Analisi e valutazioni delle politiche economiche

ITALIAN FISCAL POLICY REVIEW 2017

a cura di Antonio Scialà

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Preface

Five years ago we started a new project on the evaluation and the appraisal of fiscal policy. Despite the large availability of information and assessments on national fiscal policies, we detected for Italy the need of a public meeting where academics, professionals, policymakers may gather together, delivering their evaluations of fiscal decisions, their expected impacts on the economic structure and the social welfare of the country as well as on feasible alternatives.

Public discussion on fiscal policy is often focused either on the simulated evolution of public finance indicators, or on the evaluation of single policy interventions and their theoretical consistency with efficiency and values. We aimed at bringing together macroeconomists and public economists with the objective of focusing on: the effects of fiscal policy on demand, supply, potential output, growth, social welfare; the drivers of simulation results; the policies which stand out as the most salient in the previous year budget law and the assessment of their coherence with the stated objectives.

In October 2015 and October 2017 we organized two conferences at Roma Tre University on the assessment of the Budget Law approved by Italian Parliament in December 2014 and December 2016 respectively. In both situations, our challenge was to discuss the previous year Budget Law when the Italian government was putting forward its Budget Law for the next year. Our bet had been that the time distance between our conference and the establishment of the policies we were focusing on added up to the interest of our initiative, and apparently we have been right.

At the beginning of 2017 we published a volume collecting some contributions discussed at the 2015 conference. We are now publishing an e-book which draws on analyses and evaluations discussed at our 2017 conference. We publish them in English because we know that the scho-

lars, forecasters, policymakers operating in other European countries may be interested in the Italian economic policy debate. This interest stems from the existence of a common European fiscal governance binding all national fiscal policies and making the analysis of the differences and the similarities among them quite interesting.

We expect to keep on publishing similar books in the future.

B. Bises, E. Felli, S. Ginebri, E. Granaglia, P. Liberati, A. Scialà

Introduction

The 2017 Budget Law was the last one elaborated by the Renzi cabinet that resigned few days after the outcome of the December 4th referendum on the constitutional reform approved by the parliament few months ahead. It can be worth remarking that the 2016 was the third year in which Italy came back to a positive growth rate – albeit still below the psychological threshold of one per cent – after six years of severe recession experimented by the Italian economy.

The cumulative amount of incremental resources generated by the Budget Law in year 2017 amounted to about 17 € billions; the expansionary measures was about 30 € billions. The net expansionary impulse was about 12 € billions.

The measure that absorbed the higher share of incremental resources was the suspension of the safeguard clause introduced with the Budget Law for the year 2016 which would have implied an increase of both VAT and excises tax rates. This measure represented about 50% (15,4 € billions) of the total expansionary measures. It should be pointed out that it is the second consecutive year in which the government decides to devote the highest share of incremental resources generated by the annual Budget Law to the suspension of the safeguard clause. Moreover, it is from the 2012 Budget Law that Italian governments resorted this instrument in order to match with recommendation formulated by European Commission.

It is worth noting that at least two relevant policy changes approved with the Budget Law for the year 2016 came into force in year 2017: the reduction of the corporate income tax rate from 27,5 per cent to 24 per cent and the investment tax incentives introduced with the Stability Law for 2016 and expanded by the Budget Law for the year 2017. Moreover, it should be also pointed out that some measures introduced with the 2017 Budget Law – albeit not so relevant from a quantitative point of view –

have qualitatively relevant implications, since they are framed within general trends characterizing several dimensions of the State intervention in the Italian economy in the last few years.

In the first part of the book a macroeconomic analysis of EU budget and fiscal rules is carried on.

In their contribution, Jean-Luc Gaffard and Francesco Saraceno propose a critique of the theoretical setting underlying the policy management of the economic crisis by European national governments inspired by EU institutions. In particular, the authors focus on three misconceptions that characterize such a setting: (I) the different degree of market liberalization introduced in each country, (II) the existence of a superior institutional arrangement to organize a market economy, and, finally, (III) the little attention assigned to the effects that emerge during the transition from the current institutional arrangement to the alleged superior one. In their contribution the authors claim that such misconceptions definitely affected the economic policy strategy, leading to bad economic performance. In the second part of their paper, Gaffard and Saraceno propose a revision of the European fiscal rules that, in their opinion, should make the EU institutional framework consistent with policies able to lengthen of policy makers' and markets' time horizon.

Canofari, Piergallini and Piersanti focus on the flaws of public debt-GDP ratio as a measure for assessing public debt sustainability. Then, they propose as an alternative measure the public debt-net wealth ratio. They show that using this measure the conclusions about the sustainability of European and non-European countries public debt change dramatically.

As reported above in 2017 relevant measures aiming to improve the competitiveness of Italian productive system and to foster an increase in private R&D investments have been implemented. These measures are part of a record of policies introduced over a ten-year period, all aiming to improve the functioning of the labor and capital market, with the objective of improving the performance of the Italian firms. The second part of the book collects contributions that provides an assessment of this kind of fiscal measures. Two interventions deserve special attention. First, the implementation of the CIT tax rate reduction approved in the 2016 Budget Law. Second, the financing of the plan *Industria 4.0*.

The contribution by Gastaldi, Pazienza, and Pollastri, and the one by Giacomo Ricotti concentrate on the changes occurred in the structure of Corporate Income Taxation (CIT) in Italy and in other industrialized countries in the last fifteen years. In particular, Gastaldi *et al.* analysis is fo-

cused on Italy. They investigate the relationship between the recent changes in CIT and the main factors that have hindered the growth of the Italian productive system (i.e. competitiveness, undersized dimension, debt bias and investment gap). They conclude that the main gainers of these policies have been larger firms operating as a tax group or in manufacturing and financial service sector. However, impact on firms' investment expenditure has been very limited.

Giacomo Ricotti develops some considerations about the rationale behind the changes in the structure and in CIT tax rates across OECD countries, trying to extract common trends and differences. The author insightfully points out that «the tax base competition has undermined one of the functions of the CIT, namely the allocation of revenues at the international level, causing, above all, an increase in the occurrences of double taxation» (Ricotti, this book, p. 116). Moreover, starting from the US experience, a special attention is paid by the author to the role of, and the challenges to, CIT in a world where the share of digital economy is growing faster and faster. This issue is at the top of the European Commission agenda as witnessed by its recent proposals on this argument.

One of the most emphasized policy intervention implemented by Renzi cabinet has been the plan *Industria 4.0*, that includes a set of tax and benefits in favor of private companies operating in Italy. Caravella and Crespi contribution takes advantage of the introduction of this program to discuss the main policy actions aiming to sustain the recovery of firms' production and competitive performances in the last few years. For their analysis, the authors review the insights coming from the economic literature on the design of industrial policy and describe the peculiar characteristics of the Italian industrial policy approach. They conclude that there is a significant departure of current industrial policy actions and the suggestions provided by relevant economic literature. Such departure is mainly due to a lack of systemic instruments whose positive impact has been emphasized on the theoretical and empirical ground.

The third part of the book is devoted to the analysis of some policy interventions on the welfare state.

Elena Granaglia, proposes an analysis aimed to discuss if and to what extent the recent micro and very sectoral oriented interventions in the field of social policies are more and more transforming the Italian welfare state in a categorical one, turning it away from a universal one. The focus of the analysis is on tax and transfer measures encompassed in 2017 Budget Law,

belonging to three set of policies: child care support, antipoverty measures and occupational welfare.

In order to properly address the issue of the possible segmentation of the Italian welfare state, the author provides a fruitful definition of what is meant with 'categorical policies', that permits to conclude that the degree of segmentation of the Italian welfare state system has been increased by the recent policy interventions.

Finally, in his contribution Sergio Ginebri focuses on the main changes occurred in the social security sector. In particular, the author provides an in depth analysis of the main innovations in, and the likely consequences of, two relevant measures: the eligibility requirements for the retirement of vulnerable workers and of the increase of smaller amount pensions. Ginebri points out that the design of these two interventions will hardly have an impact on income inequalities among workers and retirees. However, they may have a positive impact on a different, but not less relevant, dimensions of inequality, that is actuarial fairness. The author concludes that, in this perspective, the interventions included in 2017 Budget Law are quite innovative, since for the first time softer eligibility requirements applies to workers whose life expectancy after retirement may be expected to be shorter due to the harshness of their occupations and the vulnerability of their social conditions.

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Jean-Luc Gaffard[*], Francesco Saraceno[**]

Bringing the Long Term Back to Europe. The Crisis of Macroeconomics and European Governance Reform

1. *Introduction*

The European economy is finally recovering from the worst recession since the 1930s, and it is he moment, now that the time for policies dictated by the emergency is over, to take a broad perspective and to learn from past events.

This paper argues that the poor management of the European economies during the crisis (and unfortunately also well before it) stems from a number of misconceptions, rooted in the consensus view that dominated (and still does, to a certain extent) macroeconomics. The first misconception is that the divergence among European economies were ultimately to be attributed to their different degree of adhesion to market liberalization; the second, related one, is that it exists a unique, superior institutional arrangement to organize a market economy. Finally, the third misconception is that any policy that allows reaching this superior institutional arrangements should be pursued disregarding its short-term impact which is, by definition, temporary. Only the long run should guide policy action and institutional design.

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We'll argue in this paper that, somewhat paradoxically, these misconceptions eventually led to a 'dictatorship of the short run', where both markets and policy makers have acted with shortened time horizons, thus weakening the growth prospects of the economy in the long run. This, we will argue, is particularly true for Europe.

We will then try to show that what counts is not the reference to some ideal superior institution, but rather to ensure the consistency of policies and institutions with in mind the long run viability of the economy. This requires a radical departure from the current consensus, that could be made easier by the current state of flux of the theory and by the internal critiques of the consensus itself. We will finally suggest a revision of the European fiscal rules that tries to correct for the bias.

2. *The Pre-Crisis Consensus*

The 'New-Keynesian' consensus that dominated macroeconomics starting from the 1980s stems from the attempt to recover Keynesian features in microfounded models, in which imperfections of various nature could cause departures of output from its natural level. After the rational expectations revolution, the economics profession therefore evolved towards a framework that blends a short run with Keynesian features, and a long run where the Real Business Cycles (RBC) features are dominant (Blanchard, 1997).

2.1 *A Theory of Natural Rates*

The typical tools of the New Consensus, still widely used by academics and by international institutions, are the so-called Dynamic Stochastic General Equilibrium (DSGE) models, that embed in a RBC structure a number of nominal rigidities and imperfections: these models most commonly feature price and wage rigidities, accompanied by the existence of some consumers who are unwilling or incapable of maximizing utility over time, the so-called Non-Ricardian consumers. Rigidities in turn allow for the appearance of significant demand shortages, and hence of Keynesian features, that are nevertheless limited to the short run. Furthermore, central banks have an impact on the economy, because rigid prices fail to

instantaneously adapt to nominal interest changes, and the real interest rate therefore can be at least in the short run impacted by monetary policy choices. Going through the many facets of the New Consensus is well beyond the scope of this chapter. What is relevant for our purposes is that the New Consensus has developed several results that are independent of the features of individual models.

