the Historical Left (1877-1896), and to 17.89% with the Giolitti era and the Great War (1897-1920). Fascism and the Second World War did increase this ratio up to an average of 23.69% (1921-1947), whilst among 1948 and 1979 it decreased to 20.16%. Finally, among 1980 and 2008 there was an excessive increase, which led this ratio to 44.32%.

By analysing the dynamics of the budget balance in relation to GDP, it stood on an effective average deficit of 1.97% during the Historical Right period; yet, with Historical Left there were no sudden upheavals, as average deficit was of 0.20%. The Giolitti years and the First World War produced a high medium deficit (5.40%); with fascism, there has a subsequent rupture of the combination, since the increase in revenue was lower than that of expenditure, producing a budget deficit equal to 8.47%; in the period 1948-1979 together with a decrease in expenditure, there was a stagnation of the average revenue, so that deficit/GDP ratio decreased (3.98%). Finally, from 1980 to 2008 the robust increase in expenditure has accompanied the less accented increase in revenue, resulting in marked deficits (7.32%).

The debt/GDP in 1989 exceeded the threshold of 90%, which, according to Reinhart and Rogoff (2010), represent a secular weight that impact on economic growth in the long-run (and often lasts for two decades or more). Since that year, that ratio has not returned below 90% anymore. Keeping the estimated threshold by Cecchetti *et al.* (2010), equal to 85%, we would find that value was exceeded in 1987. In addition, the existence of a negative relationship between debt/GDP ratio and output growth in the period 1861-2010 is confirmed by the results of Balassone *et al.* (2011). Obviously, a bilateral correspondence exists between debt and growth, but the normal recessions last only one year and it cannot explain a period of two decades of malaise. It is more likely that the growth constraints have the origin in the government's need for raising taxes, as well as in lower investment expenditure. Thus, public expenditure provides an incentive in the short term, with a secular decline in the long-run.

More in detail, considering the whole time span, nonparametric tests evidence that a significant difference in growth median between war and peace periods is shown, with positive and higher value for the first group (2.62 against -0.95); on the other hand, no differences emerge comparing years in which fiscal reforms have been implemented and the others (2.43 against 1.75, see Tables A and B). As expected, the same results have been found for public expenditure, as we reject the null hypothesis that there is no

difference between the two periods. In fact, war years exhibit a higher mean (37.62 against 21.79); indeed, for fiscal reforms contrasting results emerge (Tables C and D). Finally, comparing public revenue, again we discover mixed results in the case of fiscal reforms, whilst results indicate that the mean and medians are not statistically different for war and peace years (Tables E and F).

The analysis presented here continues with the estimation of possible non-linear effects of public expenditure, assuming that the growth rate is a positive function of aggregate income, but a negative function of its square:

$$Y_t = \alpha + \beta_1 G_t + \beta_2 G_t^2 + \gamma U_t + \varepsilon_t$$

where:  $t$  are the indices associated to each year;  $Y$  is the rate of output growth;  $G$  corresponds to government expenditure as a percentage of GDP;  $U$  is a set of control variable in order to capture business cycles, such as the unemployment,  $\varepsilon_t$  is the stochastic component. The presence of the BARS curve is verified if  $H_0: \beta_1 > 0$  and  $H_0: \beta_2 < 0$  cannot be rejected.

The second-degree term indicates a diminishing marginal productivity of public expenditure. The share of expenditure on GDP that maximizes economic growth based on quadratic equation in [1] can be deduced by the formula [2], after having differentiated income in respect of expenditure:

