

Austerity will not drive the Italian economy out of its long-term stagnation

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Abstract

This article aims to assess the austerity policies adopted in Italy which are based on two mainstream arguments: the first argument is that a higher fiscal deficit tends to crowd out capital accumulation, private investment and growth. The second argument is that there is a threshold level of sovereign debt (or fiscal debt) beyond which investors requires higher bond yield. This may trigger a vicious cycle which leads to an unsustainable debt re-payment path. The two arguments have been empirically tested by Alesina and Ardagna (2010) and by Reinhardt and Rogoff (2010) respectively; both works have been criticised from various points of view.

This article first looks at the context of the Italian prolonged stagnation of the last three decades which is associated with some important changes in the composition of both aggregate demand and supply and an increasing debt. In this context, we further concentrate on the relations between changes in the fiscal deficit (and its two components, spending and revenues), debt and economic growth. We found that only once, during the last three decades, that is immediately after the crisis, the Italian economy moved along a countercyclical Keynesian mechanism, where a significant deterioration in the primary balance, was followed by an increase of output. This was mostly due to automatic stabilisers, which the recent labour market reform wants to eradicate.

We approach the analysis of the relationship between fiscal deficit, growth and debt in three ways: we use a simple growth model to conceptualise the relationship between the variables, a graphical examination of the dynamics using standard-phase plane analysis, and implement an econometric analysis through three models: a VEC model to analyse the relation between government debt and GDP, and also to estimate causality between these two variables. A three-dimensional VAR analyses the components of debt and the fiscal position. A four-dimensional VAR examines the breakdown of the primary balance into revenues and spending.

Key words: Secular Stagnation, Fiscal austerity, Debt sustainability, Post-Keynesian

JEL Classifications: E32, E60, E62, E12

1. Introduction

The Great Recession renewed Keynesian theory across the world: the economic debate returned to the effects of fiscal deficit on economic performance, fuelled an impressive amount of empirical work on how fiscal policy should be financed, on whether government spending crowds in or out private spending, and on the size of the actual effect of government spending on GDP. Within this literature, a case for ‘expansionary austerity’ was revived by two controversial works. The first of these argued for short-run positive impacts of fiscal cuts on economic performance (Alesina and Ardagna 2010). The second, by Reinhart and Rogoff (2010), argued for a non-linear relationship between debt-to-GDP ratio and growth.

We review the main arguments related to the relationships between fiscal deficit, economic growth and government debt and summarise their key theoretical and methodological critiques only briefly.

Our main aim is twofold: first, we test some of these findings empirically with respect to the Italian economy and we argue for a case that is relevant for Keynesian theory, that is, the relationship between these variables is a dynamic one; second, we consider whether fiscal policy affects economic performance negatively or positively and whether economic growth (or the lack of it) improves (or worsens) public finances and debt-to-GDP ratios. With these aims, we consider the components of the fiscal deficit, spending and revenues and the relation of causality between deficit and economic performance, and we account for the role of the interest rate. We consider a preliminary analysis of Italian data during the last three decades. We then implement an econometric analysis through three models: a VEC model to analyse the relation between government debt and GDP, and also to estimate causality between these two variables. A three-

dimensional VAR analyses the components of debt and the fiscal position. A four-dimensional VAR examines the breakdown of the primary balance into revenues and spending.

This paper contains five sections. Following this introduction, the second section reviews the main arguments related to the relationships among the variables at play. The third section presents historical and recent patterns of fiscal spending in Italy during the last three decades. The fourth section presents the econometric analysis and the final section summarises the main findings.

2. The resumption of the debate on debt, deficit and economic growth in the wake of the Great Recession

In the wake of the Great Recession, the implementation of austerity measures sparked a resumption of the debate on the effects of fiscal deficit and debt on economic performance in all the advanced countries. This section attempts a review of the most popular arguments put forward in this debate, each followed by a brief summary of their critiques. First, the Ricardian Equivalence about the irrelevance of how government spending is financed, put forth by Barro (1979) and reinstated more recently to discourage the fiscal stimulus in the USA (Barro 2009). Second, we discuss the conventional view on public debt and growth presented in standard macroeconomic textbooks, that is the crowding-out effect. Third, we review an argument currently in vogue based on the idea that financial markets act as watchdogs, or bond vigilantes. Finally, we conclude this section by briefly summarising recent empirical works about the size of the multiplier and issues related to debt and debt sustainability.

First, based on the permanent income hypothesis, the Ricardian Equivalence, put forward by Robert Barro (1979, 2009), implies the irrelevance of whether government's fiscal package is financed by deficit or tax reduction. In this work, only a permanent change in the level of spending matters. The key insight of this theory is that lower taxes and a government deficit today are associated with higher taxes in the future. Hence, a deficit-financed tax cut today amounts to a mere postponement of the tax burden. Consumers fully anticipate this, saving the entire amount of the tax relief to meet the future tax hike. Therefore, the decrease in public savings is completely offset by an equivalent increase in private savings, leaving the overall picture unchanged. It's important to note that the Ricardian Equivalence does not imply the irrelevance of all fiscal policies: a deficit-financed increase in government spending, for instance, would lead to a decrease of current consumption given the expectations of higher taxes, and hence of a decrease of future output, since private consumption is a component larger than public expenditure. This is, however, a feature that data on Italy hardly display. By the same token, a decrease in government spending that reduces deficit would boost consumption immediately, giving a theoretical underpinning to the case for expansionary austerity.

The model relies on the assumptions that guarantee the holding of the permanent income hypothesis, including perfect capital markets, no liquidity constraints and perfect foresight. Relaxing one of these assumptions changes the prediction of the model, allowing for a Keynesian response of output to government fiscal decisions.

Empirical tests of the Ricardian Equivalence found mixed results, often very sensitive to model specification. Elmendorf and Mankiw (1999) in their survey conclude that 'this literature as a whole is simply inconclusive' (p. 57). In a review of the literature for his macroeconomics

textbook, David Romer (2001) holds that ‘there is little reason to expect Ricardian equivalence to provide a good first approximation in practice’ (p. 541).

Second, on the contrary, how the deficit is financed is a crucial issue of the so-called crowding out effect: the conventional view emphasises the expansionary effects of fiscal policy on aggregate demand, and thus on output, in the short run. In the long run, however, fiscal expansion is believed to reduce national savings and growth. In other words, the conventional approach assumes that the economy behaves in a Keynesian way in the short run and in a classical one in the long run. If the government reduces taxes resorting to debt financing, leaving its spending level unchanged, the private sector’s disposable income and spending increase. Since prices and wages are assumed to be sticky, a higher level of aggregate demand raises national income through an increased usage of the economy’s factors of production. Hence, a key assumption for this to work is the presence of idle productive capacity. Nevertheless, the Keynesian view holds that the composition of the fiscal expansion also matters, since increases in government spending are considered to be more effective than tax reductions, particularly if the former is able to increase the productivity of labour and/or capital.

In the long run, however, market rigidities are less binding and an increase in public debt is believed to reduce investment through a decrease in national savings. A shirking investment in turn affects the capital stock and reduces growth. For a more complete treatment of this issue, taking into account open economy effects, see Elmendorf and Mankiw (1999). Ball and Mankiw (1996) give an admittedly rough estimate of the crowding out effect for the USA in the 1990s, concluding that a government debt close to half of the country’s GDP reduces output by 3 to 6 percentage points. In a more recent work, Gale and Orszag (2004) conduct a similar exercise calibrated on USA data in the framework of the Solow model, concluding that persistent increase

of the government budget deficit equal to 1% of GDP reduces income by 2 to 3% in the long-run, raising steady state long term interest rates by 50 to 80 basis points. A stream of empirical literature turned to the effect of the composition of the fiscal package on economic growth and has been pioneered by a controversial work by Alesina and Ardagna (2010), which supports the idea that fiscal contractions might have expansionary effects.

Their argument can be traced back to a paper by Giavazzi and Pagano (1990) on two historical cases of strong fiscal contractions that did not have recessionary effect on the economy: Denmark in 1983–86 and Ireland in 1987–89. In both cases, the government improved its budget by significant spending cuts; these measures were preceded by strong currency devaluation. In both cases, it is argued, austerity had a positive effect on growth, through expectations: a credible signal to markets and consumers led to a reversal of the deteriorating course of public finances. This pushed down interest rates and restored confidence, fostering demand directly with an increase in investment and indirectly through a positive wealth effect.

However, it seems implausible to draw policy implications that are relevant for today's advanced countries from these two particular historical experiences. The analysis by Alesina and Ardagna (2010) is very comprehensive and takes into account nearly 200 episodes of fiscal policy in OECD countries from 1970 to 2007, focusing on the composition of the fiscal package to establish what makes a fiscal expansion/contraction successful. Large fiscal episodes are identified using movements in the cyclically adjusted primary balance, adjusting it through unemployment as proposed by Blanchard (1993). Their major finding is that the composition of the fiscal package matters: fiscal stimuli based on tax cuts are more beneficial for growth than ones based on spending increases. Fiscal contractions based on spending cuts are more likely to be successful in reducing the debt-to-GDP ratios.

