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Public debt and growth in Italy: Analysis and policy proposals

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Abstract

The Italian economy is characterized by a considerable amount of public debt and low growth for over a decade. This is a key issue both at a theoretical and policy level. The relationship between public debt and economic growth is widely discussed in the economic literature, since in many countries spending is rising faster than income, leading to widening budget deficits and higher levels of debt. However, the empirical literature generally highlighted the heterogeneity of the debt-growth nexus. This paper summarizes four working papers written by the author in the period from 2007 to 2014, where the structural problems of the Italian economy are identified, and the critical aspects related to Italy high debt and its low growth is emphasized. The contribution aims at discussing possible policy actions to address the Italian structural problems in the current situation. In particular, the paper underlines the importance of a long-term strategy for growth, to boost productivity and the potential growth of the Italian economy. In addition, it focuses on fiscal policy emphasizing the strategic role both of spending optimization and of tax collections through, for instance, digitizing the tax collection process in order to contribute to the long-term sustainability of sovereign Italian debt.

Keywords: public debt, growth, single currency, debt sustainability, fiscal policy, structural reforms
Jel Classification: H63, E62, O40, F36

INTRODUCTION

The relationship between public debt and economic growth is a relevant topic discussed in the academic debate and among policymakers, especially because the Global Crisis brought forth a massive increase in public debt worldwide. In general, the rich empirical literature highlighted the heterogeneity of the debt-growth nexus, both across countries and time periods, and it did not provide a clear-cut answer on the causal relationship.[1] The Italian economy is characterized by a considerable amount of public debt and low growth for over a decade. The high level of public debt also created concerns about its sustainability. These problematic aspects of the Italian economy are accompanied by a set of structural nodes, which have also been present for some time and affect the economic performance of the country. Also, Italy as a member of the European Monetary Union, must adapt its budget policy to the European fiscal rules and this further constrains its economic policy choices.
This contribution first examines the recent literature on the relationship between public debt and economic growth. Second, it summarizes four of the working papers written by the author in the period 2007–2014 (Schilirò, 2007, 2009, 2010, 2014), which is during the years of the global economic crisis and the eurozone crisis. In these works, the author identified the structural problems that plagued the Italian economy, in particular, low growth, high public debt, high public spending, and, at the same time, low efficiency in tax collection and high levels of unemployment with increasing poverty, which still represent structural problems today. Third, taking into account the economic literature, the essay discusses growth and public debt sustainability in Italy, in the context of the eurozone. Policy proposals and conclusions end the paper.

THE LITERATURE ON PUBLIC DEBT AND ECONOMIC GROWTH

Reinhart and Rogoff (2010) produced a seminal contribution investigating the relationship between public debt and growth, identifying non-linearities in the nexus, and emphasizing to what extent debt accumulation has a detrimental and causal effect on gross domestic product (GDP) growth. An empirical contribution by Teles and Mussolini (2014) confirmed that the level of the public debt–gross domestic product ratio negatively impacts the effect of fiscal policy on growth. Moreover, the effect of public expenditures on growth, given the constraint of the high debt–GDP ratio, is another major issue in the academic and policy debate. In this regard, Teles and Mussolini's contribution highlights that the effect of public expenditures on growth is limited by the debt–GDP ratio. Also, Mahdavi (2004) analyzed the impacts of debt servicing on public expenditure composition and found that debt burden adversely affects capital expenditure, and it invariably changes the spending composition in favor of payments of interest on debt, leaving a smaller fiscal space for fighting unemployment, poverty, and, ultimately, growth. Panizza and Presbitero (2014) provided an interesting analysis where they found a negative correlation between high public debt and GDP growth, which is consistent with the literature. At the same time, the link between debt and growth disappeared once they corrected for endogeneity. These authors found there

[1] For a review of the literature, see Panizza and Presbitero (2013).