In the Real Business Cycle model fluctuations are determined by the optimal reaction of agents to supply side shocks, most notably technological shocks, and are hence to be considered 'natural'. Market imperfections and rigidities may cause this natural equilibrium to be different from the Paretian first-best. Rigidities and imperfections may have different sources: efficiency wages, staggered price and wage setting, incomplete markets, search and bargaining, information asymmetries, imperfect competition, liquidity constraints or coordination problems, are some of the many imperfections that can be embedded in otherwise standard rational expectations models to yield departures of the natural rate from the Pareto optimum.

To increase the natural growth rate of the economy, and to make the natural equilibrium converge to the first best, policy needs to eliminate the rigidities through the very same *structural reforms* that were called for by New Classical macroeconomists.

Market imperfections, mainly nominal rigidities, also cause short run departures from the natural growth rate, to yield demand-driven business cycle fluctuations in the short run. More precisely, when the economy is hit by a shock, imperfections prevent agents from reacting to the shock optimally; this determines deviations from the natural output path.

The short run deviations from natural output tend to be reabsorbed in the medium run by markets through (mostly price and wage) flexibility. Discretionary macroeconomic policies are ineffective to stabilize economic activity. Rules are to be preferred because they make policy predictable and hence easier to embed in agents' expectations.

Monetary policy should be preferred to fiscal policy mostly for two reasons. First, it is less subject to lags in decision and in implementation; second, it can be delegated to independent and technocratic bodies that are not subject to political biases and capture by vested interests. Furthermore, monetary policy aimed at stabilizing inflation will in most cases also keep output at its optimal level (what Blanchard and Galí, 2007, call *divine coincidence*), thus making any further policy intervention unnecessary.

Short run fluctuations of natural output have little, if any, influence on long run growth, as there is no reason for supply side determinants of the natural rate to be affected by temporary deviations from the optimal path.

The scope of this paper is not to ask 'how Keynesian' is the New Keynesian theory that lies beneath the New Consensus. It is enough to remark here that the answer would be 'not much', as the model only allows temporary deviations from a framework in which market forces spontaneously tend, if left alone, towards a first (or second) best that constitutes the best of possible worlds.

In particular, and this is instead very relevant for the argument of this paper, the New Consensus embraces the RBC rejection of sustained and persistent excesses of savings over investment, which were the central feature of Keynes' *General Theory* (1936). Precisely the impossibility to generate such persistent demand shortages explains the fact that, after the crisis, the New Consensus has been challenged in many quarters, including by economists that contributed to its development.

As we said, while monetary policy may play some role in smoothing the cycle, the New Consensus removed fiscal policy, even in the short run, from the policy maker toolbox. Theoretical and empirical work on fiscal policy, therefore, focused on the design of 'optimal' rules (Kopits and Symansky, 1998) aimed at preventing opportunistic behaviours and excessive (distortionary) share of the government in the economy.

The New Consensus shaped European institutions, that were put in place with the Maastricht Treaty in the early 1990s. The Treaty centered European economic governance on the rejection of active macroeconomic policies.

Embracing the *divine coincidence*, the ECB only was given a mandate for price stability, furthermore with considerable autonomy in pursuing it. Furthermore, the Stability and Growth Pact (SGP) forces countries to rely solely on automatic stabilizers to cushion economic fluctuations. The SGP requires countries to balance their balance over the cycle, which means that only cyclical deficits are allowed.

Last, but not least, the Maastricht Treaty gives the Commission a strong saying in competition policies, with the objective of favouring structural reforms and removing obstacles to the efficient working of markets.

2.2 *The Paradoxical Irrelevance of the Long Run*

The Consensus revolves around the potential growth rate, and its twin concept, the natural rate of unemployment. These are the medium-term attractors of the economy, and while they are not constant, they only respond to supply side factors, because they are fundamentally determined by the universal laws of profit and utility maximization by optimizing agents. Adding some degree of foresight, then, completes the picture, as agents will embed the knowledge of the natural rate into their action plan, and the economy will converge to it regardless of short-term policy action.

Policy in this framework has a very limited role to play: if price rigidities exist, nominal rate management by the central bank can move the real rate towards the natural rate, thus dampening the fluctuations of the economy around its potential. Financial stability on the other hand is not a matter of preoccupation for monetary authorities, as asset prices tend over the medium term to reflect the fundamentals, and hence to be aligned with the optimality of the equilibrium.

Long term growth stems from a creative destruction process that entails the destruction of resources in some sectors and their shift to more productive ones. This process therefore is more effective, and ultimately leads to higher growth rates, if obstacles to the movement of resources are eliminated or reduced. Economies where labour markets are rigid, or where financial markets are insufficiently developed, will specialize in low value-added productions, while economies where resources (and prices) can move more freely will be able to allocate them to dynamic sectors.

Reforms that foster the flexibility of markets, therefore, increase the long-run growth rate of the economy, and could even be beneficial in the short term, if households and firms anticipating higher potential growth embed this information in their short run behavior. Supply side policies would therefore stimulate the demand side of the economy. The short run would in some sense be absorbed by the long run, giving a new youth to Say's Law by which supply creates its own demand[1].

This is the paradox of a theory that is exclusively focused on the long run, but ends up neglecting it: in the world it describes, the only institu-

[1] The idea of 'expansionary austerity' dating back to the 1990s (Giavazzi and Pagano, 1990) is based on the same logic: embedding future tax reductions in the intertemporal budget constraint rational consumers and firms increase spending today, thus compensating for the negative impact of fiscal consolidation. Former ECB president Jean-Claude Trichet was a proponent of expansionary austerity at the height of the EMU crisis (Trichet, 2010).

tion that matters are markets that are considered to be capable of attaining the natural (and possibly optimal) equilibrium. Thus, as any other institution has no real impact on what really matters, the long-run disappears from the decision-making horizon. Policy institutions, in particular, can (and should) focus on short term rules: the central bank targets inflation, mainly to anchor expectations, and the government follows nominal targets (deficit, debt), to ensure financial stability and to minimize incentives' distortions for markets. The world described by the theory is intrinsically dichotomic: the short and the long run, the real and the monetary side, are all determined independently.

3. *The Crisis: The end of Dichotomies?*

The crisis has shaken the Consensus. The balance-sheet recession (Koo 2011), a massive negative wealth effect, could hardly be understood, and tackled, by means of the New Consensus supply-side-based models. There was much more than nominal and real rigidities could account for, in the dramatic demand shortage of 2008-2009. Many of the Consensus policy prescriptions were challenged (see e.g. Ostry *et al.*, 2016), among which the exclusive focus on structural reforms and, related, the dichotomy between short and long run.

3.1 *The Policy Response to the Crisis: From Fiscal Expansion to Austerity*

The New Consensus monetary dominance is the reason why most countries, when the crisis began in 2007-2008, favoured monetary policy to try to contrast the recession. The prompt intervention of central banks, through massive credit to financial institutions, was successful in that it prevented the meltdown of the financial sector. This injection nevertheless was ineffective to restart the economy. In the process of deleveraging, banks, businesses and households shrank their balance sheet, thus reducing liquidity at a faster pace than credit was increased by central banks, which was therefore not turned into demand for goods and services (Adrian and Shin, 2010). The *liquidity trap*, came back from history books, and made monetary policy lose traction, as was clear by the end of 2008. In line with Keynes' prescriptions, fiscal policy then took the witness; in the spring of

2009, most advanced and emerging economies implemented massive stimulus plans that supported demand and put the economy on a recovery path, even if at the price of a generalized deterioration of public finances.

The coordinated fiscal expansion was fruitful, and is credited with triggering the recovery (Eichengreen and O'Rourke, 2009). But as soon as the acute phase of the crisis was over, the fear of deficits and debt caused a quick reversal of the policy stance. The turn towards austerity was particularly brutal in Europe, where the crisis in peripheral countries (Greece, Ireland, Portugal, Spain) was interpreted as a fiscal profligacy story, and therefore 'cured' with fiscal consolidation. The US were not exempt from a policy reversal; the sequester of 2013 marked the beginning of a fiscal contraction that many judged premature. Nevertheless, the timing of this contraction (private expenditure had already started to recover) made it remarkably less destructive than in the EMU.

The Consensus requires austerity to be accompanied by structural reforms, to unleash the full potential of the economy once the government has withdrawn. Thus, especially for countries requiring financial assistance, conditionality included (mostly labour market) liberalization. It is now generally admitted that the bundle austerity/reforms had stronger than expected recessionary effects, most notably in Europe (Blanchard and Leigh, 2013). This did not soften the Consensus' emphasis on austerity and reform, as the recession was interpreted as a necessary short-term side effect of the policies put in place to increase the potential growth rate of the economy. This interpretation rested on the Consensus separation between short and long run, with demand side factors only affecting the former, and supply side policies having an impact on the latter. The conventional wisdom would argue that the reduction of aggregate demand and the ensuing recession that were followed by austerity and reforms would be a short-term pain which would in no way affect the long-term gain represented by the effect of reforms and government downsizing.

Nevertheless, the severity of the recession has cast doubt as of whether the economy was going through a simple cyclical downturn. Economists have therefore started asking whether the economy will ever be able to recover its past levels of output. On one side, the discussion on secular stagnation (Summers, 2014, 2016) highlighted the reasons that would lead to believe that the growth rates of the 1950s-1970s will never be recovered again. On the other side, economists emphasized how prolonged periods of crisis may dent physical and human capital, causing a permanent damage to the economy.

3.2 *The Return of Hysteresis*

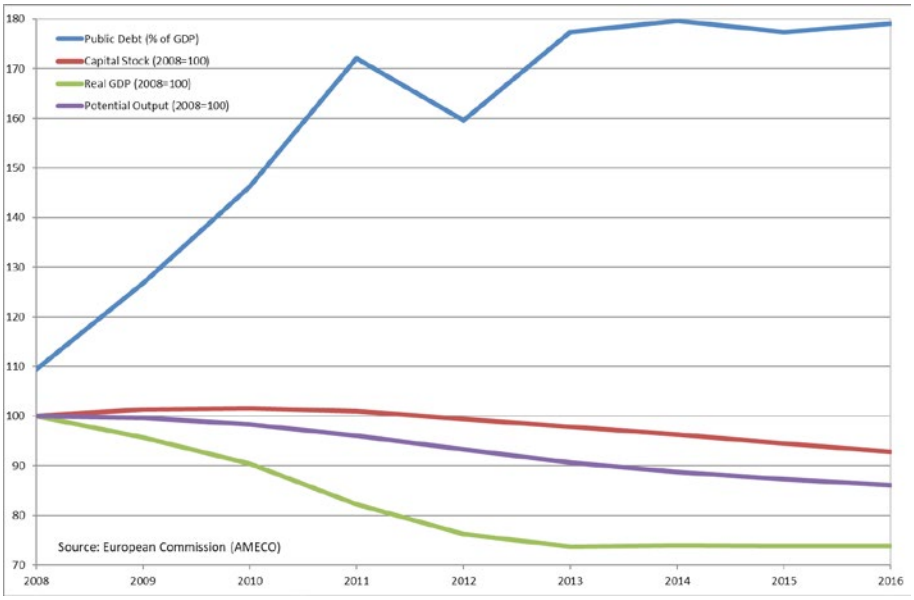
DeLong and Summers (2012) revived an old intuition by Blanchard and Summers (1986), who had highlighted the role of *hysteresis* in explaining long-term unemployment: workers who stay unemployed long enough will start losing their human capital, i.e., their capacity to participate to the production process and to keep up with the competencies required by technical progress. Thus, when these workers eventually find a new job, they will be less productive. The result is a permanently lower capacity of the economy to produce.