Various critiques to this study have been put forward: first, Jayadev and Konczal (2010) found that Alesina and Ardagna's sample mainly contains episodes of rapid growth associated with reductions of government spending. Second, with a different identification strategy, the IMF (2010) found that fiscal consolidations typically reduce growth and are accompanied by a rise in unemployment. The composition also matters: tax-based contractions are more recessionary than spending cuts and most of the difference is due to monetary responses. In general, the exchange rate can mitigate the contractionary effects of fiscal austerity by increasing exports (which can cushion nearly half of the impact on GDP) and the interest rate can reduce the fall in investment and consumption. These findings seem to be relevant to Italy and will be discussed in the third section.

Besides Alesina and Ardagna (2010), the second argument in favour of expanding austerity was introduced by Reinhart and Rogoff (2010). This is based on the role of bond vigilantes and has achieved a considerable resonance in the specialist media and among policymakers both in Europe (Schauble 2010) and in the USA (Anonymous 2009). The argument maintains that if budget deficit and debt-to-GDP ratio increase, surpassing a critical threshold, investors will doubt the country's ability to meet its debt obligations, and, as a result, will react by reducing their exposure. This pushes up the interest rate on government bonds.

In their findings, the non-linear relationship between the stock of public debt and economic growth leads to a strong negative effect on output growth when the debt-to-GDP ratio surpasses the 90% threshold, while for lower levels there is no direct link. However, clear-cut thresholds are always questionable. The idea that a high level of public debt is detrimental to growth is nothing new and can easily be integrated into the conventional view of government debt. The latter however suggest a more linear relationship than the one postulated by Reinhart and Rogoff (2010).

This work has been widely criticised: first, Irons and Bivens (2010) cast serious doubts about the link between debt-to-GDP ratio and growth which Reinhart and Rogoff (2010) assume to be relatively static, although the relationship between debt and growth is clearly a dynamic one. Second, Reinhart and Rogoff (2010) jump from correlation to causality, ignoring the possibility that changes in growth may cause change in the level of government debt. Moreover, the dataset used is very long: some observations date back to 1790. Third, given all the institutional differences involved, it's hard to maintain that an observation based on the USA in the late eighteenth century, for example, can have any predictive power over the policy that Portugal should implement in 2013. More recently, the work of Herndon, Ash and Pollin (2013) demonstrated a number of critical computational faults in Reinhart and Rogoff (2010) which led to wide media resonance (e.g. Pollin and Ash 2013). Fourth, an implicit assumption of this argument is that markets are informationally efficient, so that they can act as watchdogs for the governments' financing decisions. The efficient-market hypothesis has been questioned repeatedly, the more so after the 2007 financial crisis and the recent see-saw in the yields of European governments' bonds. The surge of European sovereign yields spurred some research. For instance, Attinasi, Checherita and Nickel (2009) focus on the change in government bond spreads between 2007 and 2009 and found that only 21% of the change can be ascribed to the expected fiscal position, while 56% of the movement is explained by market sentiment. A more recent working paper by Aizenman, Hutchison and Jinjarak (2013) finds evidence of mispricing in the CDS market for PIIGS countries, where the default risk was downplayed before the financial crisis and exaggerated after the turmoil of 2010. De Grauwe and Ji (2012) find similar results focusing on sovereign spreads, implying that these were moved by market sentiment more than

by fundamentals; moreover, they find that investors worry much more about the solvency of euro countries than about non-euro countries with similar public finances.

Finally, a certain level of debt-to-GDP ratio is explicitly incorporated in the Stability Pact (now Euro Plus Pact) as a condition for debt sustainability. Nevertheless, this condition had been widely criticised even before the controversial work of Reinhart and Rogoff (2010), not only because it is based on a static analysis and on a target that is set arbitrarily. In fact, debt-to-GDP ratio accounts only for public debt as an indicator of financial strength of the country, while it ignores private debt (of both households and firms) (Quadrio-Cruzio 2011). However, the inclusion of private debt in the analysis allows for an evaluation of the burden that could hit public finances, in terms of liquidity provision and solvency, if private debt becomes excessive (Sylos Labini 2009). Moreover, a sound assessment of debt sustainability should include foreign debt, which, for Italy, does not seem to be particularly troublesome, remaining at around 120% of GDP in 2011. However, we concentrate in our analysis on debt sustainability à la Domar (1944) by comparing interest rate on government debt and output growth rate. This, as will be shown in the following sections, seems particularly relevant for a country like Italy, whose growth has been sluggish for the past three decades and whose stock of government debt is one of the largest amongst the advanced economies. Nevertheless, the credibility of Reinhart and Rogoff (2010) has been seriously jeopardised by Herndon et al. (2013) who have shown errors in the data and exclusion of some observations which, if accounted for, the entire threshold idea loose validity. A negative correlation between public debt and growth persists but the relation of causality is uncertain (Herndon et al., 2013).

Third, a growing body of literature has been trying to identify the size of the multiplier, that is the effect of government spending on GDP (e.g. Barro 2009). Pioneered by Blanchard and

Perotti (2002), who estimated a multiplier of around one for the USA, generally, the results vary considerably across different studies, depending on model specification. For example, Romer and Bernstein (2009) estimate a multiplier close to 1.5 for the Obama fiscal stimulus, while Cogan et al. (2010) estimate it to be around 0.5 using the same data.¹

Those who support austerity policies generally consider the multiplier minimal so that the effects of restrictive policies might be expansionary. Nevertheless, a recent work by Blanchard e Leigh (2013) found results in favour of a significant size of the multiplier.

Finally, there is the issue of the analysis of the debt and the debt sustainability. Sylos Labini (2009) suggests to consider both public and private debt in order to account for possible solvency and liquidity issues arising from the private debt, so this analysis should involve the issue of the exposure of banks. In addition, it is also important to look at the evolution of both figures and see whether public borrowing compensate for private borrowing. Of course, last but not least the relation between growth and debt for the growth necessary to pay debt back and the issue of how to overcome stagnation.

3. Historical and recent patterns of fiscal spending in Italy: some widely known trends and some common misconceptions

This section presents an analysis of the data on the variables under consideration, namely fiscal position, interest rate and interest payments, GDP and debt, as a preliminary to the econometric analysis presented in the next section.

<FIG.1 NEAR HERE>

Figure 1 shows quarterly interest payments and primary deficit as a percentage of GDP in Italy over the period 1980–2014. Shaded areas represent recessions, usually defined as two consecutive quarters of negative GDP.

Figure 1 also shows that Italy has been running a primary surplus since the first quarter of 1992, with a stable increase in the budget position from 1988 until 1998; it then became more volatile, displaying a negative trend until 2006, then rising until 2008; it turned negative again in 2009. During the last three decades, we have three brief periods when the country experienced both a declining GDP growth and a deteriorating primary budget: the years 2001–03, in which the primary surplus declined from almost 5% to 2% of GDP, and the period 2008–09 when it turned from 3.5% of GDP into a mild deficit, the years 2013 onwards.

<FIG.2 NEAR HERE>

Figure 2 shows quarterly data on the real interest rate, the GDP growth and the government debt as share of GDP from 1980 to 2014. The increase of debt-to-GDP ratio started at the beginning of the 1980s and remained relatively stable with a declining trend until 2007: since then it has grown from 102% of GDP in the last quarter of 2007 to 137% of GDP at the end of 2014. The surge of debt-to-GDP ratio was accompanied by an increase of real interest rates,² which contributed to the increase in interest payments described in Figure 1. After the dramatic surge of the real interest rate at the beginning of the 1980s, interest payments reached a peak during the 1992 currency crisis, when the Bank of Italy tried to support the Italian Lira within the European Exchange Rate Mechanism. The real interest rate then decreased steadily until the third quarter of 2008, to start increasing again at the end of 2009. The increase of nominal yield after 2009 was compensated by an increase of inflation that kept the real yield stable. In 2011–12 the nominal yield has been relatively stable, while inflation eased and deflation appeared.

Besides the evolution of individual variables, these preliminary data show a dramatic situation in terms of debt sustainability: Figure 2 shows how the real interest rate has generally remained above the GDP growth rate, and only during brief periods – such as the five quarters starting from the beginning of 2000; from the last quarter of 2005 to the first quarter of 2006; and the third and fourth quarters in 2006 – was the output growth rate barely above the interest rate. On average, the difference between these two rates has been of around 2.7 percentage points, with a peak of 10.5 percentage points in the first quarter of 1993 and in the second quarter of 2009. These figures suggest that Italy has experienced a considerable difficulty in growing out of its debt during the recent decades beyond, then, the last period of crisis.