is no strong evidence that public debt has a causal effect on economic growth, challenging the common view of the negative causal effect on economic growth. Chudik, Mohaddes, Pesaran, and Raissi (2017) found significant negative effects of public debt buildup on output growth. They investigate whether the debt–growth relationship varies with the level of indebtedness, developing tests for threshold effects. However, they found no evidence for a universally applicable threshold effect in the relationship between public debt and economic growth. Gómez-Puig and Sosvilla-Rivero (2017), in their empirical analysis of public debt and economic growth in the euro area, showed that their findings are in concordance with the predominant view that the positive effect of debt on output is more likely to be felt in the short rather than in the long run. In particular, their empirical evidence suggests a negative effect of public debt on output in the long run. Thus, the results support previous reports indicating that high public debt tends to hamper growth by increasing uncertainty over future taxation, crowding out private investment, and weakening a country's resilience to shocks. However, the paper showed that a positive relationship between a debt increase and economic growth is found when the indebtedness level is either low or moderate. Finally, it pointed out that Italy is among the countries that present a negative relationship between debt and growth during the period of crisis. In conclusion, the literature shows that it is difficult to establish a clear, causal link from high public debt to low growth. However, excessive debt accumulation very likely detetermines lower growth and greater output volatility. This debate on the relationship between public debt and growth is important for the Italian case, since low growth and high public debt are two key issues that have characterized the Italian economy in the last 20 years.

Low Growth And High Public Debt In Italy Before And After The Crisis

In "Growth in Italy after the euro: Which reforms?" (Schilirò, 2007), the author observed that the growth rate of GDP in Italy in the 2000–2006 period, i.e., after entering the single currency, had decreased. In particular, the GDP growth rate in Italy in the 1999–2006 period was, on average, just over 1% against an average growth rate of the euro-area countries of nearly 2%. The author's argument was that Italy had not yet integrated into the European context, characterized by an asymmetry with regard to the subjects that respectively decided monetary and fiscal policies based on the Maastricht Treaty rules. He argued that Italy needed some structural reforms to fully enter Europe. An important aspect focused on in the essay was public spending. In Italy, overall expenditures (including debt interest) steadily exceeded revenues from 2001 to 2006, implying a net borrowing by the Public Administration that prevented the decline in debt. At the same time, the real GDP growth rate in Italy was close to zero. Another key issue was taxation and its effects on growth. The problem of high taxation was highlighted. In general, the high taxation negatively affects growth because it hampers the competitiveness of businesses and limits consumption. Thus, it was argued that tax reforms must go towards a reduction in taxes on labor and on businesses, to make the economy and employment grow. In discussing the causes of the low growth of the Italian economy after entering the single currency, given the size of the public debt that weighed on the state budget and on the growth capacity of the economy, the author agreed with the policy view aimed at balance-sheet equilibrium related to a tax reform to simplify the fiscal system and hit evasion, and, at the same time, with the implementation of structural reforms concerning the simplification of bureaucracy.

In two other essays (Schilirò, 2009, 2010) written in the midst of the global financial crisis, the author pointed out that in Italy the crisis had a stronger negative impact than in other European countries. The Italian economy, in fact, showed a very low GDP growth rate due to structural factors such as low productivity, weak competitiveness, and poor innovation in companies; a labor market with little flexibility that led to high youth unemployment and an unsustainable rate of unemployment in the Southern regions; and an inefficient public administration that tolerates extensive tax evasion and allowed unproductive public spending. Finally, it had a slow bureaucracy far removed from the needs of businesses. Furthermore, the single currency did not represent an integrated and homogeneous economic area, and the eurozone economies were very heterogeneous in their structure and performance. By highlighting the considerable amount of public debt that influenced the growth capacity of the Italian economy, Schilirò (2009, 2010) emphasized the need of structural reforms essential for relaunching potential growth.[2]

Also, in Schilirò's (2014) work, the author observed that Italy had the lowest growth rate in the European Union for about 15 years, showing low productivity, lower than its European partners, and a public debt that became the third highest in the world. Investments after the crisis had dropped considerably, there was high unemployment with an excessive number of young people out of work, an aging population, and, particularly in the Southern regions, the risk of poverty and social exclusion had reached alarming levels. In 2001, income per capita in Italy was higher than other European countries, including Germany and France. Afterwards, it started to decline. The situation had its first significant deterioration between 2002 and 2004, and then it worsened

[2] On the trend of public debt and a retrospective analysis of public policies in Italy at the end of the decade, see Guerra and Zanardi (2010).