Even physical capital accumulation may depend on the severity and duration of the recession. Furceri and Mourougane (2012) show that, in advanced as well as in developing economies, investment is strongly related to distance from potential output, so that the capital stock may be permanently diminished by long lasting crises.

Thus, both physical and human capital may be severely affected by long recessions, that therefore may result in a *permanent* reduction in the productive potential of the economy. DeLong and Summers (2012) write that most advanced economies are undergoing fiscal consolidation, and conclude their work warning against the long term harm of these supposedly short term policies. Fàtas and Summers (2015) provide empirical support for this claim, as they find that short-run shocks to the economy tend to have an impact both on current and potential GDP. Among these shocks of course they focus on fiscal consolidations, that at times of crisis, when multipliers are particularly large (Auerbach and Gorodnichenko, 2011), have a particularly large negative effect on output both in the short and in the long run. Thus, Fàtas and Summers concur with the literature that argues against fiscal consolidation, adding a further zest: the bad timing of austerity does not only cause unnecessary pain in the short run. It may be self-defeating in the long run as well.

Greece is a good case study of the long-term impact of fiscal consolidation. As we said, in exchange for financial assistance from the EU and the IMF, Eurozone countries in distress had to implement draconian structural reforms and austerity plans monitored by a troika composed of the ECB, the European Commission, and the IMF. For Greece in particular, assistance came in the form of three bailout packages (the first negotiated in May 2010, the latest in 2015, that ended in August 2018), that the country obtained in exchange for a vast program of austerity and reforms. Since 2010 thirteen austerity and reform plans have been approved by the various governments, including the one led by Alexis Tsipras.

Figure 1. Greece: Selected Macroeconomic Variables.

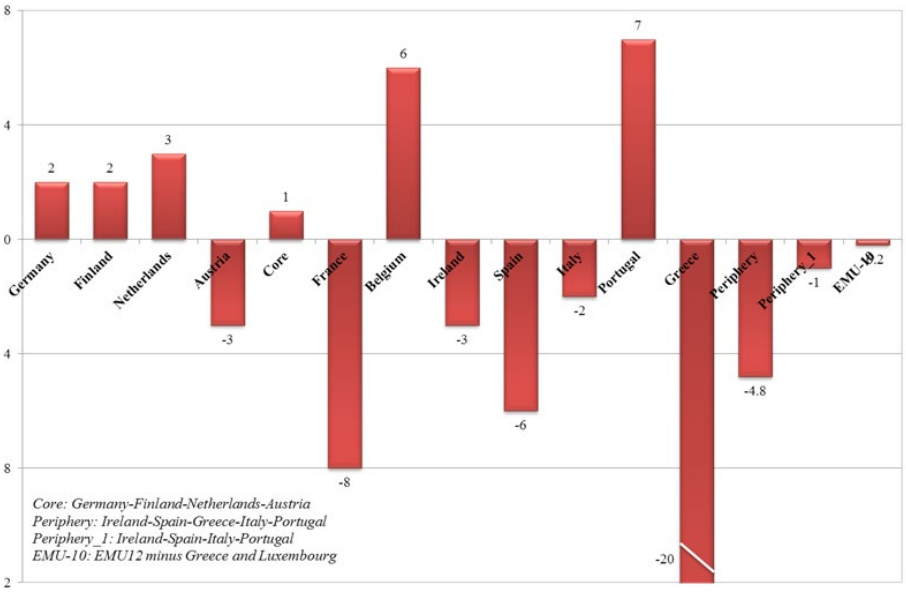


What is the result of these massive reform programs? As we said, these were based on the mistaken belief that the multiplier value was small, so that austerity would reduce debt more than income, and cause only short-term pain to the Greek economy. Figure 1 shows how this belief was wrong.

The sharp short-term fall in GDP led to a drop of investment and of the capital stock; this impacted potential output, that is today 17% lower than in 2008. Human capital was also affected, as public health indicators deteriorated sharply following austerity (Kentikelenis *et al.*, 2014). Furthermore, public debt is still at unsustainable levels. Austerity was self-defeating, and it led to permanent damage to the economy.

It is then no surprise that, in spite of austerity and reforms, divergence between the core and the periphery of the Eurozone is even larger today than it was in 2007. Figure 2 shows the change in the competitiveness index rankings computed by the World Economic Forum. While these indexes may be criticized along several dimensions, and are somewhat arbitrary, their change over time may be taken as a good qualitative assessment of the change under way. All countries in the core of the Eurozone gained in competitiveness between 2006 and 2015, while all countries of the periphery lost ground. Reform in these countries led to *lower* not

Figure 2. WEF Competitiveness Ranking Change: 2006-2015.



higher competitiveness. This is particularly true for Greece, that lost 20 positions in the ranking. When growth will resume, Greece will be in an even weaker position than it was in 2007; thus, it will be unable to benefit from better macroeconomic conditions. The short-term pain is likely to evolve in long term pain.

3.3 *The inflation – unemployment trade-off*

Whether they believed or not in the existence of a natural rate, during the crisis most economists had to recognize that the economy had departed quite substantially from it. The increase of unemployment should at that point have exerted downward pressure on wages, and hence on production prices. True, most advanced economies flirted with deflation; but given the brutal increase of unemployment, the effect on prices should have been much more marked.

This 'missing deflation' revived the debate on the Phillips curve, initiated in the 1960s by Phelps (1967) and Friedman (1968): does it or does it not exist a relationship between prices and unemployment? And if it

exists, can it be exploited by policy makers to smooth GDP fluctuations? An interesting paper by Blanchard *et al.*, (2015) on one side shows how current and potential GDP are related, thus bringing further support to the confutation of the dichotomy between short and long run. On the other side, it documents the flattening of the Phillips curve after the crisis: unemployment changes, even substantial ones, do not have an immediate influence on wages and prices. Thus, during the crisis unemployment increased without pushing wages too hard towards deflation, and symmetrically the current recovery sees prices and wages react very slowly to the reduction in the number of unemployed.

The policy implications are straightforward: if the link between prices and unemployment is weaker, and if the crisis may have an impact on the capacity of the economy to grow in the long run, then aggressive countercyclical policies are warranted: it is better to err on the 'too much' side than to risk that the economy remains tangled in a long-lasting recession.

But why did the Phillips curve flatten? The debate focuses on several factors that might explain the stability of prices in spite of large swings in economic activity. First, structural factors. Technical progress and increasing inequality tend to compress wages and prices, regardless of the cyclical position of the economy. Then, there could be measurement errors, as the unemployment rate does not really measure the slack in the economy (it disregards discouraged workers and involuntary part times, just to name two issues). Even wage statistics do not really capture labour market dynamics. The Phillips curve therefore may actually be there, but simply hidden. Another, reason, which would have far reaching consequences, is expectation stability. The consideration of expectations in the Phillips curve allowed monetarists and New Classical economists to argue that it was vertical in the long run, when markets embed policy shocks in their behavior and head back towards the natural rate. In a recent article, titled *Should We Get Rid of the Natural Rate Hypothesis?*, Blanchard (2017) remarks that inflation expectations in the recent past stopped reacting to actual inflation and unemployment. This, according to Blanchard, for two reasons: first, monetary policy is today more credible than in the past; second, and more importantly, because the long period of price moderation that most advanced economies experienced removed inflation from the decision-making process of agents, who somehow 'forgot' that it might constitute a problem. The French economist concludes, in line with his 2015 work, that as long as inflation is moderate, so that it remains unno-

ticed by markets, it exists a margin for active policies *even in the medium run* (see also Brainard, 2017).

It is interesting, as a further proof of the complexity of policy making in today's world, that the flattening of the Phillips curve may lead to opposite policy prescriptions. Borio (2017) subscribes to the view that inflation stability depends on structural factors, so that monetary policy has no impact on it. Central banks' attempts to boost economic activity and inflation (e.g. through Quantitative Easing) were doomed to fail from the beginning, and today restrictive policies should be implemented to avoid the formation of bubbles and the piling up of excessive debt for households and firms.

In the European context this debate is less controversial. On one side, the end of the recession is more recent, and several indicators point to the fact that we are still far from potential. On the other side, inflation remains subdued for a number of reasons, ranging from the strength of the euro to inertial expectations. We are therefore in the situation depicted by Blanchard and Brainard, calling for monetary (and fiscal) policy to focus on growth and employment, and to neglect inflation as long as it remains inertial. This seems to be the strategy chosen by Mario Draghi and the ECB.

To sum up, the recent empirical findings, and policy discussion, question the Consensus dichotomic structure, and suggest that the proper analytical framework to design policies needs to take into account the linkages between demand and supply, between short and long run, between monetary and real variables. In the next section we will argue that this theoretical reconstruction needs not to start from scratch. Going back to Keynes may constitute an excellent starting point.

4. *Towards a Theoretical Reconstruction*

4.1 *The Betrayal of Keynes' original message*

Keynes argued that we live in producion economies that are intrinsically monetar. This means that choices about finance and money affect real variables, starting from employment. For example, the rate of profit and the rate of interest do not necessarily move together, as a drop of the former

may lead to an increase of the latter through expectations of agents of future drops of economic activity; this leads to expected price moderation, and to an increase of expected real interest rates: current interest rates then follow through the yield curve. The interest rate therefore settles to a level that is not consistent with full employment, thus making expectations self-fulfilling (Leijonhufvud, 1981).

Furthermore, firm decisions, in particular investment decisions, crucially affect the path followed by the economy. Keynes therefore departs radically from the classical tradition that imputed unemployment to malfunctioning labour markets and to wage rigidities. The British economist on the contrary pointed out that in a monetary economy deflation increases the burden of debt and triggers a deflationary spiral (Keynes, 1936: 303).

After the Great recession, Keynes' message was watered down in the IS-LM construct, in which the real and monetary sector are linked by the influence of the interest rate, determined by liquidity preference and money supply, on investment. Once this setup is in place, the link between monetary and real variables is just a matter of empirical assessment. If the equilibrium in the money market (in particular money demand) has limited impact on the interest rate, and if the latter has limited impact on investment, the nexus between monetary and fiscal variables is cut, and the dichotomy reappears. A fall in the profit rate is followed by a fall in the interest rate either because prices drop or because unemployment increases; in both cases this brings the economy back to equilibrium. Thus, momentary drops in aggregate demand and economic activity are ultimately due to price and wage rigidity, as in the pre-keynesian tradition (Modigliani, 1944). The price system keeps the economy in equilibrium in the medium run, and intertemporal coordination failures, that were at the hearth of Keynes' analysis (Leijonhufvud, 1968), disappear. As would be the case later on for the New Consensus, the temporary deviations from full employment can be shortened by policy action; whether it is monetary or fiscal policy it is just a question of elasticities.