<FIG.3 NEAR HERE>

<FIG.4 NEAR HERE>

Figure 3 illustrates the relation between the primary deficit as share of GDP shown in Figure 1 and real GDP growth rates since 1980. Primary deficits from 1981 to 1991 and then again from 2009 to 2010 are indicated by positive values along the horizontal axis. During most of the period, however, from 1991 until 2009, Italy experienced primary surpluses. Therefore, only rarely is it possible to observe a counter-cyclical function of the fiscal deficit during the entire period; this is seen during the years between 2008 and 2010, when a significant deterioration in the primary balance, mostly due to automatic stabilisers, was associated with an increase of output, and in the last two years where, however, changes in variables are extremely small, showing a situation of stagnation.

Figure 4 shows the last years, 2006–14, in more detail, using quarterly data: while there was a counter-cyclical fiscal policy up to 2010, where we can appreciate an anti-clockwise movement with an increase in deficit, this was reversed in the following years.

In a case of slow growth, the Keynesian view would recommend a stimulus to the economy from the demand side in terms of public consumption and investment which should favour a crowding-in effect from the private sector. On the other hand, standard approaches would suggest that when the primary deficit is too high, then growth is hampered. In the case analysed above, however, we can observe such counter-clockwise movements only in the years 1984–88, 1992–95 and, as shown in more details in Figure 4, during the recent recession. However, both pre-Euro periods, 1984–88 and 1992–95, are associated with significant devaluations, as shown in Figure 5.

<FIG.5 NEAR HERE>

Figure 6 shows the components of the aggregate demand since 1980, indicating, an increase in exports in the first half of the 1980s and a considerable increase of export in correspondence of the devaluation at the beginning of the 1990s. This suggests, as it is well known, that exchange rate served as a counter-cyclical tool until the 1990s which allowed Italy to pursue a balanced budget policy.

If we consider investment in the period just before the crisis, however, we can observe an increase of 16.2% in the period 2001-2007, while in Germany we have an increase by a mere 2.2% and overall in Europe by 17.2% (Eurostat data). However, in the period 2008-2014, investments decrease and the ratio investments/GDP remains around 18%.

<FIG.6 NEAR HERE>

Furthermore, Figure 7 shows the breakdown of the primary budget into its spending and revenue components. Since 1980, fiscal revenues have constantly increased at a rate greater than the increase in spending, leading to an improvement in the budget balance until 1994; after this,

spending started to show a negative trend until the beginning of the 2000s, to increase again, reaching the peak level of 46% of GDP in 2014. On the other hand, fiscal revenues have shown a positive trend until 1994. Since then, they showed a mildly positive trend until the last recession, when they started to decline, increasing again in the last few years, when revenues continue to be above spending.

<FIG.7 NEAR HERE>

Figure 8 shows the typically symmetrical relationship between the net borrowing of the government and that of the private sector. Overall, a negative level of net borrowing indicates subtracting of the sector to the aggregate demand, while positive levels of net borrowing represent an addition to the level of aggregate demand. In general, increasing levels of private net borrowing indicate the end of a recession, when automatic stabilisers are less necessary and net government borrowing can ease. Figure 8 shows that the level of public borrowing decreased significantly from about 12% of GDP in 1990 to 4% of GDP in 1997 due to a decrease in fiscal spending, as shown in Figure 7. This decline has been accompanied by a reduction of the net private-sector lending, but at a relatively slower pace. Moreover, Figure 8 shows the breakdown of private borrowing into private financial, private non-financial and household borrowing: that private net borrowing declines rapidly at the beginning of recession periods, e.g. 1992 and 2007, and grows after public borrowing starts to rise as government revenues decline and spending increases due to automatic stabilisers. In 2009, the government increased borrowing by 5.3% more than what was necessary to offset the decline in net private borrowing of 3.4%. From the recent period 2012-14 private net borrowing declines of 12% offsets by only an increase of 9% by the government. The breakdown of the private borrowing is shown in Figure 8, where government net borrowing dropped considerably until 2000, then mildly oscillated, dropping again in the three years before

the crisis, and rising after 2007. In aggregate, financial and non-financial private-sector net borrowing show a typical symmetric relation with the government net borrowing; however, within the private sector it is evident that it was the household net borrowing that increased considerably during the period, from a negative 14% of GDP at the beginning of the 1990s to a negative 4% of GDP in 2009. In the last few years, we can observe a considerable decrease of private non-financial net borrowing.

<FIG.8 NEAR HERE>

To sum up this section, preliminary data analysis shows that Italy experienced a considerable difficulty in growing out of its debt with the real interest rate on government borrowing systematically above the real output growth rate (Domar 1944). Despite this, Italy has been pursuing a fiscal surplus over the last three decades, in periods of positive as well as in periods of negative output growth. The ballooning of the government debt occurred during the 1980s, when growth was volatile but with a positive trend, and when the fiscal position started to improve. This improvement, if we ignore the role played by automatic stabilisers during the Great Recession, was the result of an increase in revenues rather than a decrease in spending. Devaluations supported aggregate demand, with a balanced fiscal position being pursued until the adoption of the euro, after which household consumption and exports supported aggregate demand with a decline of investment.

In a nutshell, Italy is undergoing a long-term crisis with higher unemployment, stagnation and decreasing per capita GDP which, recently, has been accompanied by deflation to ass worse to bad.

4. Econometric analysis

The quarterly data used in this paper have been collected from the Bank of Italy (2015), the International Monetary Fund (IMF 2015), the European Commission (Eurostat Database 2015) and the Italian National Institute of Statistics (ISTAT 2015). We study the relationships amongst the variables discussed so far: GDP, debt, primary balance, primary revenues, primary spending and the real interest rate. All the variables, except the real interest rate, have been expressed in terms of 2010 prices, and all the variables, with the exception of the primary balance and the real exchange rate, have been used in their logarithmic form.

Methodology and econometric specification

Following the methodology and econometric specification implemented by Taylor et al. (2012), the presence of unit roots was tested for all variables using standard tests such as the augmented Dickey–Fuller test and the Phillips–Perron test. There was evidence of serial correlation for all the variables indicating non-stationarity in levels and stationarity in first differences. For this reason, we used a vector autoregression (VAR) model in first differences, and, to analyse cointegration, that is the short- and long-run relationships between variables, a vector error correction (VEC) model. The number of lags for each model was determined by the standard selection criteria, namely the Akaike, Schwarz and Hannan–Quinn information criteria.

We estimated three models: the first was a two-dimensional VEC model for the relationship between the net real debt (LNDEBT) and real GDP (LNGDP). In this, the real interest rate was the exogenous variable. The model provided both the long-run relationship between the two variables, debt and growth, and the short-run interactions in both directions of Granger causality. We also estimated this relationship by controlling for quarters of negative growth.

The second model was a three-dimensional VAR model, which examined the interactions between the components of debt and the fiscal position: the model considered real GDP growth (DLNGDP), the first difference of the real primary deficit (DDEFICIT), and the real interest rate (BOND_YIELD).

Our final model was a four-dimensional VAR model which broke down the primary balance into revenues (DLNREV) and spending (DLNSPEND) in order to analyse the impact of spending and tax collection and their cyclicity.

Effects of economic growth on the fiscal position

In the third section we discussed the counter-cyclical effect of primary deficit: when GDP declines then the primary budget tends to deteriorate and government debt increases by the sum of changes in budget and interest payments. This dynamic is studied in all three models.

After controlling for the impact of interest rate, the impulse response functions in Figure 9 show a negative relationship between GDP and debt: that is, if GDP contracts 1% each quarter, then, after one year, debt will increase by about 0.6%. That is, if we consider the 2012 GDP and debt levels, a contraction of GDP by 0.7% each quarter would lead to an increase of at least 4% of debt-to-GDP ratio in the year. Recent data show that in 2012 GDP growth was negative 2.8% and debt-to-GDP ratio effectively increased by 6%.

This finding is in line with the study of Taylor et al. (2012) about the United States and with Reinhart and Rogoff (2010): however, high debt-to-GDP ratios might be the result and not the causes of low growth rates: changes in the Italian debt levels are Granger-caused by changes in

Italy's GDP and not the other way round for both the entire period and even during periods when growth is negative (details results are available from the authors).

<FIG.9 NEAR HERE>

The second model, the three-dimensional VAR, confirms that, overall, there is evidence of counter-cyclical in the fiscal position: there is a negative relationship between GDP growth and primary deficit (Figure 10a). Thus, if we consider the 2011 levels of GDP and primary deficit, an increase of 0.25% of GDP in one quarter would imply a decrease of the primary deficit of about 0.3% of GDP after a year and a half. This implies that the first negative GDP quarter-on-quarter drop of about 0.5% experienced in the last quarter of 2007 alone would have caused a deterioration of the primary balance of at least 0.6% by the end of the second quarter of 2009. In actual fact, the primary balance deteriorated by about 2.5% as GDP dropped by 7% overall from the last quarter of 2007 to the second quarter of 2009.

<FIG.10a NEAR HERE>

However, by including the last two years to this analysis, we have a different relation between deficit and GDP, more specifically, an increase in deficit is associated with negative growth from 2011 Q1 until 2012 Q4. After this, we have again a mild counter clockwise (countercyclical) pattern from the end of 2012 onward. This confirms that Italy has never used fiscal policy as a countercyclical tool even when devaluations were not longer an option.