further with the 2008–2009 crisis and, finally, it had a further decline in 2012–2013.[3] The Fiscal Compact introduced in the European Union in January 2013, with its fiscal policy geared to austerity, did not help Italy to overcome its recession. Italy from 2008 to 2013 was no longer able to grow, suffered two recessionary shocks in 2008–2009 and 2012, and went towards a progressive impoverishment. In 2008, the GDP in Italy decreased by 1.2%, and, in 2009, it decreased by 5.5%. In the long period of crisis, 2008–2013, the weaknesses of the Italian economic system emerge. The paper also highlighted the unresolved high public debt problem. Table 1 shows the Italian general government debt figures as a percentage of GDP from 2007 to 2013. In particular, the table shows that the crisis of 2008–2009 aggravated the Italian government debt situation, thus the debt–GDP ratio followed a growing trend. The Italian government debt greatly exceeded 100% of its GDP and is clearly higher than the average of the debt of the other eurozone countries. However, because of the crisis, the weight of public debt tended to grow steadily for all the eurozone countries, and, more generally, worldwide. In fact, in 2008, the average government debt–GDP ratio for the eurozone (18 countries) was 69.8%, while in 2013 it increased to 92.8%, according to Eurostat.[4]

Table 1 General Government Gross Debt

Italian and eurozone (18 countries) general government gross debt as percentage of GDP -Annual data							
Years	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Italy	**103.9**	**106.1**	**116.6**	**119.6**	**119.7**	**126.5**	**132.4**
Euro area (18 countries)	**66.1**	**69.8**	**80.4**	**85.9**	**87.8**	**90.9**	**92.8**

Source: Eurostat, 2018

The high stock of debt constituted an objective limit to the possibility of adopting expansive budget policies. The austerity-oriented budget constraints imposed by the European Union (Stability Pact and Fiscal Compact) set further limits. Thus, public spending and net of interests on debt were somehow contained. As a matter of fact, expenditures actually increased relative to GDP, compared to the pre-crisis years. This was also due to waste and inefficiencies in public spending that continued to persist without guaranteeing high-quality public services. In turn, the tax burden has increased and created difficulties for families and businesses. High taxation was always motivated by a high expenditure, but it is actually also linked to the extensive tax evasion in Italy. The high public debt and high taxation are therefore two key problems of public finance, as they contribute to curbing the growth of the economy, hindering the competitiveness of businesses and discouraging consumption and investment. Schilirò's (2014) paper argued that, in order to reduce public debt, the economy policy would have to move along three lines. First, it would need to implement a systematic spending review to minimize waste and inefficiencies that are tied up in public spending and, above all, in its bureaucratic mechanisms. Second, it would need to carry on a credible, medium-term program for the disposal of public assets, making the procedures more streamlined and transparent. Third, it would need to fight effectively against tax evasion and simplify tax legislation and procedures. Fourth, it would need to implement growth-friendly policies that facilitate companies on the tax front for investments in innovation, avoiding financial incentives and reducing the tax wedge. Last but not least, it would need to invest more in human capital. All this is probably not enough to bring down the debt and bring it to 60% of GDP, as is required by European fiscal rules. A revision of the debt parameter at the European level would be desirable, because the average debt among eurozone countries has significantly increased due to the crisis (as shown in Table 1), so a parameter set at a very different historical moment should be reconsidered (Schilirò, 2017). Also, unemployment remained one of the central nodes of the Italian economy (Schilirò, 2014), especially in the regions of the South that suffer from a strong social unease with a very high rate of youth unemployment, which exceeds 60%.

Growth And Public Debt Sustainability In The Italian Economy

The analysis just carried out on the Italian economy has shown that public debt has been haunting Italy for decades,[5] and it is at the origin of much of the country's financial instability and incapacity to grow. Actually, the country showed negative productivity growth for over a decade. According to Hassan and Ottaviano (2018), since the mid-1990s, Italy experienced a dramatic slowdown in total factor productivity (TFP) growth, with negative values in the 2000s. Their explanation of this productivity trend, particularly in the manufacturing sector,

[3] In 2008, income per capita in Italy was $40,689; in 2015, it dropped to $35,219; in 2015, it continued to decline to $30,153. https://www.statista.com/statistics/263595/gross-domestic-product-gdp-per-capita-in-italy/

[4] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=teina225&plugin=1

[5] Italian public debt exploded and began its uninterrupted ascent starting from the beginning of the '80s, when the debt – GDP ratio was just above 60%, and, in less than 20 years, it has almost doubled.