The main shortcoming of the IS-LM framework is to interpret Keynes as a theory of crises, which is of interest only in the short run. Keynes nevertheless did not ignore the long term, and repeatedly stated that the long term is nothing but a sequence of short runs. Thus, it would be dangerous to believe that an economy subject to exogenous shocks will spontaneously return to an equilibrium exclusively defined by real factors, namely technology and preferences. In fact, Keynes argues that money is not neutral in the long as well as in the short run; but unfortunately, as he does

not develop a theory of the long run, he paves the way for the short-run and fixed-prices interpretation of IS-LM proponents. Tobin (1964, 1965) makes an attempt to provide a monetary theory of the long run when he proposes a growth model in which growth depends on capital intensity, which in turn is influenced by an interest rate determined by portfolio choices in the money market. But his attempt remained isolated.

4.2 *Recovering a long-term perspective*

The key to develop Keynes' intuition on the importance of the long run is in putting investment at the center of the stage, not only as a component of aggregate demand, but also as creation of productive capacity. This creation, furthermore, will generally be a source of disequilibrium in the economy. This is what undertakes Hicks (1973) who argues that both production and the creation of productive capacity take place in real time, and that the latter needs to precede the former (time-to-build). If investment were stable over time, so would be economic growth. But as investment is governed by Keynes' animal spirits, and furthermore is constrained by financial and human resources, constraints, it does not follow a steady path[2]. The introduction of a new technology, for example one that alters the cost profile (high cost for constructing capacity, more than compensated by lower production costs once capital is operational), will necessarily cause a temporary drop of production and employment even absent shocks in the financial sector. A mismatch between supply and demand therefore appears, that will only be reabsorbed when (and if) the transition to a new steady state is completed. These mismatches in turn create a space for policy action. Careful tackling of the financial constraints that appear both for firms and households when the economy is in disequilibrium, allows policy makers to soften these constraints and to increase the odds of a successful transition.

4.3 *How to ensure coordination out of equilibrium?*

The Consensus claim that prices and wages are the main (in fact the only) tool to ensure full coordination of plans and decisions should be aban-

[2] The existence of financial constraints is by no means a necessary condition for long term disequilibrium fluctuations. Coordination problems can arise in a barter economy as well.

doned. Once trade happens out of equilibrium, price and wage reactions to market disequilibria not only may fail to restore equilibrium, but may further disrupt the system (*The General Theory*'s chapter 21 already contained this intuition). Some price rigidity may actually help, because it gives agents (in particular firms) the time to learn about the nature of shocks and to adapt to shocks. As prices do not function as signaling devices anymore, their role in providing a nominal anchor is emphasized.

The coordination in a disequilibrium process crucially rests on the elimination of financial constraints that may disrupt the flow of demand and investment (and in the medium term the time profile of the capital stock). Financial constraints are not necessarily linked to market imperfections; rather, they are an almost inevitable consequence of time to build, and of the intertemporal complementarity of investment. As the time profiles of costs and revenues of a given investment are necessarily misaligned, financial constraints appear as the natural feature of each structural change. What is crucial, therefore, is not so much the cost of investment, but the possibility to carry it to its very end. The stability of financing is what allows the long-term engagement of the firm that is the precondition for a successful reaction to economic shocks. Any successful policy action should aim at lengthening the time-horizon of firms and financial institutions, quite an opposite perspective from the Consensus emphasis on short term allegiance to nominal targets.

The assessment of financial markets efficiency should therefore be based on their capacity to reconcile the desire of savers to hold liquid assets, and the necessity of firms to count on stable long-term financing of their investments. An assessment, in other words, that needs to take into account not only a generic 'degree of liberalization' of markets, but also and above all their institutional characteristics. For example, a prevalence of small shareholders, or family ownership of majority stakes, have been shown (e.g., Mayer, 2013) to lead to more stable investment environment than investment funds do. Similarly, bank financing, dismissed by the Consensus because less reliant than stock markets on market discipline, may be a source of long term stable funding.

Similarly, the stability of labour relations is crucial for the continuity of investment, including in human capital. While the Consensus prescribes flexibility of labour markets, the capacity to engage in long-term relationships with workers is key, together with stable flows of financing, in guaranteeing adequate accumulation of capital. The German labour market is a very good case in point. Contrary to the conventional wisdom, that sees

the Hartz reforms as heavy and far reaching liberalizations, an important segment of the German labour market, the one linked to manufacturing and business services, is still ruled by long-term agreements between employers, workers, and local work councils (Carlin and Soskice, 2009). For these 'insider workers' a system of work relations is in place, in which highly paid workers acquire skills through vocational training (within or outside the firm), and are protected by an all-encompassing welfare system. Vocational training creates robust bonds between the firms, that often invest substantial resources in the training, and the workers, whose specific skills could not easily be transferred to other sectors or even to other firms. The strength of this institutional setting has been apparent at the turn of the century, when globalized markets coupled with the aftermath of the reunification, exerted a serious pressure for a restructuring of labour relations. This restructuring happened through a consensus process that did not involve the government, and kept untouched the bond between the firm and the worker. The mutual interest in preserving the long-term relationship between workers and firms in the insider markets led to agreements aimed at reducing costs or to increase productivity without increasing turnover or reducing average job tenure. These agreements could involve on the workers' side labour sharing, flexibility in hours and in labour mobility, wage concessions, reductions in absenteeism. In exchange for this, firms would guarantee continued investments in innovation and in the (vocational) training of workers, and job security.

The German case study shows that the resilience of an economic system depends more on the capacity to preserve a long-term perspective than on pursuing market flexibility at all costs. This can explain why reforms in Europe did not bring the expected fruits.

4.4 *The Unintended Consequences of Structural Reforms*

Structural reforms, in this new perspective, need to be evaluated jointly with the costs and benefits in terms of the stability of economic relationships, and therefore considering the constraints they lift or create to the capacity of firms to implement long-term plans.

Reforms by their very nature destroy resources in some sectors, and create the potential for creation in other, more dynamic and productive ones. There is nothing ineluctable in this process, though. And increased flexibility of product and labour markets does not necessarily make it easier. It may happen – most notably if firms expect demand shortages (linked

to the downward pressure on wages and incomes) or face financial constraints – that the workers from the inefficient sectors instead of feeding innovative activity, remain in the original sectors, but in precarious, low-pay often part-time jobs. Thus, an important segment of the population may become poorer because of reforms, with the consequence that domestic demand is compressed, and more importantly that human capital accumulation and potential growth decrease, instead of increasing as per the objectives of the reform. This polarization marks the appearance of a dilemma that we saw at work in advanced economies in the decade prior to the crisis. Poorer workers and households would either face financial constraints preventing consumption and investment in human capital, or be allowed to pursue previous spending patterns through access to credit; this latter option, nevertheless, came at the price of increased financial fragility, and eventually of a crisis (Fitoussi and Saraceno, 2011). So, the increase in flexibility might eventually result in the polarization between high-paid skilled and low-paid unskilled jobs, with an overall reduction of wage costs.

The dualism in labour markets marks the decline of the middle class and affects the structure of demand (Foellmi, 2006). Wealthier households buy luxury goods manufactured in small volumes, or invest their savings in non-produced assets. Poorest households turn away from domestic products and buy low-cost products from low-wage countries. A form of de-industrialization takes place which has the effect of reducing productivity gains, export capacity and the potential growth rate.

In spite of the rhetoric associating them with increased productivity and potential growth, poorly implemented reforms risk resembling to an internal devaluation, and to a beggar-thy-neighbor policy.

To sum up, productivity and growth depend on much more than the simple flexibility of (labour) markets. They result from the combination of stable economic relationships, and the long-term decisions of public and private actors. Flexibility alone would mostly result in increased inequality, and rather hamper than enhance these factors. This is why the same tendency towards increasing inequality, secular stagnation and a slowdown of productivity can be observed in the US, where markets are more flexible, as much as in European countries.

5. *Adapting EMU Institutions: A Golden Rule?*

The EMU institutional setup is geared towards the short termism of policy makers. The emphasis on nominal target implies the faith in the capacity of markets to converge to the natural equilibrium alone; the same is true for the restrictive interpretation of competition policy by the Commission, that *de facto* prevents industrial policy by Member States.

The current discussion on Eurozone reform happens at a moment when the Consensus is challenged, and it is a good occasion to reintroduce a long term perspective in European policy making. A good starting point would be fiscal policy. The exclusive focus on structural deficit built into European rules has introduced a strong bias against capital spending, being investment politically easier to cut than current expenditure. The result is a chronic deficit of public capital, that the crisis has further deepened.

In general, the multiplier associated with public investment is larger than the overall expenditure multiplier. This is particularly true in times of crisis, when the economy is at the zero-lower bound. Interestingly enough, in these cases projects with longer time to build should be preferred: when the economy is at the ZLB, monetary policy reaction is muted, and the only way to decrease real interest rates is inflation. The supply side deflationary impact of public investment is therefore problematic because it increases the real interest rate. By delaying it public investment becomes more effective in lifting the economy out of the zero lower bound (Le Moigne *et al.*, 2016).

Dervis and Saraceno (2014) recently proposed that the EMU adopts a fiscal rule similar to the one implemented in the UK by Chancellor of the Exchequer Gordon Brown in the 1990s, and applied until 2009. The new rule would require countries to balance their current budget, while financing public capital accumulation with debt. Investment expenditure, in other words, would be excluded from deficit calculation, a principle that timidly emerges also in the Juncker plan (for details, see Creel *et al.*, 2009). Such a rule would stabilize the ratio of debt to GDP, it would focus efforts of public consolidation on less productive items of public spending, and would ensure intergenerational equity (future generations would be called to partially finance the stock of public capital bequeathed to them). Last, but not least, especially in the current situation, putting in place such a rule would not require treaty changes, and it is already discussed, albeit timidly, in EU policy circles.

The golden rule is not a new idea, and in the past it has been criticized (see e.g. Balassone and Franco, 2000) on the ground that it introduces a bias in favor of physical capital and penalise certain expenses, for example education and health care, that – while classified as current – are crucial for future growth. This criticism, however, can be turned into a strength. Dervis and Saraceno propose that at regular intervals, for example in connection with the European budget negotiation, the Commission, the Council and the Parliament could find an agreement on the future priorities of the Union, and make a list of areas or expenditure items exempted from deficit calculation for the subsequent years. Joint programs between neighboring countries could be encouraged by providing co-financing by the European Investment Bank. The modified Golden Rule would in fact yield a return, on a European scale, to industrial policy, a political and democratic determination of the long-term growth objectives of the EU. The entrepreneurial State, through public investment, could once again become the centerpiece of a large-scale European industrial policy, capable of implementing physical as well as intangible investment. Waiting for a real federal budget, the bulk of public investment would remain responsibility of national governments, in deference to the principle of subsidiarity. But the modified Golden Rule would coordinate and guide them towards the development and the well-being of the Union as a whole.

Dervis and Saraceno argue that the implementation of a golden rule of this kind would serve the purpose of focusing on the nature and quality of public spending in relation to the long term growth objectives. It would also force European policymakers to have a periodic and transparent discussion on the investment needs of their economies, and to coordinate policies as part of a process that would increase participation, cohesion and legitimacy in the Eurozone.