<FIG.10b NEAR HERE>

The results of our third model, the four-dimensional VAR, are shown in Figure 11. The importance of economic growth for fiscal revenues stands out: an increase of 0.25% in GDP growth in one quarter produces an increase in revenues of 0.75% after three years.

The reaction of economic growth to the fiscal position

Figure 9 shows that the effects of a fiscal position on growth are smaller than the effects of growth on the fiscal position discussed in the previous section. More specifically, there is a positive effect of an increase of debt on GDP growth for the whole sample, providing evidence against expansionary austerity. Furthermore, once we control for negative growth periods, the impact on real GDP growth appears larger, suggesting that consolidation plans affect the economy more negatively.

The three-dimensional VAR model shows that an increase of primary deficit affects growth positively. That is, if we consider the 2011 levels, a one-quarter increase in deficit of 0.3% over GDP raises the real growth by 0.05% per quarter with a maximum increase of 0.25% after five quarters. That means that a fiscal austerity plan aiming to reach a 3% of GDP primary surplus, in line with the Euro Plus Pact, starting from a position of 1% surplus at the end of 2011, would require the discomfort of a negative growth rate of about 2% per year for two years or more.

Furthermore, we considered the effects on growth of changes in spending and revenues separately in Figure 11. The analysis shows that a positive response of real GDP to an increase in spending is maintained for the entire period of the 30 quarters under consideration, with the highest impact occurring during the third year. The impulse response also shows a negative impulse of real GDP growth to an increase in tax revenues with the highest (negative) impact in

the seventh quarter. The impacts of the responses of revenues and spending seem similar in size; however, spending show a much larger variability.

<FIG.11 NEAR HERE>

The reactions to changes in the real effective interest rate: testing the bond vigilantes hypothesis

Overall, the reactions to real interest rates seems ambiguous until 2012. Figures 10 and 11 show a positive reaction function of GDP to an increase of real interest rates, which may indicate that growth depends also on capital inflows. Considered in detail, both figures 10 and 11 show that real GDP growth responds positively to an increase in real interest rate only after three quarters, accumulating a modest effect after ten quarters.

The idea that international capital markets watch the primary balance and withdraw capital when the fiscal deficit increases is tested by the response of interest rate to primary deficit changes shown in Figure 10. The result is ambiguous, showing considerable variation. These findings suggest that interest rates are not responding to primary deficit changes as suggested by the bond vigilantes view. From Figure 11, the response of fiscal expenditure to changes in real interest rate appears ambiguous. The positive response of fiscal revenues to increase in real interest rate appears more significant.

However, the relation between deficit and real interest rates (bond yield) changes too if we consider the last two years: if primary fiscal deficit goes up then the real yield goes down because the ECB has been buying bonds. This casts serious doubts on the role of the so-called bond vigilantes.

5. Conclusions

This paper has examined the relationships between primary fiscal deficit, debt, interest rates and output growth in Italy during the last three decades, adopting a simple model used by Taylor et al. (2012) to analyse the USA economy. The model stems from the idea that, in cases of low or negative growth, primary fiscal deficit increases and that, on the other hand, when primary deficit increases, output growth may either increase, because the primary deficit may support aggregate demand, or it may decrease, in accordance with the argument put forward by the notion of expansionary austerity.

In terms of debt sustainability, in the long term, according to Domar (1944), the debt-to-GDP ratio may be sustainable, as long as the growth rate is above the interest rate, thus alleviating the burden of debt. So, if in the short run, expansionary fiscal deficit is pursued as long as growth is resumed, there is no reason for concern about the evolution of the debt-to-output ratio, since higher growth rates will reduce it.

Our findings can be summarised as follows. First, preliminary data observations and econometric analysis show the relationship between deficit and growth: data show that it is only during brief periods of time that the country experienced both an increasing deficit and a negative growth, since Italy has been pursuing a budget balance for the last two decades. Nevertheless, the relation of causality goes from output to debt for the entire period, even after controlling for periods of negative growth and for the effect of the interest rate. This is a result that is consistent with what Taylor et al. (2012) anticipated and goes against the prediction of Reinhart and Rogoff (2010).

Second, overall our analysis gives results against the case of expansionary austerity and in favour of a case for an increase of primary deficit as a tool to improve growth: output affects revenues positively and responds positively to an increase in spending.

Third, the role of the interest rate seems to be positively associated with growth via capital inflows, and the hypothesis of bond vigilantes does not seem to have played much of a role in the last three decades in Italy. Their role, if any, has faded away in the last two years following the European Central Bank rhetoric and Asset Purchasing Programme.

Fourth, in terms of debt sustainability, the rate of output growth was above the real interest rate only for relatively brief periods of time: the difference between rate of output growth and real interest rate has been 2.7% during the period, with peaks of over 10% at the time of the exchange rate crisis at the beginning of the 1990s: rather than using fiscal deficit as a counter-cyclical measure, Italy had managed to support aggregate demand by devaluing its currency before joining the euro. After the introduction of the euro, however, the country continued to pursue a policy of balancing its budget even in a situation of dramatically sluggish growth.

Finally, fiscal revenues have continued to increase at a rate above the increase in spending, increasing even in the years when the latter has declined.

In conclusion, the concerns about balancing the budget even at the expense of growth in a country that is experiencing long-term stagnation seem to be ideologically driven and unsupported by data. For example, the last two administrations have embraced a two-stage plan that pursues austerity in the first stage and then growth promotion in the second stage (Monti, 2012), apparently overlooking the dynamic between the various variables at play. Austerity at the expense of growth has, so far, not improved the sustainability of the Italian debt: stagnation has not reduced the debt-to-GDP ratio, while automatic stabilisers are becoming ordinary rather than exceptional measures.

Notes

1. The findings in Cogan et al. (2010) are based on the Bayesian dynamic stochastic general equilibrium (DSGE) model proposed by Smets and Wouters (2007) and have been strongly criticised. Generally, the linearised DSGE model assumes that shocks impact the economy at full employment, so they offer a poor approximation during recessions; moreover, the parameters of the model are either estimated or calibrated relying on large time series (most of the studies use post-war US data) and hence hardly capture the features of the current economic climate. This might be one of the reasons why forecasting models did so poorly in predicting the impact on growth of the fiscal consolidations in the euro area from 2009 onwards and largely underestimated the fiscal multiplier, as found by Blanchard and Leigh (2013). If the fiscal shock hits the economy in an environment characterised by low interest rates, liquidity constraints and severe financial market disruptions, the multiplier is much larger, usually exceeding one, as in Eggertsson and Krugman (2012). Their model is tailored to capture some features of a debt-driven slump; thus it offers admittedly poor guidance in periods of expansion, but it might be well suited to capture the ongoing situation. With DSGE models, the estimated multiplier hinges crucially on model specification. A discussion of these issues is outside the scope of this work; for a more comprehensive treatment, see Mitnik and Semmler (2012), where the authors review the most recent developments of this stream of literature.
2. The real yield is calculated as the nominal yield of the 10-year government bond minus the inflation rate (IMF data).