$$G^* = -b/2c$$

**Table 3 – Estimates for the BARS Curve (Italy, 1948-2008)**

Dependent Variable: $y$	1948-2008	1948-2008	1948-2008
G	5.2174 *** (0.6700)	6.0235 *** (0.6265)	5.8884 *** (0.6594)
G <sup>2</sup>	-6.4420 ** (3.4447)	-8.0540 ** (3.5092)	-8.3364 ** (3.4776)
u		-0.0746 ** (0.0404)	-0.0679 (0.0487)
Fiscal Reforms			-1.1940 * (0.7017)
Constant	-3.7125 *** (1.2104)	-5.4789 *** (1.1050)	-5.1526 *** (1.1675)
N	61	61	61
ARMA Correction	(4,3)	(4,3)	(4,3)
G*	40.50	37.39	35.32
Wald $\chi^2$	(0.0000)	(0.0000)	(0.0000)
AIC	-328.6616	-239.2553	-237.2389
BIC	-307.5528	-262.2931	-262.3710
$l$	174.3308	108.6277	106.6194
$r_{y,G}$		-0.7265	

Notes: Robust Standard Errors in parentheses. Significance levels: \* 10%, \*\* 5%, \*\*\* 1%.

Applying time series methodologies, the estimates presented in Table 3 show that the optimal public expenditure share from World War II to 2008 is equal to 40.50%, near 9% above its mean value. Including in the analysis the unemployment rate, the estimated optimal government size drops to 37.39%, which corresponds to less than 6 percentage points over the mean; finally, inserting as an explanatory variable a dummy that controls for enacted tax reforms, we arrive at 35.32%, or 3.7% above the registered mean. Thus, surprising empirical results emerge, insomuch as the estimated optimal public expenditure/GDP ratio exceeds its real mean value, which may imply unexpected policy implications for the Republican ages. In fact, given these calculations, a more pronounced public intervention in the economic sphere could have led to a stronger growth. Did Italian policy-makers spend few resources?

Notwithstanding, one can note that these values do not differ much amongst them, and above all are in line with the estimates (again for Italy in the second post-war, but with different sources of data) by Forte and Magazzino (2011), Pevcin (2008), and Magazzino (2008). Indeed, these results are quite far from 27% in Herath (2009), which relates to a developing country (Sri Lanka). Moreover, it is interesting to underline that tax reforms undertaken in this period have shown a brake on growth, having in fact generated tax restrains

rather than lightening.

The estimates with respect to the previous time intervals confirm the presence of a BARS curve (Table 4). Between 1862 and 1914 the optimal government size was equal to 13.96%, in line with the government size of that historical period (Tanzi and Schuknecht, 2007), when policies budget were inspired by orthodox (or neutral) finance theory. Leroy-Beaulieu (1879) argued that a tax pressure equal to 12% of domestic production was already exorbitant and gravid of the danger for growth and economic freedom.

**Table 4 – Estimates for the BARS Curve (Italy, 1862-2008)**

Dependent Variable: y	1862-1914	1915-1947	1993-2008
G	1.7692 *** (0.6387)	2.4282 *** (0.5705)	6.5797 *** (0.0058)
G <sup>2</sup>	-6.334 ** (3.0988)	-4.9708 *** (1.1213)	-8.1039 *** (0.0002)
u			-0.0048 *** (0.0009)
Fiscal Reforms	0.0423 *** (0.0074)		-0.0365 *** (0.0032)
Time	0.0008 *** (0.0000)	0.0032 *** (0.0005)	0.0012 *** (0.0004)
Constant	-0.0208 *** (0.0324)	-0.0186 *** (0.0345)	1.3209 *** (0.0678)
N	53	33	16
ARMA Correction	(1,1)	(2,1)	(1,3)
Wald $\chi^2$	(0.0000)	(0.0000)	(0.0000)
AIC	-226.3655	-58.78951	-114.4468
BIC	-210.7555	-46.81745	-107.4935
<i>l</i>	121.1827	37.39476	66.22339
$r_{y,G}$	-0.0589	-0.2482	-0.0812
G*	13.96	24.42	40.60
$\bar{y}$	1.35	1.90	1.43
$\bar{G}$	10.69	26.21	47.09

Notes: Robust Standard Errors in parentheses. Significance levels: \* 10%, \*\* 5%, \*\*\* 1%.