References

Adrian, T., Shin, H.S. (2010). Liquidity and Leverage. *Journal of Financial Intermediation*, 19(3), 418-437.

Auerbach, A.J., Gorodnichenko, Y. (2011). Fiscal Multipliers in Recession and Expansion. *NBER Working Papers*, September, n. 17447.

Balassone, F., Franco, D. (2000). Public Investment, the Stability Pact and the 'Golden Rule'. *Fiscal Studies* 21(2), 207-229.

Blanchard, O.J. (1997). Is There a Core of Usable Macroeconomics?. *The American Economic Review*, 87(2), 244-246.

Blanchard, O.J. (2017). Should We Get Rid of the Natural Rate Hypothesis?. *NBER Working Papers*, November, n. 24057.

Blanchard, O.J., Cerutti, E., Summers, L.H. (2015). Inflation and Activity: Two Explorations and Their Monetary Policy Implications. *IMF Working Papers*, November, n. 15/230.

Blanchard, O.J., Galí, J. (2007). Real Wage Rigidities and the New Keynesian Model. *Journal of Money, Credit and Banking*, 39(s1), 35-65.

Blanchard, O.J., Leigh, D. (2013). Growth Forecast Errors and Fiscal Multipliers. *American Economic Review*, 103(3), 117-120.

Blanchard, O.J., Summers, L.H. (1986). Hysteresis and the European Unemployment Problem. *NBER Macroeconomics Annual*, 1, 15-90.

Borio, C. (2017). Through the Looking Glass. *BIS.org*, <https://www.bis.org/speeches/sp170922.htm> (last access 19.10.2017).

Brainard, L. (2017). Understanding the Disconnect between Employment and Inflation with a Low Neutral Rate. *Federalreserve.gov*, <https://www.federalreserve.gov/newsevents/speech/brainard20170905a.htm> (last access 19.10.2017).

Carlin, W., Soskice, D. (2009). German Economic Performance: Disentangling the Role of Supply-Side Reforms, Macroeconomic Policy and Coordinated Economy Institutions. *Socio-Economic Review*, 7(1), 67-99.

Creel, J., Monperrus-Veroni, P., Saraceno, F. (2009). On the Long-Term Effects of Fiscal Policy in the United Kingdom: The Case for a Golden Rule. *Scottish Journal of Political Economy*, 56(5), 580-607.

Delong, J.B. and L.H. Summers (2012). *Fiscal Policy in a Depressed Economy*, Brookings Papers on Economic Activity (Spring): 1–52.

Derviş, K., Saraceno, F. (2014). An Investment New Deal for Europe. *Brookings.edu*, <https://www.brookings.edu/blog/up-front/2014/09/03/an-investment-new-deal-for-europe/> (last access 19.10.2017).

Eichengreen, B., O'Rourke, K. (2009). What do new data tell us. *Voxeu.org*, <https://voxeu.org/article/tale-two-depressions-what-do-new-data-tell-us-february-2010-update> (last access 19.10.2017).

Fàtas, A., Summers, L.H. (2015). The Permanent Effects of Fiscal Consolidations. *CEPR Discussion Paper*, November, n. 10902.

Fitoussi, J.-P., Saraceno, F. (2011). Inequality, the Crisis and After. *Rivista Di Politica Economica*, 1, 9-28.

Foellmi, R. (2006). Consumption Structure and Macroeconomics: Structural Change and the Relationship Between Inequality and Growth. In *Lecture Notes in Economics and Mathematical Systems*, Berlin: Springer.

Friedman, M. (1968). The Role of Monetary Policy. *The American Economic Review*, 58(1), 1-17.

Furceri, D., Mourougane, A. (2012). The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD Countries. *Journal of Macroeconomics* 34(3), 822-832.

Giavazzi, F., Pagano, M. (1990). Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries. *NBER Macroeconomics Annual*, 5, 75-122.

Hicks, J.R. (1973). *Capital and Time: A Neo-Austrian Theory*. Oxford: Clarendon Press.

Kentikelenis, A., Karanikolos, M., Reeves, A., McKee, M., Stuckler, D. (2014). Greece's Health Crisis: From Austerity to Denialism. *The Lancet*, 383(9918), 748-753.

Keynes, J.M. (1936). *The General Theory of Employment, Interest, and Money*. London: McMillan.

Koo, R. (2011). The World in Balance Sheet Recession: Causes, Cure, and Politics. *Real World Economics Review*, n. 58, 19-37.

Kopits, G., Symansky, S.A. (1998). Fiscal Policy Rules. *IMF Occasional Papers*, n. 162.

Leijonhufvud, A. (1968). *On Keynesian Economics and the Economics of Keynes*. New York: Oxford University Press.

Leijonhufvud, A. (1981). The Wicksell Connection. In Leijonhufvud, A. (ed.), *Information and Coordination: Essays in Macroeconomic Theory*, New York: Oxford University Press.

Mayer, C.P. (2013). *Firm Commitment : Why the Corporation Is Failing Us and How to Restore Trust in It*. Oxford: Oxford University Press.

Modigliani, F. (1944). Liquidity Preference and the Theory of Interest and Money. *Econometrica*, 12(1), 5-88.

Le Moigne, M., Saraceno, F., Villemot, S. (2016). Probably Too Little, Certainly Too Late. An Assessment of the Juncker Investment Plan. *OFCE Working Paper*, n. 10.

Ostry, J.D., Loungani, P., Furceri, D. (2016). Neoliberalism: Oversold?. *Finance and Development*, 53(2), 38-41.

Phelps, E.S. (1967). Phillips Curves, Expectations of Inflation and Optimal Unemployment over Time. *Economica* 34(135), 254-281.

Summers, L.H. (2014). U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound. *Business Economics*, 49(2), 65-73.

Summers, L.H. (2016). The Age of Secular Stagnation. What It Is and What to Do About It. *Foreign Policy*, 95(2), 2-9.

Tobin, J. (1964). Economic Growth as an Objective of Government Policy. *The American Economic Review*, 54(3), 1-20.

Tobin, J. (1965). Money and Economic Growth. *Econometrica*, 33(4), 671-684.

Trichet, J.-C. (2010). Reflections on the Nature of Monetary Policy Non-Standard Measures and Finance Theory. *Ecb.europa.eu*, <https://www.ecb.europa.eu/press/key/date/2010/html/sp101118.en.html> (last access 19.10.2017).

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The Fallacy of the Debt-to-GDP Fiscal Sustainability Indicator

1. *Introduction*

The sustainability of fiscal policy is arguably one of the most debated issues in current macroeconomics. The interest emerged during the 1980s owing to a growing public debt trend observed in several developed economies (see, e.g., Azzimonti *et al.*, 2014), and shifted high on the policymakers' agenda after the 2007 global crisis, when concern over the possible consequences for macroeconomic stability and economic growth of increasing budgetary imbalances became widespread both in academia and in the public.

Two main approaches can be discerned in the existing literature on debt sustainability: one is the debt threshold approach, while the other is the debt-stabilizing primary balance approach (see, e.g., Wyplosz, 2011). Conditional on projections about the evolution of the interest rate and the growth rate, the first approach focuses on the future primary budget corrections required to ensure a (terminal) debt target not greater than a threshold level beyond which risk of unsustainability is looming (see, e.g., EC, 2012, 2014; IMF, 2002, 2011; Ostry *et al.*, 2010; Ghosh *et al.*, 2013). The other approach focuses on the primary balance required to

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achieve a stationary debt path (see, e.g., Buiter, 1985; Blanchard, 1990; Blanchard *et al.*,1990). However, given the impossibility to establish uncontroversial debt thresholds and the difficulty of finding strong evidence that a threshold level even exists[1], the second approach should be favoured, since it implies that a debt is considered to be sustainable when it follows a non-explosive path over time, i.e., if it is on a non-increasing trend[2].

To empirically address these issues, the literature has proposed a battery of indicators and tests of sustainability: see, e.g., Miller (1983), Buiter (1983, 1985, 1987), Blanchard (1990), Horne (1991), Ize (1991), Buiter *et al.* (1993), Croce and Juan-Ramon (2003) for empirical strategies based on indicators, and Hamilton and Flavin (1986), Trehan and Walsh (1988), Bohn (1998, 2008) for strategies based on tests[3]. A key feature of this research is that the most generally used synthetic indicator to gauge a country's fiscal discipline and debt sustainability is the evolution of debt-to-GDP ratio. As shown in Canofari *et al.* (2018), however, the problem with this measure is that it is seriously flawed and may lead to wrong and possibly harmful policy measures.

According to Canofari *et al.* (2018), there are at least two major reasons why the debt-to-GDP ratio is a spurious metrics of sustainability: (I) it is not logically consistent to compare a stock relative to a flow variable, although obvious relationships exist between the two; (II) the implied debt sustainability index is not theoretically consistent with the transversality conditions obtained from dynamic optimizing macroeconomic frameworks, which instead pertain to the asymptotic behavior of pure stock variables[4].

To make these points most easily understood, they use an endogenous growth model to show that forward-looking agents' optimizing behavior

[1] See, e.g., IMF (2003), Cordella *et al.* (2010), Wyplosz (2011), Panizza and Presbitero (2014), Pescatori *et al.*(2014), Egert (2015), Schadler (2016), Chudik *et al.* (2017).

[2] Wyplosz (2011) made explicit this suggestion, also noting that in this approach the debt path is a target, while the primary balance is the instrument in terms of macroeconomic policy analyses.

[3] Literature reviews can be found in Balassone and Franco (2000), Larch and Nogueira Martins (2007), Giammarioli *et al.* (2007), Marini and Piergallini (2008).

[4] The drawbacks of the debt-to-GDP ratio as an indicator of fiscal sustainability have been frequently recognized in the literature, prompting many to search for alternative indicators, such as the debt-to-revenues ratio, the debt-to-exports ratio, or the debt-to-GNI ratio (see, e.g., Balassone *et al.*, 2007; Giammarioli *et al.*, 2007; Wyplosz, 2011). As does the debt-to-GDP ratio, however, these other ratios suffer from the difficulties of determining an appropriate ex ante threshold and of displaying a stock variable measured relative to a flow variable.

typically gives rise to a *wealth-based* sustainability index of government policy. More specifically, they use a dynamic macroeconomic model which allows: *a*) fiscal policy to play a key role on the long-run economic growth, thus explicitly modelling the public investment-growth relationship which the IMF-World Bank staff, following a recurring criticism by many observers, now recognizes to be critical for a comprehensive monitoring of debt sustainability over the long term[5]; and *b*) the intertemporal effects of changes in the government's budget balance on the long-run sustainability of the debt policy to be addressed in a more natural and convenient way. Solving then the model for the long-run balanced growth rate equilibrium, they show that the government intertemporal budget constraint implies a fiscal sustainability index (*FSI*) of the form:

$$FSI_t \equiv \left(\frac{VT_t}{W_t}\right) = \left(\frac{D_t}{W_t}\right) + \left(\frac{VB_t}{W_t}\right), \qquad (1)$$

where VT_t is the present value of all current and future tax payments necessary to ensure the long-run sustainability of government debt, D_t is the current stock of government debt, VB_t is the present value of the primary budget balance, and W_t is the current size of national wealth[6].