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FIGURES

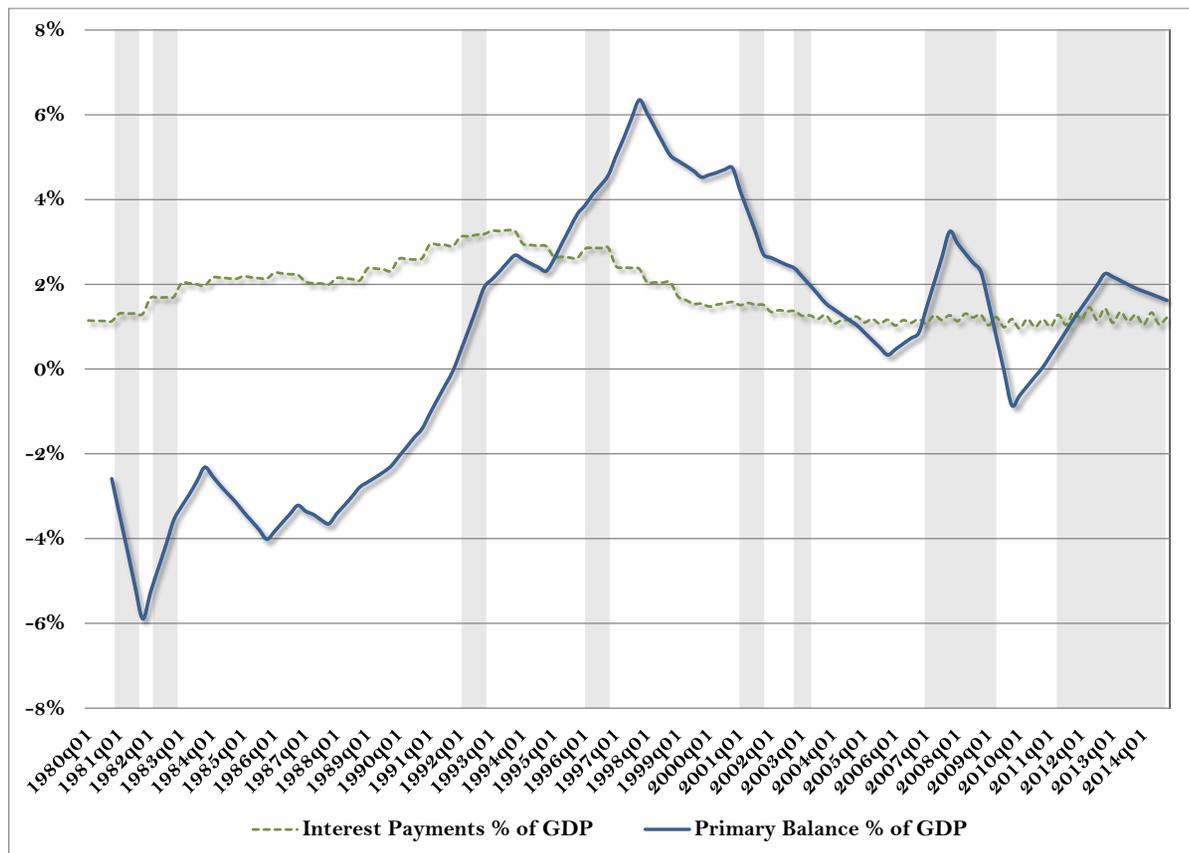


Figure 1 *Interest Payments and Primary Balance as percentage of GDP (1980–2014)*

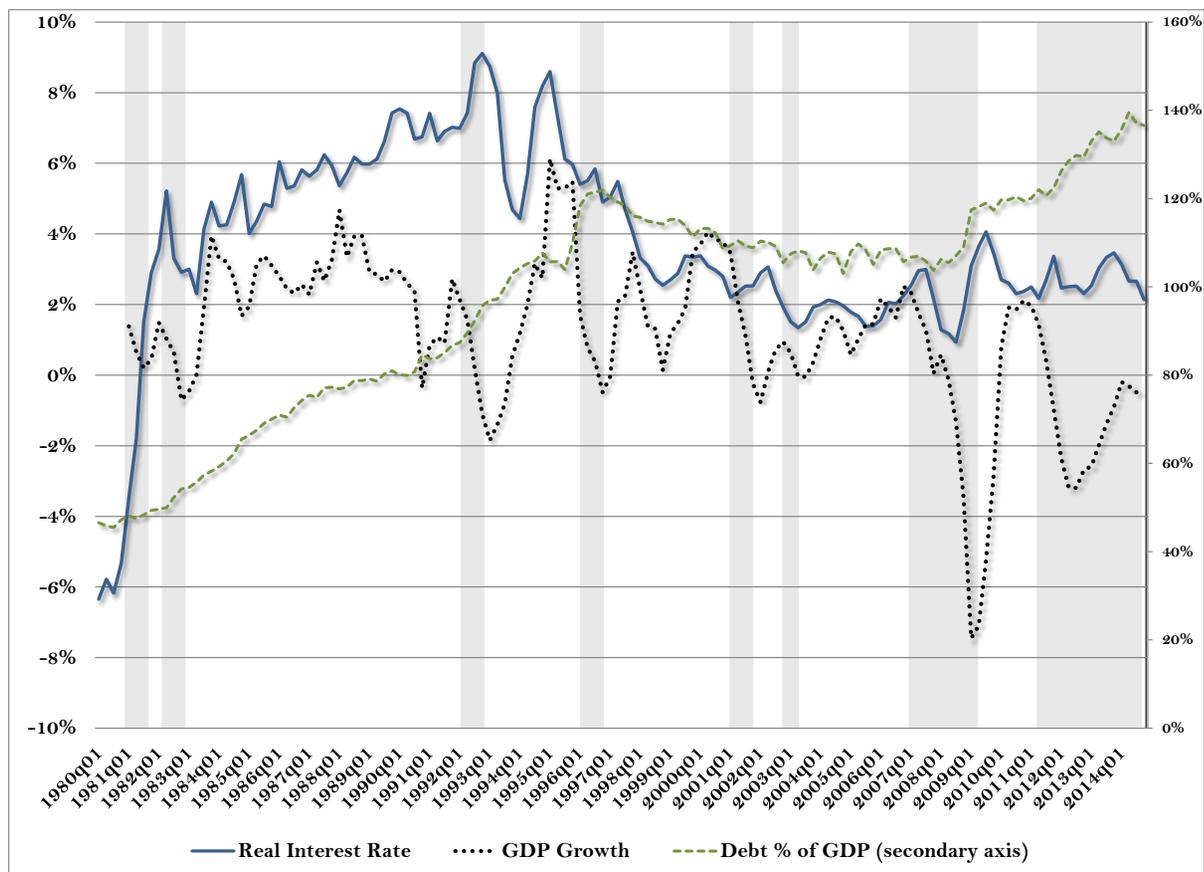


Figure 2 Debt-to-GDP Ratio, GDP Growth and Real Interest Rate (1980–2014)

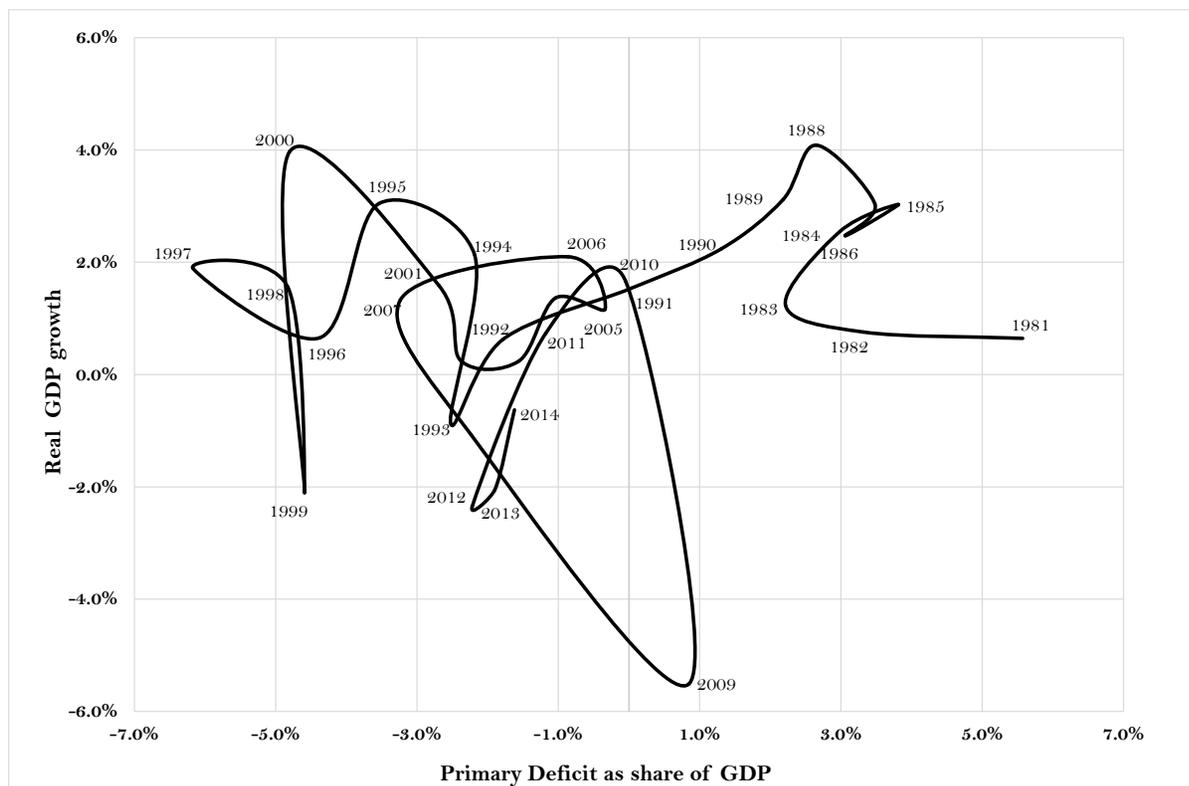


Figure 3 Counter-cyclical fiscal policy: Debt-to-GDP Ratio and Primary Deficit as percentage of GDP (1980–2014)