lies in the generally rising difficulty of reallocating resources across firms within sectors where technology is changing faster, rather than between sectors with different speeds of technological change. However, adaptation to new technologies and to innovation processes remains one of the weaknesses of the Italian production system and, more generally, of the Italian system.
Since the global crisis in 2008–2009, Italy has been struggling to overcome its severe difficulties, but it has remained at the bottom of the Gross Domestic Product (GDP) growth ranks within the eurozone. The reasons for low growth are several; undoubtedly, structural and institutional factors have played an important role. Among the structural factors, there is the generally small size of Italian companies.[6] Actually, the Italian industrial structure is conditioned by a clear imbalance in the number of micro and small businesses, to the detriment of the larger companies. This often does not favor the adoption of advanced technologies, contributing to the low growth of total factor productivity. To get around the impasse of chronic economic stagnation, Italy must drastically accelerate the pace of SME aggregation, through tax incentives; subsidized finance; information; and technical, legal, and accounting support associated with transactions (Moise, 2019). Furthermore, Italy is characterized by a chronic problem of misallocation and underutilization of talent (Antonin, Guerini, Napoletano, and Vona, 2019). This, in turn, creates a scarce supply of skills necessary to increase specialization in high-tech sectors. The lack of social mobility and poor evaluation of meritocracy has also led a large number of Italian graduates to emigrate to other countries that tend to value and invest more in human capital. In addition, Italy continues to have a strong gap between North and South in terms of income, production, employment, infrastructures, etc., which has become more pronounced in the aftermath of the global economic crisis.
At the same time, high public debt restrains Italy's chances of growth. It is true that in the years preceding the crisis, Italian governments timidly tried to stabilize the debt–GDP ratio through a process of consolidation, but this consolidation has not been really effective and structural. The great crisis caused the debt and its ratio with respect to GDP to soar. Italy is one of the most indebted countries in the world, with a public debt equal to 132.2% of GDP in 2018 (Bank of Italy, 2019). From 2014, when the debt–GDP ratio was 131.8%, to 2017, when it was 131.4%, the debt continued to fluctuate around stable values, as shown in Table 2.

Table 2

Italian Public Debt over GDP in percentage and levels in billions of euro, Total Public Expenditure as percentage of GDP, and Primary Balance in percentage (2014–2018)

Years	2014	2015	2016	2017	2018
Public Debt/over GDP	131.8	131.6	131.4	131.4	132.2
Public Debt (levels) in euro	2,121	2,186	2,231	2,263	2,316
Total Public Expenditure as a percentage of GDP	50.9	50.3	49.0	48.9	48.6
Primary Balance	1.5	1.5	1.4	1.4	1.6

Source: Bank of Italy, 2019

In 2018, there was a further increase in the value, at 132.2%. Moreover, the absolute level of Italian public debt increased over the same period; in particular, in 2018 the rise of debt became stronger, with an increase of 53 billion euros. All this happened despite the significant primary budget surpluses accumulated by the Italian governments in that period, also due to the relative containment of total public expenditure, as shown in Table 2.[7]
One of the causes of the increase in debt in the years of the crisis and subsequent years was the increase in the real interest rate on debt, but also, naturally, the low rates of GDP growth.
The high public debt in Italy poses the issue of existence of fiscal space and the corresponding ability to use fiscal policy without jeopardizing access to financing; therefore, it raises the question of sovereign debt sustainability. This happens in a context in which the European central bank is becoming aware of the limits of monetary policy in the presence of low nominal interest rates, thus urging governments to do more in terms of fiscal stimulus, and implicitly also to sustain higher debt loads. Anyway, the question as to whether public debt is sustainable (or not) is a central consideration in any macroeconomic analysis of fiscal policy. According to Debrun, Ostry, Willems, and Wyplosz, (2019), debt sustainability is a concept that is difficult to define theoretically and even more to pin down empirically. In general, fiscal and debt sustainability is mostly about maintaining solvency for the government. The requirements to maintain the debt solvency are: the debt–GDP ratio will never exceed a certain threshold (debt limit); the government does not service its debt by issuing new debt on a regular basis; and the government has enough resources in the future to service the debt accumulated from the past, with the practical implication that the budget will have to aim for primary surpluses. Finally, for

[6] The distortion of Italian small manufacturing companies compared to EU competitors is illustrated in a work by Berlingieri, Calligaris, Costa, and Criscuolo (2018).
[7] Total public expenditure was still represented in 2018 as a little less than half of the GDP.