A number of advantages follow from the above *FSI* indicator. First, all values are derived relative to the current size of wealth, thus avoiding the shortcoming of the debt-GDP ratio where a stock variable is measured relative to a flow variable[7]. Second, the right-hand side of equation (1) includes two (correctly normalized) components: the current stock of government debt, and the present value of the primary budget deficit. Hence, the left-hand side gives the value of fiscal policy adjustment required to

[5] See, e.g., Wyplosz (2011), Buffie *et al.* (2012), IMF and WB (2012), and IMF (2014, 2016).

[6] As standard in forward-looking analysis, a positive interest rate-growth differential restriction applies to equation (1). This condition implies that the debt ratio will explode in the future unless the government runs a large budget surplus to compensate. Hence, in order to stay in a non-explosive path, the total value of the debt outstanding must be paid off by future budget surpluses.

[7] A similar sustainability index has been proposed by Bruce and Turnovsky (1999). They express their measure as a ratio based only on capital stock, whereas we express ours as a ratio based on total wealth. In a different context (the environment), an analogous approach has also been suggested by Arrow *et al.* (2004), who refer to the net worth of an entity (the government or the country) as a base for assessing sustainability. Buiter (1985) was the first to propose the use of the government net-worth to measure fiscal sustainability.

warrant the viability of the long-run fiscal balance as reflected by the two components in the right-hand side of (1). Lastly, being based on endogenous growth model, the index provides a dynamic scoring of the long-run government balance that takes into account the intertemporal nature of fiscal policy and its impact on the growth rate and other macroeconomic variables, and by which we can assess a country's fiscal position as follows:

- If $FSI_t \leq 0$, we shall say that the fiscal policy is sustainable, meaning that the long-run government's budget requires no corrective action;
- if $0 < FSI_t \leq (D_t / W_t)$, we shall say that the fiscal policy is weakly unsustainable, meaning that the government is running a primary surplus, but of insufficient magnitude to fully pay off its debt;
- if $FSI_t > (D_t / W_t)$, we shall say that the fiscal policy is strongly unsustainable, as the government is running a primary deficit which adds to its outstanding debt, thus requiring a corrective action to ensure the intertemporal viability of the government's budget.

Other worthy features of the fiscal sustainability index given in (1) are that (I) it does not imply any threshold level on debt, which is puzzling and highly questioned in academic literature; (II) yields a simple, transparent and standardized tool that can be easily implementable to all countries; (III) consistently with Wyplosz's (2011) advocacy, switches emphasis from levels to paths and computes how much adjustment is required to converge to the stability path; (IV) implies that the adjustment process need not necessarily occur immediately, but better spanned over a longer planning horizon to avoid the deep recessions resulting from huge fiscal contractions and the risk of possible devilish dynamics driven by self-fulfilling expectations of debt non-sustainability (see, e.g., De Grauwe and Ji, 2012; Canofari *et al.*, 2015).

The relevance of these features emerged powerfully during the recent global economic and financial crisis and the associated fiscal austerity in the Eurozone, when policymakers choose to implement restrictive fiscal policy to reduce imprecisely known risks of debt distress (i.e., financing difficulties or worse, partial or total default) linked to a particular debt ceiling. As noted by Wyplosz (2011), however, this strategy can be very costly to any country and self-defeating, as they reduce growth and increase the debt-to-GDP ratio, especially if implemented during a recession (e.g. DeLong and Summers, 2012; Cafiso and Cellini, 2014; House *et al.*, 2017), possibly driving a fully solvent government with a high level of debt

towards the bad, crisis equilibrium under multiple equilibria and self-fulfilling dynamics of debt (un-)sustainability.

In the next section we apply the index given in equation (1) to data for the G-7 economies, and discuss the main sustainability results and the related policy implications. Finally, in section 3 we present the concluding remarks.

2. *Some Empirical Evidence*

To test how the proposed *FSI* indicator works in practice, in Canofari *et al.* (2018) we focused on the G-7 countries (Canada, France, Germany, Italy, Japan, United Kingdom, and United States), and computed values of the indicator for the post-1999 period. Consistently with the restriction imposed on equation (1), the assessment of public finances sustainability was then executed only for those countries in which the after-growth real interest rate came out to be positive.

We obtained annual fiscal and growth data from the IMF World Economic Outlook. We computed the nominal interest rate series by dividing interest payments for period t over the stock of nominal debt at the end of period $t-1$, consistently with Bohn (2008). This enabled us to take into account the fact that government debt is composed of a portfolio of securities with different interest rates. We obtained annual data for households' net total wealth from the OECD, that are available up to 2013. Therefore, since budgetary forecasts contained in the IMF World Economic Outlook are available up to 2021, the computation of our sustainability index uses averages of fiscal variables over nine years[8].

Table 1 reports the government debt-wealth ratio over the period 2001-2013 for the G-7. What stands out is that the figures are now much less threatening than the corresponding debt-to-GDP ratios (Table 2), as sovereign debts amount to only one-fifth of total wealth on average in Table 1, whereas they are close to or even exceed 100 percent of GDP in several countries in Table 2. Openly, this simply reflects the different scaling factor used to measure the level of indebtedness, but no doubt the picture in Table 1 is less gloomy and compelling than commonly supposed in most Fiscal Sustainability Reports released by national and international institutions or grades issued by rating agencies.

[8] Details on data and computations are given in the Appendix.

Table 1. The Government Debt-Wealth Ratio 2001-2013

Table 1: The Government Debt-Wealth Ratio 2001-2013														
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	AVG.
Canada	28%	29%	26%	24%	23%	21%	20%	23%	24%	24%	25%	24%	23%	24%
France	18%	18%	17%	16%	15%	13%	13%	15%	17%	17%	18%	19%	19%	17%
Germany	18%	19%	20%	20%	20%	20%	19%	20%	20%	23%	23%	22%	21%	20%
Japan	33%	35%	36%	39%	39%	39%	39%	42%	43%	46%	48%	49%	49%	41%
Italy	23%	21%	20%	20%	19%	18%	18%	19%	20%	21%	22%	22%	24%	21%
United Kingdom	8%	8%	8%	9%	9%	9%	9%	12%	14%	16%	17%	17%	18%	12%
United States	11%	12%	12%	13%	12%	12%	12%	17%	19%	20%	22%	21%	20%	16%
AVG.	20%	20%	20%	20%	20%	19%	19%	21%	23%	24%	25%	25%	25%	21%

Table 2. The Government Debt-Gdp Ratio 2001-2013

Table 2: The Government Debt-Gdp Ratio 2001-2013														
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	AVG.
Canada	82%	80%	76%	72%	71%	70%	67%	68%	79%	81%	82%	85%	86%	77%
France	58%	60%	64%	66%	67%	64%	64%	68%	79%	81%	85%	89%	92%	72%
Germany	58%	59%	63%	65%	67%	66%	64%	65%	72%	81%	78%	80%	77%	69%
Italy	105%	102%	100%	100%	102%	103%	100%	102%	113%	115%	116%	123%	129%	109%
Japan	154%	164%	170%	181%	186%	186%	183%	192%	210%	216%	232%	238%	244%	197%
United Kingdom	36%	36%	37%	40%	41%	42%	44%	52%	66%	77%	82%	85%	86%	56%
United States	53%	55%	59%	65%	65%	64%	64%	73%	86%	95%	99%	102%	105%	76%
AVG.	78%	79%	81%	84%	86%	85%	84%	89%	101%	107%	111%	115%	117%	93%

Table 3 reports the average interest rate-growth differential over the period 2001-2013 in the countries under investigation. The table shows that Canada, United Kingdom and United States are characterized by negative after growth interest rates. As observed by Bohn (2008) this is consistent with a growth dividend ensuring the sustainability of their fiscal policies.

Table 3. Average After Growth Interest Rate 2001-2013

Table 3: Average After Growth Interest Rate 2001-2013	
Canada	-2,78%
France	0,77%
Germany	1,19%
Italy	2,26%
Japan	0,47%
United Kingdom	-0,68%
United States	-1,24%

We therefore computed the resulting wealth-based indicator from 1999 onwards for countries which exhibit a positive after-growth real interest rate, consistently with equation (1).

Figure 1. The Government Debt-Wealth Ratio, 1999-2013.

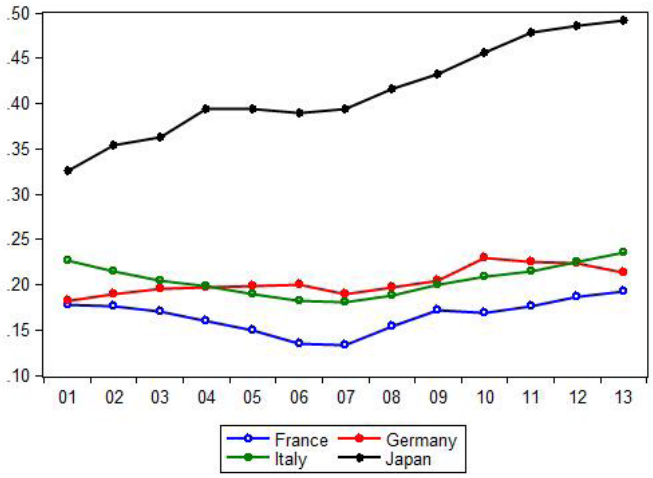
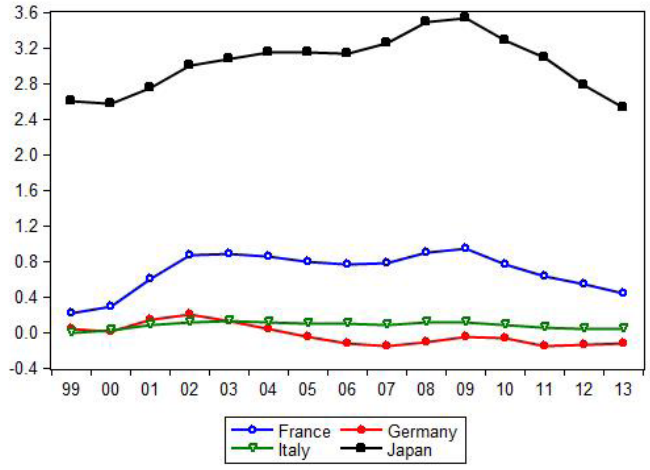


Figure 2. The Wealth-Based Sustainability Indicator, 1999-2013.



The paths for the government debt-weath ratio and the fiscal sustainabilty indicator in these countries are displayed in Figure 1 and Figure 2.

According to Figure 2, the path of the fiscal indicator for Germany and Italy proves to be sustainable, because the index converges to a value $FSI<0$. In this case, primary surpluses along the equilibrium growth path are sufficient to finance the outstanding debt-wealth ratio. The path for France and Japan is unsustainable, because the index systematically displays a value $FSI>0$. In this case, the underlying fiscal policy does not guarantee the intertemporal viability of the government's budget.