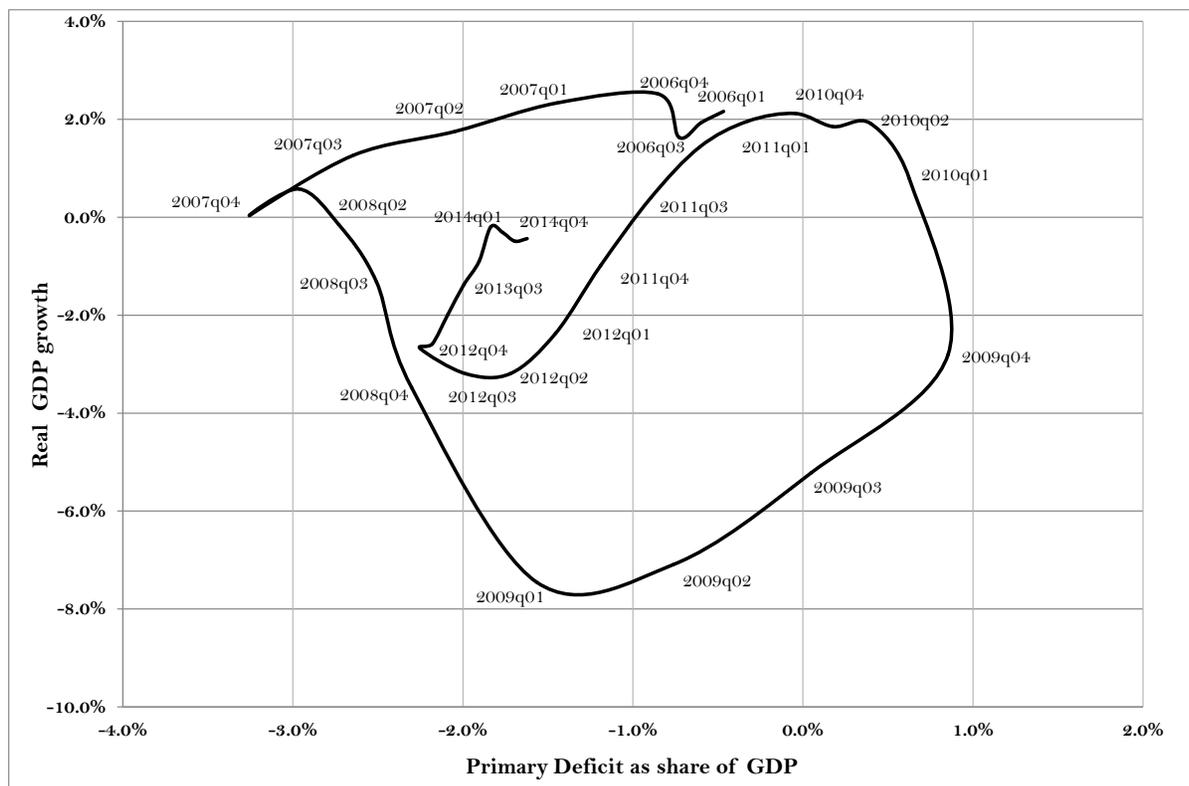


Figure 4 Counter-cyclical fiscal policy: Debt-to-GDP Ratio and Primary Deficit as percentage of GDP (2006–14)

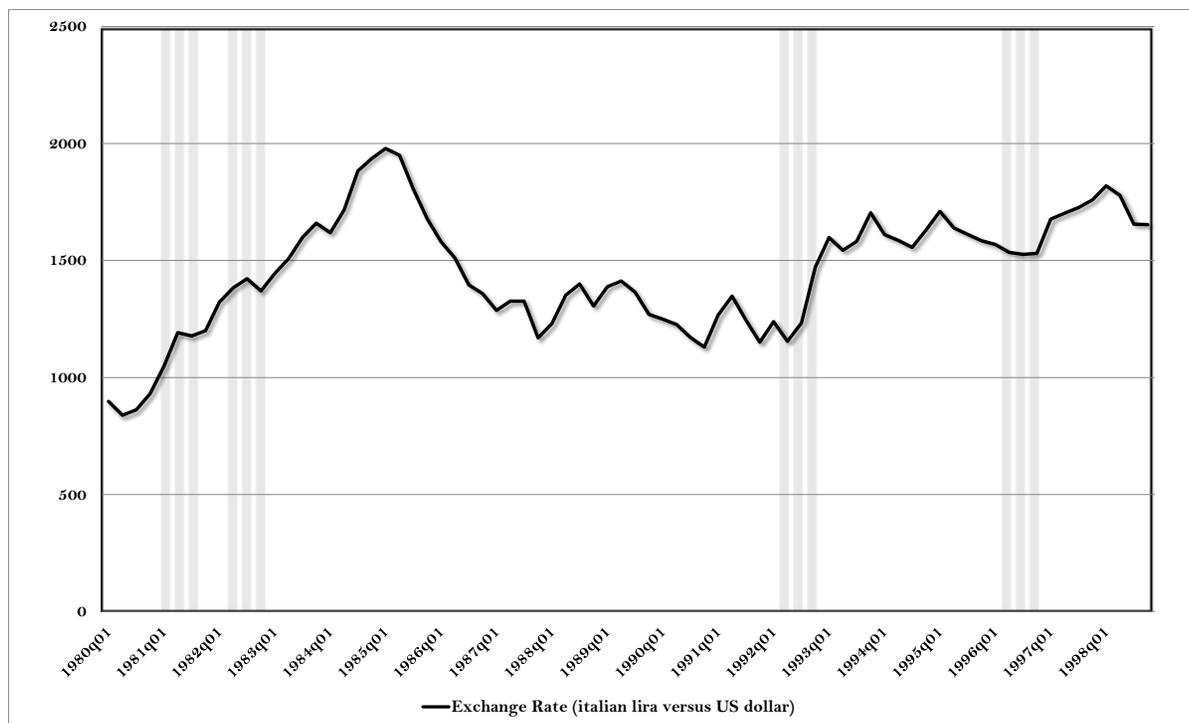


Figure 5 *Exchange Rate (Italian lira versus US dollar, 1980–98)*

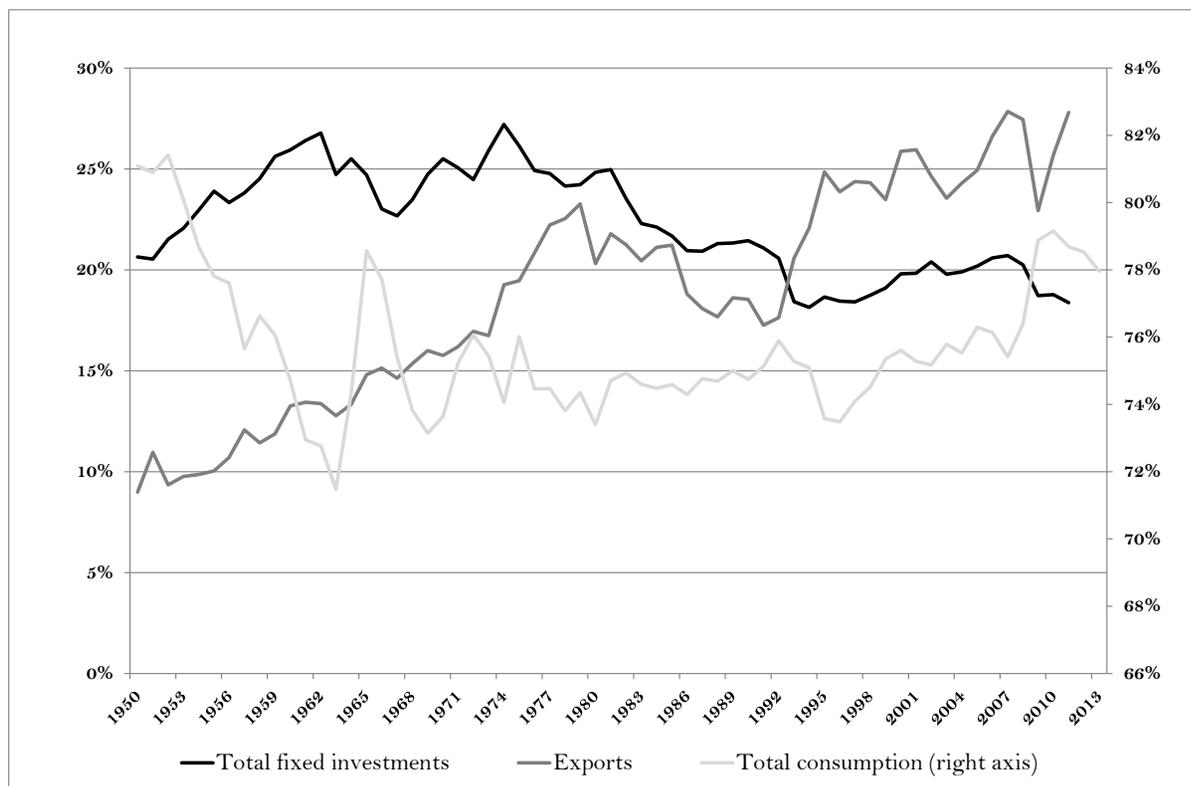


Figure 6 *Total Fixed Investments, Exports and Consumption as a percentage of GDP (1980–2013)*