In those years, the average ratio of expenditure/GDP (10.69%) was still below both values mentioned above. Therefore, until the First World War, the liberal governments seem to have spent less than necessary, according our calculations. Yet, it should be remarked how, in that period, the tax collection was an extremely difficult exercise. In the inter-war period – almost entirely covered by fascism – this threshold rises to 24.42%, in line with the 25% held by Keynes (1936) as a tolerable maximum. In addition, the average share amounted to the same values (26.21%). Finally, with the so-called Second Republic marked differences are recorded between optimal expenditure (40.60%) and its average (47.09%), with obvious negative effects on economic growth, as previously highlighted. The last finding differs numerically to that in Mavrov (2007), who calculated an optimal government size for Bulgaria in the 1990-2004 years approximately about 21%.

Thus, it appears that in the last two decades the registered mean value of government size has exceeded its calculated optimal value, which is able to promote growth.

#### 4. Concluding Remarks and Policy Implications

Our results show the presence of a non-linear relationship between the size of public sector (measured by the share of government expenditure over GDP) and the economic growth rate for Italy. In general, regardless the data used – here, those of Forte (2011), in other analyses those of the European Commission – and the temporal subdivisions, the presence of a parabolic dynamic between variables, however, emerges.

Therefore, for Italy, a space of considerable manoeuvre might be evidenced, since growth incentives can be pursued for a dual route: both expenditure and tax cuts concur to the strengthening of economic activity, in the first case as a BARS effect, and in the second as a Keynesian effect (increasing the disposable income). Moreover, reducing the tax burden, if a Laffer effect triggered, it would improve the state of public finances,

by increasing revenue (EC, 2011).

It should be noted that the prescriptions of policies arising from these analyses cast doubt the existence of a trade-off between austerity and growth that policy-makers would face, since the plans of fiscal consolidation – if the BARS and Laffer curves worked – would contribute to achieve both objectives.

The previous results should be combined with those concerning the composition of expenditure (Magazzino, 2012b): since no item of public expenditure Granger causes aggregate income, the cuts in public expenditure should not have a negative impact on growth. Therefore, reallocating the public resources from unproductive to more productive items (R&D or public investment), it would stimulate long-run economic growth. In other words, modifying the public expenditure composition and varying the volume of each chapter, one could obtain the effect of a more pronounced growth.

Moreover, public expenditure cuts contribute to the achievement of the primary balance surplus and debt reduction, within a wider framework of fiscal consolidation. Without mention the relevant structural reforms, of which Italy has a clear necessity, able in addition to restructure public expenditure and to promote economic growth: the Welfare State reform, the revision of the tax system, the reduction of the fiscal churning, the justice reform, the reorganization of pension system, the labour market reform, the revision of education system, new institutional architecture, with a simplification of policy framework (Bavetta and Navarra, 2012).

For Italy, the economic slowdown, increasing public deficits and below-the-line operations in the context of the support to the financial sector combined to drive up public debt. The social impact of the global economic crisis is increasingly alarming, and it imposes measures aimed at reducing unemployment. Rising unemployment, wages cuts and blocks, joined to the unjustified rescue of some banks, the house prices collapse, the deterioration of savings and pension funds are dangerously increasing the popular malcontent in Italy, in Europe, in the world (Magazzino and Romagnoli, 2013).

The widespread loss of confidence in government ability to restore stability supports the emergence of the protests, as well as the concern about a possible overflow disorders at a global level.

The threat of social disorders stems from widespread poverty (absolute and relative, both marked by deep interdependence among countries); from the absence of confidence in governments and political leaders (which motivates the suspicion that the situation is worse than officially affirmed); from the indictment against agents responsible for the crisis, identified in banks and rating agencies (whose manager and trade networks have been characterized by ineptitude and greed).

### **Acknowledgments**

The Author is especially grateful to Francesco Forte (Sapienza-University of Rome), Mauro Costantini (Brunel University) and Gian Cesare Romagnoli (Roma Tre University) for their helpful and valuable comments. However, the usual disclaimer applies.