In particular, comparing Figure 2 with Figure 1, showing the behavior of the government debt-wealth ratio, it emerges $FSI_t > (D_t / W_t)$ for both Japan and France. This means that the governments in these two countries are running primary deficits, which further worsen their initial fiscal position. Thus, from the foregoing perspective, we are led to conclude that the long-run fiscal policy of France and Japan is 'strongly' unsustainable in that (potentially) large tax corrections, absorbing large fractions of current income, will ultimately be necessary to ensure fiscal viability.

The above results are very different from conventional views and suggest that indicators and tests of government solvency, used in the current fiscal policy literature and based on the dynamics of the debt-GDP ratio, are strongly biased and misleading. Specifically, once private wealth is taken into account for an empirical evaluation of the long-run fiscal balance, results show that the fiscal position is sustainable for both Germany and Italy, and strongly unsustainable for both France and Japan. These findings are obscured if one concentrates on the dynamics of the debt-GDP ratio, and may lead to wrong and perverse policy strategies. The case of Italy to which unnecessary fiscal restrictions and, hence, undue worsening off effects on output and growth are imposed according to the debt-GDP ratio and the SGP, is markedly instructive.

3. *Conclusions*

The significant increase of public debt and deficits in the aftermath of the economic and financial crisis that started in 2008 has raised deep concerns about the sustainability of public finances in many OECD countries and turned on a hot debate on the fiscal policy adjustments necessary to ensure the long-run viability of the government's budget. In academic and public policy debates, the sustainability of fiscal policy is periodically assessed on the basis of the debt-GDP ratio, whereby a stock variable is measured relative to a flow variable. This is logically and theoretically inconsistent if one refers to dynamic macroeconomic modelling, whereby forward-looking agents' optimization incorporates transversality conditions ruling out explosive paths in pure state variables. A typical endogenous growth optimizing model indeed leads to a sustainability index of government policy that is wealth-based, as shown in Canofari *et al.* (2018). Applying this index to post-1999 data for countries that exhibit a positive after-growth real interest rate yields sustainability results which significantly diverge from conventional views. Specifically, the long-run fiscal balance is found to be strongly sustainable for both Germany and Italy, and unsustainable for France and Japan. Accordingly, fiscal policy corrections are strongly needed for France and Japan, but not for Italy and Germany. This signals that indicators and tests of government solvency, used in the current fiscal policy literature, are distorted because they exclude the debt-wealth ratio from the analysis, in sharp contrast with the theoretical predictions of optimizing macroeconomic frameworks, and may lead to undue and perverse policy strategies. Fiscal rules of the type enshrined in the Fiscal Compact in the European Union, according to which member states shall reduce the difference between the debt-GDP ratio and the 60 percent Maastricht reference value at an average rate of one-twentieth per year, are misleading, because they disregard the time path of households' total wealth, which is crucial to assess the degree of sustainability. The case of Italy to which undue fiscal restrictions are imposed according to the debt-GDP ratio and the SGP, is decidedly instructive.

References

Arrow, K., Dasgupta, P., Goulder, L., Daily, G., Ehrlich, P., Heal, G., Lewis, S., Mäller, K.G., Schneider, S., Starrett, D., Wlaker, B. (2004). Are We Consuming Too Much?. *Journal of Economic Perspectives*, 18(3), 147-172.

Azzimonti, M., De Francisco, E., Quadrini, V. (2014). Financial Globalization, Inequality, and the Rising Public Debt. *American Economic Review*, 104(8), 2267-2302.

Balassone, F., Franco, D. (2000). Assessing Fiscal Sustainability: A Review of Methods with a View to EMU. *Banca d'Italia. Fiscal Sustainability Conference*, 21-60.

Balassone, F., Franco, D., Zotteri, S. (2007). The Reliability of EMU Fiscal Indicators: Risks and Safeguards. In Larch, M., Nogueira Martins, J. (eds.), Fiscal Indicators. *European Economy-Economic Papers*, n. 297 (Proceedings from the Directorate-General for Economic and Financial Affairs of the European Commission, September 22, Brussels, 2006).

Blanchard, O.J. (1990). Suggestions for a New Set of Fiscal Indicators. *OECD Economics Department Working Paper*, April, n. 79.

Blanchard, O.J., Chouraqui, J.-C., Hagemann, R.P., Sartor, N. (1990). The Sustainability of Fiscal Policy: New Answers to an Old Question. *OECD Economic Studies*, 15, 7-36.

Bohn, H. (1998). The Behavior of U.S. Public Debt and Deficits. *Quarterly Journal of Economics*, 113(3), 949-963.

Bohn, H. (2008). The Sustainability of Fiscal Policy in the United States. In Neck, R., Sturm, J. (eds.), *Sustainability of Public Debt*, Cambridge: MIT Press, 15-49.

Bruce, N., Turnovsky, S. (1999). Budget Balance, Welfare, and the Growth Rate: Dynamic Scoring of the Long-run Government Budget. *Journal of Money, Credit and Banking*, 31(2), 162-186.

Buffie, E.E., Berg, A., Patillo, C., Portillo, R., Zanna, L.F. (2012). Public Investment, Growth, and Debt Sustainability: Putting Together the Pieces. *IMF Working Papers*, June, n. 12/144.

Buiter, W.H. (1983). Measurement of the Public Sector Deficit and Its implication for Policy Evaluation and Design. *IMF Staff Papers*, 30(2), 306-349.

Buiter, W.H. (1985). A Guide to Public Sector Debt and Deficits. *Economic Policy*, 1(1), 13-79.

Buiter, W.H. (1987). The Current Global Economic Situation, Outlook and Policy Options, with Special Emphasis on Fiscal Policy Issues. *CEPR Discussion Paper*, November, n. 210.

Buiter, W.H., Corsetti, G., Roubini, N. (1993). Excessive Deficits: Sense and Nonsense in the Treaty of Maastricht. *Economic Policy*, 8(16), 57-100.

Cafiso, G., Cellini, R. (2014). Fiscal consolidations and public debt in Europe. *International Tax and Public Finance*, 21(4), 614-644.

Canofari, P., Marini, G., Piersanti, G. (2015). Expectations and Systemic Risk in EMU Government Bond Spreads. *Quantitative Finance*, 15(4), 711-724.

Canofari, P., Piergallini, A., Piersanti, G. (2018). The Fallacy of Fiscal Discipline. *Macroeconomic Dynamics*, DOI:10.1017/S1365100518 000317.

Chudik, A., Mohaddes, K., Pesaran, M.H., Raissi, M. (2017). Is there a Debt Threshold Effect on Output Growth?. *The Review of Economics and Statistics*, 99(1), 135-150.

Cordella, T., Ricci, L.A., Ruiz-Arranz, M. (2010). Debt Overhang or Debt Irrelevance?. *IMF Staff Papers*, 57(1), 1-24.

Croce, M.E., Juan-Ramon, M.V.H. (2003). Assessing Fiscal Sustainability: A Cross Country Comparison. *IMF Working Paper*, July, n. 3/145.

De Grauwe, P., Ji, Y. (2012). Self-fulfilling Crises in the Eurozone: An Empirical Test. *Journal of International Money and Finance*, 34, 15-36.

DeLong, J.B., Summers, L.H. (2012). Fiscal Policy in a Depressed Economy. *Brookings Papers on Economic Activity*, 43 (1), 233-297.

Egert, B. (2015). Public debt, Economic Growth and Nonlinear Effects: Myth or Reality?. *Journal of Macroeconomics*, 43(c), 226-238.

European Commission (2012). Fiscal Sustainability Report 2012. *European Economy*, 8/2012.

European Commission (2014). Assessing Public Debt Sustainability in EU Member States: A Guide. *European Economy Occasional Paper*, n. 200.

Ghosh, A., Kim, J., Mendoza, E., Ostry, J., Qureshi, M. (2013). Fiscal Fatigue, Fiscal Space, and Debt Sustainability in Advanced Economies. *The Economic Journal*, 123(566), F4-F30.

Giammarioli, N., Nickel, C., Rother, P., Vidal, J.-P. (2007). Assessing Fiscal Soundness. Theory and Practice. *ECB Occasional Paper Series*, March, n. 56.

Hamilton, J.D., Flavin, M.A. (1986). On the Limitations of Government Borrowing: A Framework for Empirical Testing. *American Economic Review*, 76(4), 808-819.

Horne, J. (1991). Indicators of Fiscal Sustainability. *IMF Working Paper*, January, n. 91/5.

House, C.L., Proebsting, C., Tesar, L.L. (2017). Austerity in the aftermath of the Great Recession. *NBER Working Paper*, February, n. 23147.

IMF (2002). *Assessing Sustainability*, <https://www.imf.org/external/np/pdr/sus/2002/eng/052802.pdf> (last access 19.10.2017).

IMF (2003). Public Debt in Emerging Markets. *World Economic Outlook*, September.

IMF (2011). *Modernizing the Framework for Fiscal Policy and Public Debt Sustainability Analysis*, <https://www.imf.org/external/np/pp/eng/2011/080511.pdf> (last access 19.10.2017).

IMF and World Bank (2012). *Revisiting the Debt Sustainability Framework for Low-Income Countries*, <http://www.imf.org/external/np/pp/eng/2012/011212.pdf> (last access 19.10.2017).

IMF (2014). Is it Time for an Infrastructure Push? The Macroeconomic Effects of Public Investment. *World Economic Outlook*, October.

IMF (2016). Assessing Fiscal Space: An Initial Consistent Set of Considerations. *IMF Policy Papers*, November.

Ize, A. (1991). Measurement of Fiscal Performance in IMF-Supported Programs: Some Methodological Issues. In Blejer, M.I., Cheasty, A. (eds.), *How to Measure the Fiscal Deficit*, Washington DC: International Monetary Fund, 52-84.

Larch, M., Nogueira Martins, J. (2007). Fiscal Indicators. *European Economy - Economic Papers*, n. 297 (Proceedings from the Directorate-General for Economic and Financial Affairs Workshop Brussels, September 22, 2006).

Marini, G., Piergallini, A. (2008). Indicators and Tests of Fiscal Sustainability: An Integrated Approach. *CEIS Research Paper*, February, n. 111.

Miller, M. (1983). Inflation Adjusting the Public Sector Financial Deficit. In Kay, J. (ed.), *The 1982 Budget*, London: Basil Blackwell.

Ostry, J.D., Ghosh, A.R., Kim, J.I., Qureshi, M.S. (2010). Fiscal Space. *IMF Staff Position Note*, September, n. 10/11.

Panizza, U., Presbitero, F. (2014). Public Debt and Economic Growth: Is There a Causal Effect? *Journal of Macroeconomics*, 41(c), 21-41.

Pescatori, A., Sandri, D., Simon, J. (2014). Debt and Growth: Is There a Magic Threshold?. *IMF Working Paper*, February, n. 14/34.

Schadler, S. (2016). *Does the Level of Public Debt Matter?*. Centre for International Governance Innovation, Policy Brief, April, n. 76.

Trehan, B., Walsh, C. (1988). Common Trends, The Government Budget Constraint, and Revenue Smoothing. *Journal of Economics Dynamics and Control*, 12(2-3), 425-444.

Wyplosz, C. (2011). Debt Sustainability Assessment: Mission Impossible. *Review of Economics and Istitutions*, 2(3), 1-37.