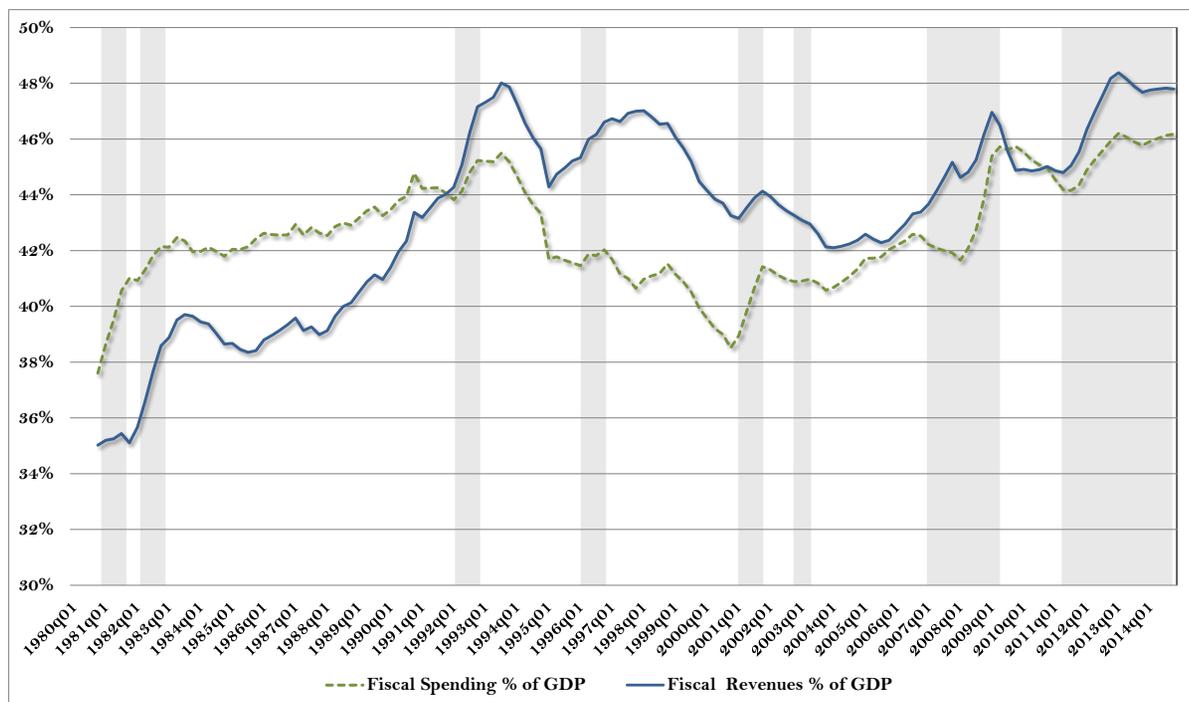


Figure 7 *Primary Revenues and Spending of the Italian government as share of GDP (1980–2014)*

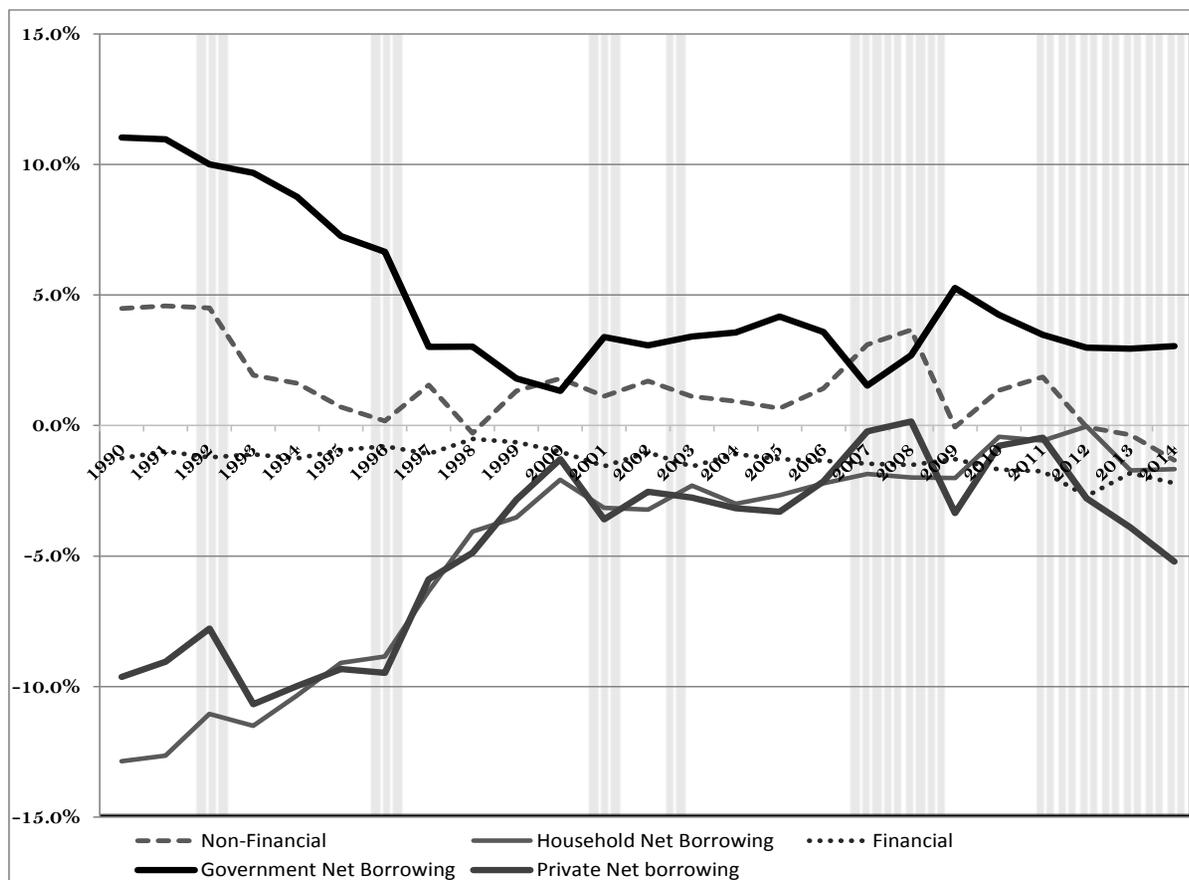


Figure 8 Government, Private Sectors Net Borrowing (Household, Financial and Non-Financial subsectors) as percentage of GDP (1990–2014)

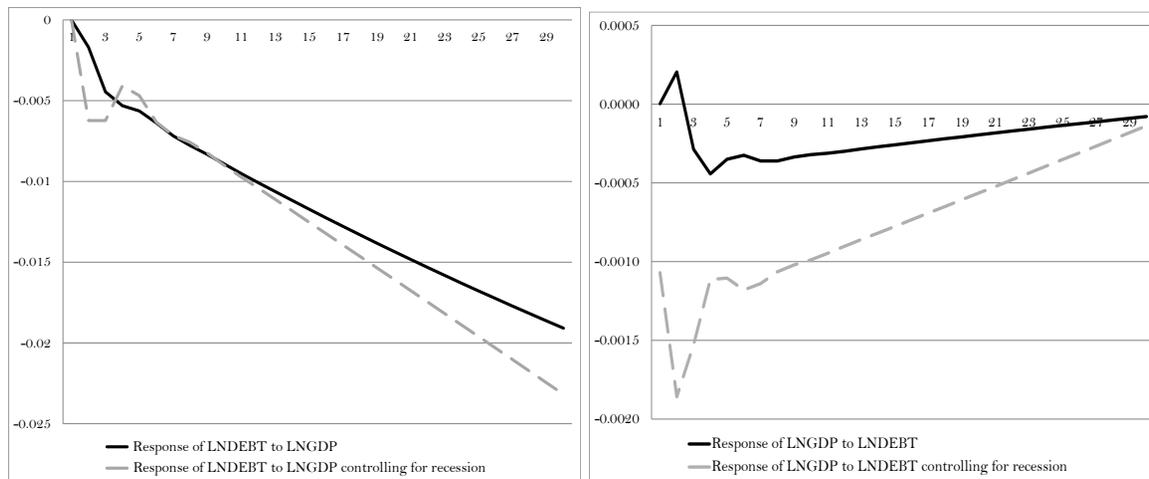


Figure 9 *Impulse response functions to one standard deviation innovations in two-dimensional VEC*

Accumulated Response to Cholesky One S.D. Innovations ± 2 S.E.