### **Suggestions for Future Research**

Further research might be devoted to the analysis of the effect of public expenditure composition on economic growth (Abbott and Jones, 2012a, 2012b; Magazzino, 2012b, 2012c).

### **References**

- Abbott, A., Jones, P., (2012a), Budget deficits and social protection: Cyclical government expenditure in the OECD, *Economics Letters*, 117, 909-911.
- Abbott, A., Jones, P., (2012b), Intergovernmental transfers and procyclical public spending, *Economics Letters*, 115, 447-451.
- Afonso, A., Jalles, J.T., (2011), Economic performance and government size, ECB Working Paper, 1399, November.

- Alesina, A., Ardagna, S., (2009), Large changes in fiscal policy: Taxes versus spending, NBER Working Paper, 15438.
- Alesina, A., Ardagna, S., (2012), The Design of Fiscal Adjustments, NBER Working Paper, 18423, September.
- Alesina, A., Carloni, D., Lecce, G., (2012), The Electoral Consequences of Large Fiscal Adjustments, National Bureau of Economic Research, January.
- Alesina, A., de Rugy, V., (2013), Austerity The Relative Effects of Tax Increases versus Spending Cuts, Mercatus Research, March.
- Ardagna, S., (2004), Fiscal stabilizations: when do they work and why, *European Economic Review*, 48, 5, 1047-1074.
- Arney, R., (1995), *The Freedom Revolution*, Washington, D.C.: Regnery Publishing Co.
- Balassone, F., Francese, M., Pace, A., (2011), Public Debt and Economic Growth in Italy, Bank of Italy - Economic History Working Papers, 11, October.
- Barrios, S., Langedijk, S., Pench, L., (2011), EU fiscal consolidation after the financial crisis, Lesson from past experiences, *EC Economic Papers*, 418 July.
- Barro, R.J., (1989), A Cross-Country Study of Growth, Saving and Government, NBER Working Paper, 2855.
- Barro, R.J., (1990), Economic growth in a cross section of countries, *Quarterly Journal of Economics*, 106, 2, 407-443.
- Bavetta, S., Navarra, P., (2012), *The economics of freedom*, Cambridge: Cambridge University Press.
- Bender, A., Drazen, A., (2006), Political Implications of Fiscal Performance in OECD Countries, March, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2005226](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2005226).
- Biggs, A., Hassett, K., Jensen, M., (2010), A Guide for Deficit Reduction in the United States Based on Historical Consolidations That Worked, AEI Economic Policy Working Paper, 2010-04, December.
- Bini Smaghi, L., (2013), *Morire di austerità*, Bologna: il Mulino.
- Cecchetti, S., Mohanty, M.S., Zampolli, F., (2011), The real effects of debt, *BIS Working Paper*, 352, September.
- Cunctator, Magazzino, C., (2012), Il trade-off tra crescita economica e rigore fiscale, *Return-On-Intelligence*, Istituto Italiano di Studi Strategici, 7, July.
- Dalena, M., Magazzino, C., (2012), Public Expenditure and Revenue in Italy, 1862-1993, *Economic Notes*, 41, 3, 145-172.
- Engen, E., Skinner, J., (1992), Taxation and Economic Growth, *National Tax Journal*, 49, 4, 617-642.
- European Commission, (2010), Public finances in EMU – 2010, *European Economy*, 4.
- European Commission, (2011), Public finances in EMU – 2011, *European Economy*, 3.
- European Commission, (2013a), Public finances in EMU – 2013, *European Economy*, 4.
- European Commission, (2013b), Council recommendation on Italy 2013 national reform programme and delivering a Council opinion on Italy's stability programme for 2012-2017, [http://ec.europa.eu/europe2020/pdf/nd/csr2013\\_italy\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/csr2013_italy_en.pdf).
- Forte, F., (2011), *L'economia italiana dal Risorgimento ad oggi, 1861-2011*, Siena: Cantagalli.
- Forte, F., Magazzino, C., (2011), Optimal Size Government and Economic Growth in EU Countries, *Journal of Analytical and Institutional Economics*, XXVIII, 3, 295-321.
- Forte, F., Magazzino, C., (2014), Economic growth and fiscal consolidation: the optimal mix between current