the debt sustainability, it is important to take into account that the interest rate determines the rate of increase in debt; thus, an interest rate greater than GDP growth causes an increase in the debt–GDP ratio and viceversa. The high debt is a major factor that prevents the Italian economy from exiting a decade of stagnation, while the absence of growth increases the debt burden; in turn, the reduced fiscal space weighs on domestic demand and public investment (Antonin et al., 2019). Certainly, the fiscal austerity imposed by the EU did not help. There has been an underestimation of budget multipliers by the European Commission, namely the impact of fiscal policy on GDP growth, in times of crisis.[8] However, with regard to the sustainability of Italian debt, the fact that Italian refinancing of debt now costs much less than it cost in the years of the crisis certainly plays a role in promoting sustainability.
However, the bad administration of public finances and high public expenditure, coupled with extensive tax evasion, not only at the central level, but above all, locally, played a relevant role in creating financial problems and an unstable economic environment. Actually, the public administration, both central and local, remains a large sector, with low productivity and many inefficiencies that need a profound reorganization. It continues to operate by producing services that are often of low quality and adopting inefficient procedures, delaying the action of businesses and citizens with its bureaucracy and, at the same time, increasing spending. Furthermore, the tax gap, calculated as a gap between theoretical tax revenue and actual revenue, is still wide. In the 2011–2016 period, the gap, with respect to the total tax revenue, was 22.1%, with a level of tax evasion that exceeds 100 billion euro (MEF, 2018). Another problematic issue is the spending review, which has often represented an important tool for the control of public spending and debt reduction, but in practice it has been implemented in a limited and ineffective way. An exemplary case is the proposal of suppression of the so-called "useless entities." During the Monti Government (November 2011–April 2013), a list was drawn up of 500 public entities defined with certainty as "useless," estimating that eliminating them would yield 10 billion euros of savings per year. But to date, despite the efforts made, the situation has not changed.
In conclusion, there are different strategies that can help an economy to overcome a high debt problem and avoid unsustainability issues. As Eichengreen, El-Ganainy, Esteves, and Mitchener (2019) pointed out, to reduce public debt, it is possible to follow the traditional approach that relies on boosting growth, primary surpluses, and the privatization of government assets.[9] This strategy, in turn, encourages long debt duration and non-resident holdings. This approach would be preferable, although not easy to implement. Another approach includes restructuring debt contracts, generating inflation, taxing wealth, and repressing private finance, but this alternative strategy discourages investors from holding long-duration debt. Which approach to follow is therefore decisive for lowering the level of public debt and keeping the economy within a virtuous path. However, a broader and complete discussion about policy proposals in order to overcome the high debt problem will follow in the next section.

POLICY PROPOSALS AND CONCLUSION

Nowadays, not only in Italy, but worldwide, many policy makers grapple with slow growth and having to choose among a series of options on how to revive their economies; their choice is: yet more debt. Theoretical approaches such as Modern Monetary Theory suggest deficit spending by arguing that central banks are exhausted, and fiscal spending is needed to facilitate companies and households. Yared (2019) discussing the theories on the political economy of public debt, argues that specific political factors can explain the long-run trajectory of government debt.[10] These factors are identified in an aging population, rising political polarization, and rising electoral uncertainty. In theoretical terms, governments behave similarly to agents with present-biased and dynamically inconsistent preferences. A consequence of this behavior is larger deficits (from higher spending or lower taxes) and changes in the long-term trend in government debt. In any case, these theories leave several unanswered questions such as, for instance, the change in the composition of government spending.
Actually, debt is not in of itself a problem as long as it is sustainable. Given lower interest bills, major advanced economies should be able to sustain higher debt loads. Of course, there is no easy answer, nor does the empirical literature give clear-cut evidence. Boosting growth and improving productivity is the priority challenge for any country. Ensuring the country and companies a high degree of competitiveness is part of the project of sustained growth and sustainable debt. In this regard, the global competitiveness report (Schwab, 2019) ranks Italy 30th over 141 countries. This is overall a fairly good result, where technological readiness and market size, but also health, primary education, and business sophistication, are undoubtedly strengths of the country.

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[8] Blanchard and Leigh (2012, 2013) showed that the fiscal multiplier was large austerity, causing a significant reduction in the eurozone's growth. They also showed that in peripheral countries the shortfall in growth was greater, since fiscal consolidation was larger.