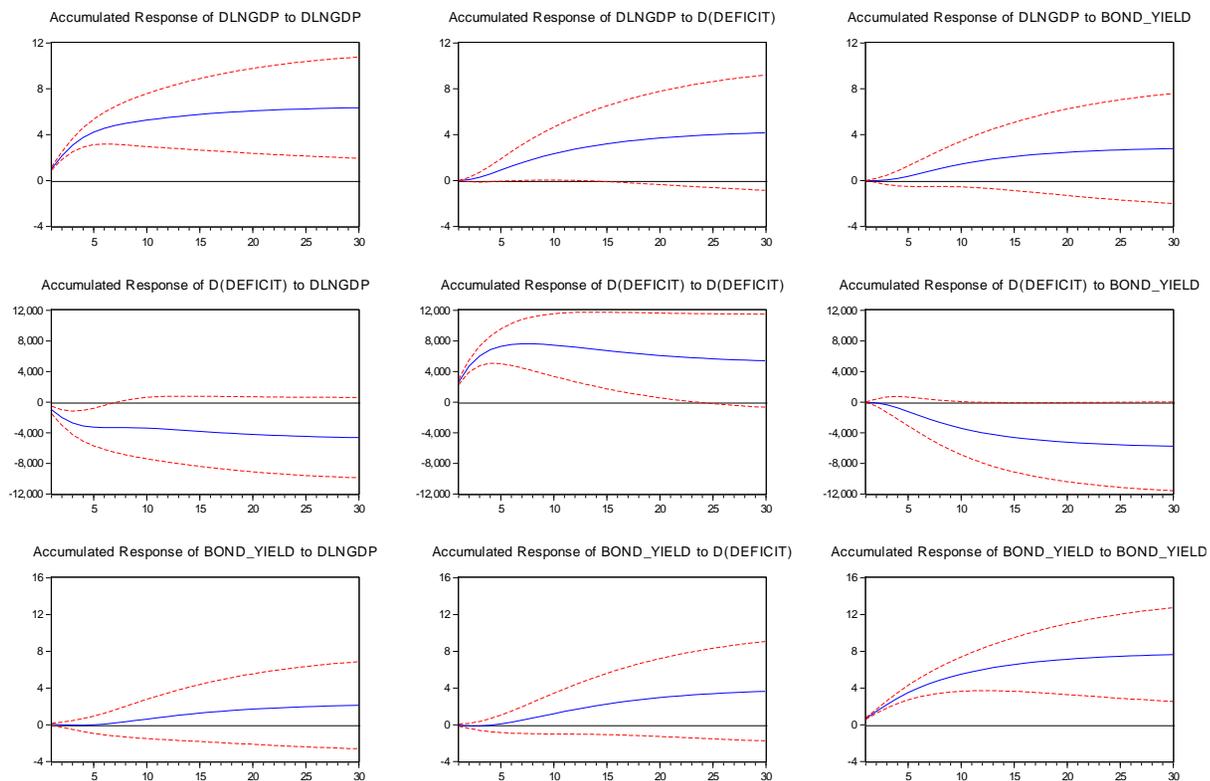


Figure 10.a Accumulated impulse responses to one standard deviation innovations in three-dimensional VAR

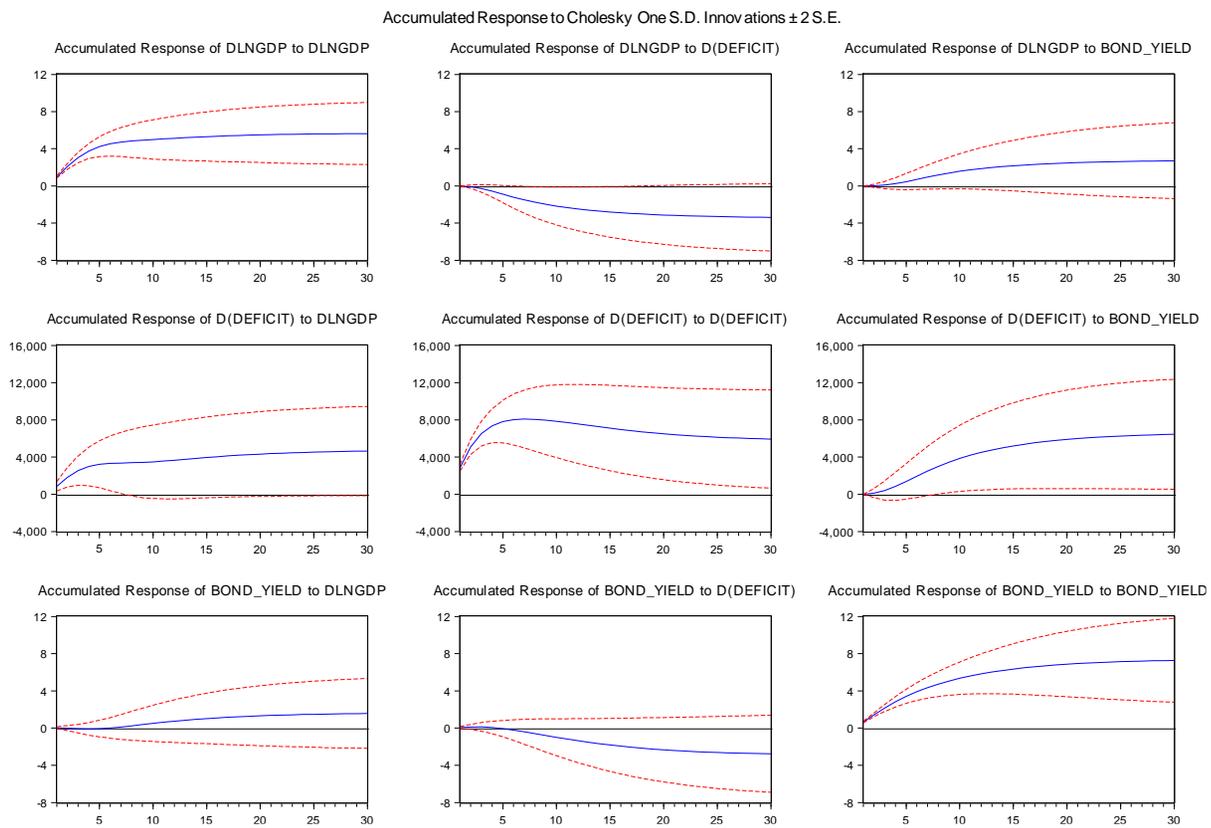


Figure 10.b *Accumulated impulse responses to one standard deviation innovations in three-dimensional VAR*

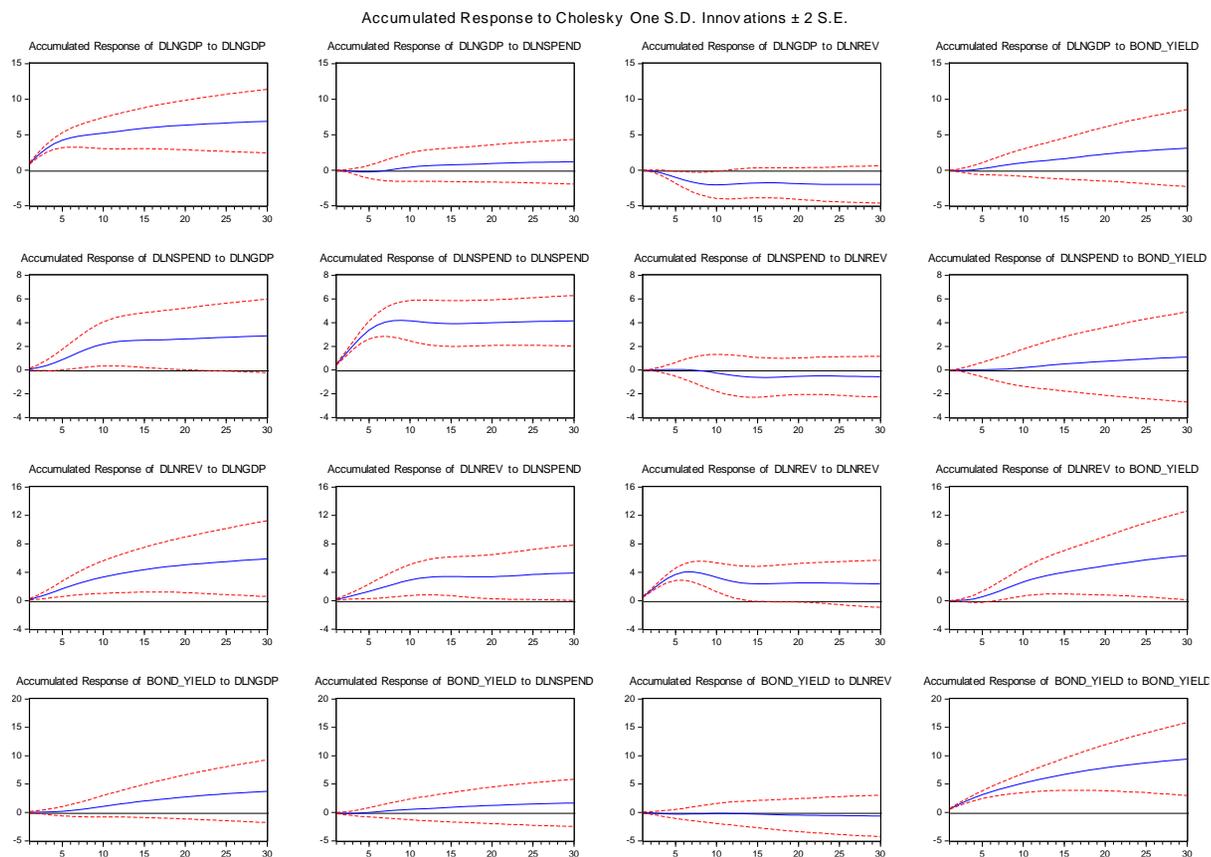


Figure 11 Accumulated impulse responses to one standard deviation innovations in four-dimensional VAR