- and investment public expenditure. The case of Europe, in Forte, F., Mudambi, R., Navarra, P., (eds.), *Handbook of Alternative Theories of Public Economics*, Cheltenham: Edward Elgar.
- Giavazzi, F., Pagano, M., (1990), Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries, in Blanchard, O.J., Fischer, S., (eds.), *NBER Macroeconomics Annual 1990*, Volume 5, Massachusetts: MIT Press.
- Giavazzi, F., Jappelli, T., Pagano, M., (2000), Searching for Non-Linear Effects of Fiscal Policy: Evidence from Industrial and Developing Countries, *European Economic Review*, 44, 7, 1259-1289.
- Grier, K., Tullock, G., (1989). An Empirical Analysis of Cross-national Economic Growth, 1951-1980, *Journal of Monetary Economics*, 24, 2, 259-276.
- Grossman, P.J., (1987), The optimal size of Government, *Public Choice*, 53, 131-147.
- Grossman, P.J., (1988), Growth in government and economic growth: The Australian experience, *Australian Economic Papers*, 27, 33-43.
- Guajardo, J., Leigh, D., Pescatori, A., (2011), Expansionary Austerity: New International Evidence, *IMF Working Paper*, 11/158, July.
- Herath, S., (2009), The size of the government and economic growth: an empirical study of Sri Lanka, *SRE Discussion Working Paper*, 2009/08.
- Hsieh, E., Lai, K.S., (1994), Government spending and economic growth: the G-7 experience, *Applied Economics*, 26, 535-542.
- Kahn, J.A., (2011), Can We Determine the Optimal Size of Government?, *CATO Institute – Development Policy Briefing Paper*, 7, September.
- Keynes, J.M., (1936), *The General Theory of Employment, Interest and Money*, London: Macmillan.
- Kormendi, R.C., Meguire, P.G., (1985), Macroeconomic determinants of growth: cross-country evidence, *Journal of Monetary Economics*, 16, 2, 141-163.
- Landau, D., (1983), *Government and Economic Growth in The Less Developed Countries: An Empirical Study for 1960-1980*, The University of Chicago Press, 35, 1, 35-75.
- Leroy Beaulieu, V.P., (1879), *Traité de la science des finances*, Paris.
- Magazzino, C., (2008), Modelli interpretativi della dinamica della spesa pubblica e ‘curva di Armey’: il caso italiano, 1862-2001, *Notizie di Politeia*, XXIV, 92, 45-60.
- Magazzino, C., (2010a), *La politica economica di Margaret Thatcher*, Milano: Franco Angeli.
- Magazzino, C., (2010b), Dimensioni ottimali dell’operatore pubblico e crescita economica, *Il Risparmio Review*, LVIII, 1, gennaio-marzo, 5-33.
- Magazzino, C., (2012a), *Politiche di bilancio e crescita economica*, Torino: Giappichelli.
- Magazzino, C., (2012b), Wagner versus Keynes: Public Spending and National Income in Italy at a Disaggregated Level, *Journal of Policy Modeling*, 34, 6, November-December, 890-905.
- Magazzino, C., (2012c), Wagner’s Law and Augmented Wagner’s Law in EU-27. A Time-Series Analysis on Stationarity, Cointegration and Causality, *International Research Journal of Finance and Economics*, 89, April, 205-220.
- Magazzino, C., Romagnoli, G.C., (eds., 2013), *Legge di Stabilità e politica economica in Italia*, Milano: FrancoAngeli.
- Mavrov, H., (2007), The size of government expenditure and the rate of economic growth in Bulgaria, *Economic Alternatives*, 1, 52-63.
- Peacock, A.T., Wiseman, J., (1961), *The Growth of Public Expenditure in the United Kingdom*, Princeton:

Princeton University Press.