[9] This is the approach already stated in Schilirò (2007, 2014).

[10] For the analysis of the political factors that offer an explanation for the long-run trend in government debt see Yared (2019, pp. 124-127).

However, Italy presents a labor market that is still very backward and with little flexibility in determining wages. Other penalizing factors are the inefficiency of the public administration, the level of taxation, as well as the complexity of the tax system. From an institutional point of view, Italy is among the last positions for the responsiveness of the government to change and for the (lack of) long-term vision of the executive. In short, the key point for Italy's modest competitiveness in performance and growth is the lack of a clear medium–long-term growth strategy that limits the ability to direct resources towards the goal of growth. A strategy for long-term growth should promote, first of all, investment in education and human capital, since economic theory for a long time stated that education and human capital accumulation are fundamental for economic growth (e.g., Nelson and& Phelps, 1966; Romer, 1990; Schultz,1961). Second, it needs to boost innovation through more investment in R&D[11] that fosters higher productivity and, consequently, growth. Third, it needs to improve the efficiency of bureaucracy, its simplification, and transparency; this reform facilitates business activities and promotes growth. Regarding public budget, despite higher tax revenues, spending is rising faster than income, leading to widening budget deficits and higher levels of debt, not only in Italy but in many developed and developing countries.[12] The problem of the equilibrium of public budget is central for Italy, because of the high debt and the constraints imposed by the European Union. Barnay, Davis, Dimson, and Dondi (2019) explain that the widening fiscal deficits are due to the dynamics of four distinct factors: increasing automation in the workplace, leading to pressure on employment; the evolution of global trade through the proliferation of e-commerce and digital business, raising questions over cross-border taxation; rising self-employment; and an aging population. In particular, the first two are somehow related to the digital economy and de-materialization of the economy, and they have an impact on tax revenues. Taxation of e-commerce, for instance, is becoming very important, but it is also challenging. Anyway, each of the four above-mentioned factors could further widen the fiscal deficit in the years ahead. Also, Barnay et al. (2019) highlight that, in general, "governments can close the widening gap between revenues and expenditures in a variety of ways through tax revenues, nontax revenues, and spending optimization" (p. 9).

A universal solution is to collect taxes more efficiently, and this solution should be applied also to Italy. Particularly, the optimization of tax collection through a process of digitalization is a way to improve efficiency. But this requires a simpler tax system and the streamlining of taxpayer services. This is a road that Italy must absolutely follow, given the current complexity and baroque style of its tax system. However, this is still not sufficient; it is also necessary to enact a change in tax policy aimed at a lower taxation, enlarge the tax base, tax the digital economy, and implement greater anti-evasion control with effective mechanism of enforcement. All this requires a more efficient tax authority that uses appropriately data, information, and analytics. These are necessary measures that help public finances by raising revenues and contribute to debt reduction.

In addition, on the side of the public expenditure, a spending review can help the Italian government better understand spending and identify opportunities for efficiencies. A spending review must be interpreted as detailed assessments of specific areas of spending, with aims of increasing transparency, improving efficiency, and, where necessary, reallocating resources. Thus, it is essentially aimed to enhance expenditure performance. Up to now, Italian governments have adopted the spending review in a very limited way, so there is still a wide margin to benefit from this type of control of public spending. A policy aimed at the optimization of debt management is a further step to contribute to lowering the Italian public debt and its sustainability. But this is partly happening with the extension of debt securities maturities and the relative decline in interest rates. Moreover, as mentioned in the previous paragraph, the target of the debt–GDP ratio of 60%, imposed by European rules, is unrealistic for Italy. It would be better not to impose a rigid threshold, and above all, to take into account the composition of the expenditure in regard to investments aimed at the growth of the economy.

Finally, the technological evolution and the affirmation of artificial intelligence and robots is changing the economy not only from the point of view of the production and labor market, but also of taxation and optimal solutions to collect and impose taxes. Keeping up with technological change is therefore a result that a country, such as Italy, that wants to grow without blowing up its debt should pursue.

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[11] In 2017 in Italy, the R&D expenditure amounted to 1.38% of the GDP, against a European average of 2.03%, and it is considerably below the UE target of 3% in 2020.

[12] For an empirical analysis on increasing public debt in the OECD coountries and the issue of public debt sustainability, see Bequiraj, Fedeli, and Forte (2018).

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