- Perotti, R., (2011), The ‘Austerity Myth’: Gain Without Pain?’, NBER Working Paper, 17571, November.
- Pevcin, P., (2008), The Issue Of The Economically Preferred Size Of Government, E.A.B.R. & T.L.C. Conference Proceedings, Salzburg.
- Pitlik, H., Schratzenstaller, M., (2011), Growth Implications of Structure and Size of Public Sectors, WIFO Working Papers, 404, October.
- Rahn, R., Fox, H., (1996), What Is the Optimum Size of Government, Vernon K. Krieble Foundation.
- Ram, R., (1986), Government size and economic growth: a new framework and some evidence from cross-section and time series data, *American Economic Review*, 76, 191-203.
- Reinhart, C.M., Rogoff, K.S., (2010), Growth in a Time of Debt, *American Economic Review*, May.
- Rubinson, R., (1977), Dependency, government revenue and economic growth: 1955-1970, *Studies in Comparative International Development*, 12, 3-28.
- Scully, G.W., (1994), What is the optimal Size of government in the US?, National Center for Policy Analysis, Policy Report, 188.
- Scully, G.W., (1995), The “Growth Tax” in the United States, *Public Choice*, 85, 1-2, 71-80.
- Tanzi, V., Schuknecht, L., (2007), *La spesa pubblica nel XX secolo. Una prospettiva globale*, Firenze: Firenze University Press.
- Vedder, R.K., Gallaway, L.E., (1998), *Government Size and Economic Growth*, Joint Economic Committee.

Appendix:

**Table A – Paired Samples Statistics (Results For T-Tests, ANOVA And Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test	
y (on Wars)	No war years	2.62	136	0.49	3.409 (0.0007)	128.8055 (0.000)	11.621 (0.0007)	2.52 (0.1146)	6.8706 (0.009)
	War years	-0.95	10						

**Table B – Paired Samples Statistics (Results for T-Tests, ANOVA and Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test
y (on Fiscal Reforms)	No FR	2.43	134	0.770	9.1266 (0.4416)	0.592 (0.4416)	0.11 (0.7454)	1.4527 (0.183)
	FR years	1.75	12	0.63				

**Table C – Paired Samples Statistics (Results for T-Tests, ANOVA and Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test
G (on Wars)	No war years	21.79	137	-3.308	7.8250 (0.0009)	10.943 (0.0009)	13.92 (0.0003)	10.8769 (0.001)
	War years	37.62	10	-7.58				

**Table D – Paired Samples Statistics (Results for T-Tests, ANOVA and Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test
G (on Fiscal Reforms)	No FR	22.19	134	-1.753	0.8759 (0.0795)	3.074 (0.0795)	3.96 (0.0485)	2.1850 (0.139)
	FR years	29.92	13	-1.70				

**Table E – Paired Samples Statistics (Results for T-Tests, ANOVA and Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test
T (on Wars)	No war years	20.94	137	-1.300	2.1135 (0.1936)	1.690 (0.1936)	0.51 (0.4759)	3.9510 (0.046)
	War years	23.99	10	-1.01				

**Table F – Paired Samples Statistics (Results for T-Tests, ANOVA and Other Comparison Methods)**

Groups	Mean	N	t	Wilcoxon test	Bartlett test	Kruskal-Wallis test	One-Way ANOVA F test	Pearson $\chi^2$ test
<i>T</i> (on <i>No FR</i> )	20.49	134		-1.903	1.0571	3.623	3.89	4.2402
Fiscal Reforms) <i>FR</i> <i>years</i>	27.88	13	-1.66	(0.0570)	(0.304)	(0.0570)	(0.0505)	(0.037)

**Table G – Exploratory Data Analysis**

<b>1862-1914</b>					
Variable	CV	SE Mean	IQR	Pseudo SD	10 Trim
Economic growth rate	3.1846	0.5916	4.4356	3.288	1.37
Public expenditure/GDP	0.1464	0.2150	2.1405	1.587	10.59
Public revenue/GDP	0.1451	0.2140	1.6637	1.233	10.85
Effective deficit/GDP	-2.2142	0.2116	0.9100	0.675	-0.32
Public debt/GDP	0.2039	2.2876	22.3183	16.540	82.78
Fluctuating debt/GDP	0.3374	0.6424	6.6980	4.965	13.74
<b>1915-1947</b>					
Economic growth rate	6.8602	2.2669	7.9504	5.894	1.29
Public expenditure/GDP	0.3952	1.8033	17.2686	12.800	25.76
Public revenue/GDP	0.3638	1.2959	9.5013	7.043	19.75
Effective deficit/GDP	-0.9203	1.7233	17.5213	12.990	-9.83
Public debt/GDP	0.2976	4.7784	23.7483	17.600	91.37
Fluctuating debt/GDP	0.5596	3.2333	18.6349	13.810	30.53
<b>1948-2008</b>					
Economic growth rate	0.7024	0.3205	4.1466	3.074	3.56
Public expenditure/GDP	0.4110	1.6652	26.8544	19.910	31.21
Public revenue/GDP	0.4567	1.7863	27.8673	20.660	29.99
Effective deficit/GDP	-0.8245	0.5882	6.3228	4.687	-5.05
Public debt/GDP	0.5205	4.3914	71.8806	53.280	63.90
Fluctuating debt/GDP	0.4347	2.6313	34.1359	25.300	47.81

Notes: CV: coefficient of variation; SE Mean: Standard Error of Mean; IQR: Inter-Quartile Range; Pseudo SD: Pseudo Standard Deviation.

Figure 2 – Public Debt and Fluctuating Debt (% , Italy, 1862-2008)

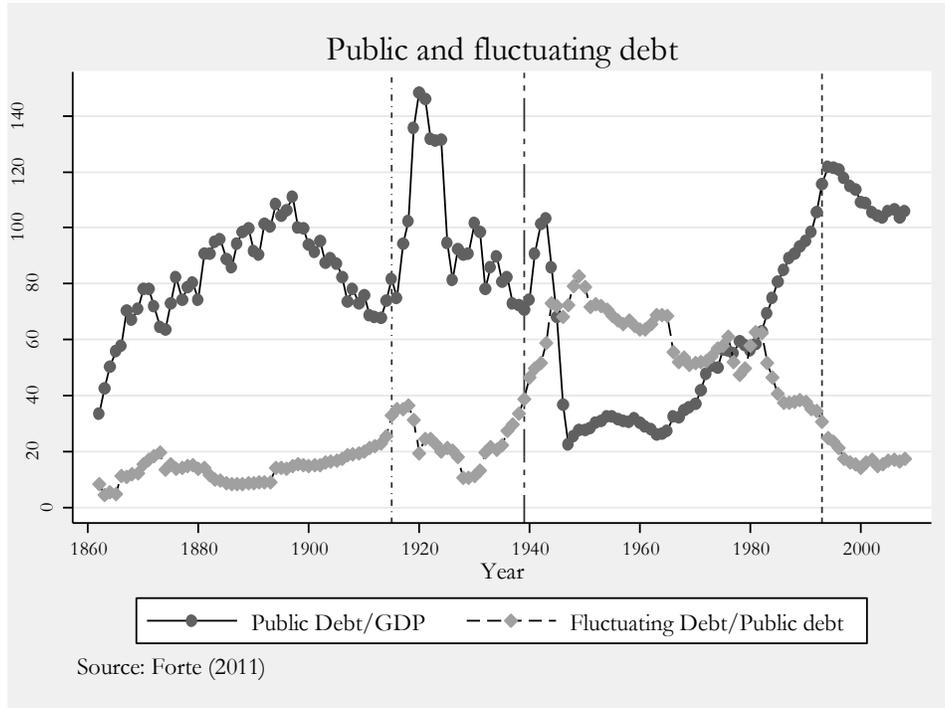


Figure 3 – Effective Public Deficit and Unemployment Rate (% , Italy, 1945-2008)