Data Appendix

Date description and their sources for United States, United Kingdom, Canada, Germany, France, Italy and Japan are in the following table.

Table 4: Data definition, frequency and source

Variable	Description	Source	Sample period
Government Debt	Stock of general government gross debt	IMF: World Economic Outlook	1999-2013
Total budget	General government revenue minus total expenditure	IMF: World Economic Outlook	1999-2021
Primary budget	Total budget plus interest expense minus interest revenue	IMF: World Economic Outlook	1999-2021
Present value of primary budget	Average primary budget over nine years period	Own Calculations	1999-2013
Interest payments	Differential between primary budget and total budget	Own Calculations	1999-2015
Implied interest rate	Interest for period t over the government debt stock at time t-1	Own Calculations	1999-2015
Gross domestic product	Gross domestic product at current prices	IMF: World Economic Outlook	1999-2015
After growth interest rate	Average implied interest rate minus average nominal growth rate	Own Calculations	1999-2015

Net financial wealth	Households' financial assets minus financial liabilities	OECD: Dataset 720	1999-2013
Real wealth	Households' non financial assets	OECD: Dataset 9B*	1999-2013
Net total wealth	Real wealth plus net financial wealth	Own Calculations**	1999-2013

* The source for Italy is Banca d'Italia: *La ricchezza delle famiglie italiane 2014*.
** Household total net wealth is the value of total assets (the total amount of financial assets plus the total amount of non-financial assets) minus the total value of outstanding liabilities. The following financial assets and liabilities are included: currency and deposits,securities other than shares (i.e. treasury bills, bonds, certificates of deposit, commercial paper, debentures, and similar instruments normally traded in the financial markets), loans, equity and investment fund shares/units (classified into real estate funds, bond funds, mixed funds or equity funds), life insurance and annuity entitlements, pension and standardised guarantee programmes (including net equity of households in pension funds), financial derivatives, and employee stock options and other accounts receivable and payable. More details are in OECD data definitions.

Serenella Caravella[*], Francesco Crespi[**]

On the prevalence of tax tools in Italian industrial policy

1. *Introduction*

The effects of the recent economic crisis on the Italian economy have been severe, in terms of GDP fall, decline in manufacturing production, shrinking employment rate and domestic demand. Italy's economic role on the European scene has been consequently harmed with respect to that played by the core countries, especially Germany (Celi *et al.*, 2018).Within this context, industrial policies have been increasingly recognized as powerful instruments to enhance the competitiveness of European economy and to reduce economic imbalances among EU countries (European Commission, 2012, 2014). In this perspective, the Italian government has approved an ambitious plan, embracing several tools to support industrial recovery, innovation activities and economic growth. After two decades of 'marginalized' industrial policy, Italy has started to invest public resources specifically devoted to these aims, launching the plan *Industria 4.0* which encompasses actions targeted to private companies mainly consisting in tax benefits.

The aim of this chapter is to describe the main policy measures recently implemented in Italy to sustain the recovery of firms' production and competitive performances and to discuss these actions with respect to the

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overall balance of the policy mix aimed at the industrial system. Such a discussion will specifically take advantage of the development of economic analysis, which suggests that public intervention in this field should move from a market failure perspective and embrace a systemic policy making approach.

The structure of the paper is as follows. Section 2 discusses the main consequences of the crisis on the Italian economy, while section 3 describes the key tools for industrial policy adopted by the Italian government for the next three-year period. Section 4 discusses the recent development in economic literature addressing the different approaches that can be adopted in industrial policy. Then, section 5 describes the Italian attitude to the use of systemic and demand-side policies and, finally, section 6 draws the main conclusions emerging from the analysis.

2. *The impact of the crisis on Italian industry*

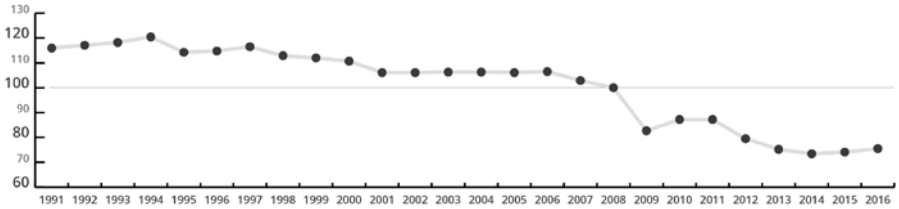
Italy has been severely hit by the 2008 global crisis. Although the Italian GDP is growing more rapidly at present (ISTAT, 2017), its level still remains below the pre-crisis level with a pace of growth lower than the Euro Area average.

The decline of the Italian GDP has been paralleled by a serious rise in the unemployment rate, which in 2016 reached 11,7%. Compared to 2008, the employment rate of high-skilled and specialized workers has fallen by 6%, while youth unemployment has increased from 11,7% in 2008 to 22,5% in 2016 (ISTAT, 2017). As shown in Figure 1 the industrial production faced a sharp contraction in 2009 (-18,7% compared to the previous year) continued to decline till 2014 and started to recover from 2015, with levels that are currently well below the pre-crisis levels.

With respect to other European countries (Figure 2), the dynamics of industrial production in Italy registered the poorest performance, which was due more to the slump in domestic demand than to the decline of international competitiveness (Lucchese *et al.*, 2016).

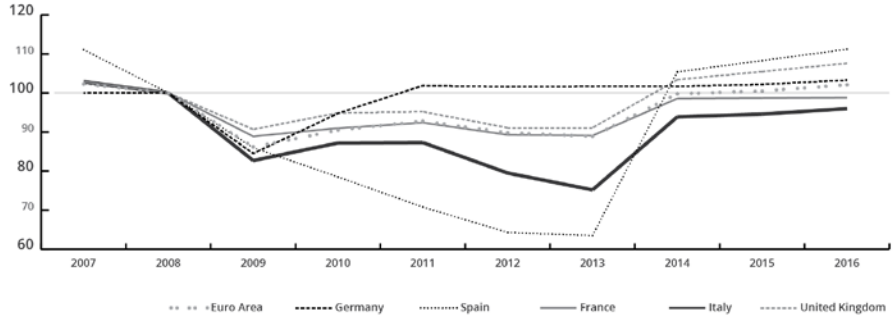
In fact, as reported in Figure 3, Italy has had a similar trend in export performance with respect to Germany following a steady increase after the fall in 2009. Conversely domestic demand, stifled by austerity policies, negatively contributed to the evolution of industrial production over time.

Figure 1. Production in industry in Italy. Annual data, not seasonally adjusted and adjusted by working days, 2008 = 100.



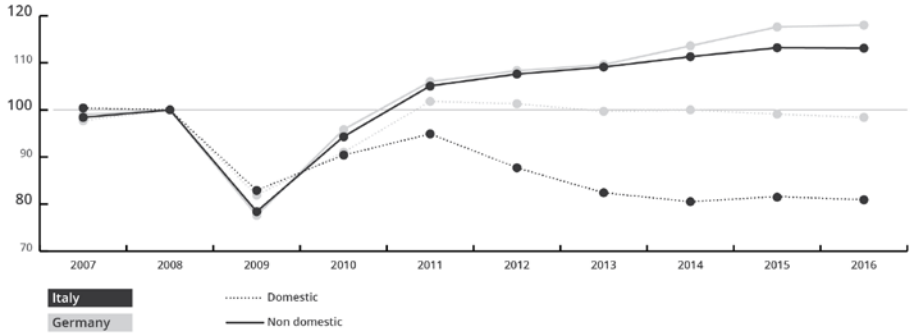
Source: Eurostat data, Short-term business statistics, Industry. Authors' elaborations.

Figure 2. Production in industry in Europe. Quarterly data, seasonally adjusted and adjusted by working days, 2008 = 100.



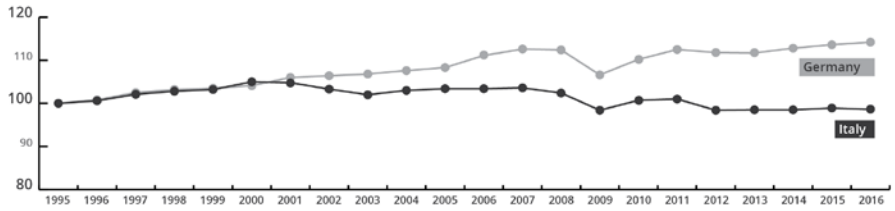
Source: Eurostat, Short-term business statistics, Industry. Authors' elaborations.

Figure 3. Turnover in industry, domestic and non-domestic market. Annual data, not seasonally adjusted and adjusted by working days, 2008 = 100.



Source: Eurostat, Short-term business statistics, Industry. Authors' elaborations.

Figure 4. Real labor productivity per person in Germany and Italy, 1995 = 100.



Source: Eurostat, Annual National Accounts, Auxiliary indicators.

As a consequence, the degree of heterogeneity between firms' performance has increased, so that export-oriented firms over-performed those oriented only towards domestic-market (Arrighetti and Ninni, 2014)[1].

Italy seems to share with other European countries, belonging to the weakening 'periphery' around Germany, an increasing industrial and technological gap when compared to the German 'core' of Europe. In fact, in contrast with Germany, the Southern 'periphery' of Europe has experienced a permanent loss of productivity which coupled the downsizing process which affected the industrial structure (Cirillo and Guarascio, 2015; Pianta, 2014; Simonazzi, Ginzburg and Nocella, 2013; Stöllinger *et al.*, 2013).

As shown in Figure 4, the Italian labor productivity trend is steadily worsening during the post-2008 period. As argued by Vergeer and Kleinknecht (2014), such slowdown has been due to the increase in labor input as well as the weakening of the Mediterranean economies' capacity for innovation and productivity growth which, in turn, has favored the creation of low-productivity and precarious jobs, rather than skilled jobs.

Even though the Italian industrial downturn has been particularly sharp in recent years, from the early 90's Italy's economic performance has been weak for a number of different reasons, including the end of the active industrial policy season launched in the decades following the Second World War. During that period a crucial role was played by public owned enterprises. In particular IRI (Istituto per la Ricostruzione Industriale) was the most evident expression of the State's entrepreneurial action both with respect to the overall magnitude of its investments and to the diversity of

[1] See Lucchese *et al.* (2016) for a thorough discussion of this specific evidence.

its spheres of operation (Pastorelli, 2006). IRI represented a key actor in the industrial development of the country, by ensuring an adequate flow of R&D investments and innovative activities and allowing the Italian productive system to become competitive also in technological advanced economic sectors.

In the last two decades, the entrepreneurial role of public sector has been narrowed as well as other industrial policies, leading to an increase in the technological gap between Italy and other European countries. The European integration process has left less room for the active role of national industrial policies. In compliance with the Maastricht Treaty requirements, Italy intensified the privatization process, which started during the 1990s. As pointed out by Antonelli *et al.* (2014), until 1994, the mechanism of knowledge governance of Italian state-owned enterprises (SOE) was particularly effective since long-term R&D activities were aimed at implementing a knowledge base characterized by high levels of generic content and a wide scope of application. On the contrary, as shown by Munari *et al.* (2002), the divestiture by the State was paralleled by a significant reduction in the stock of permanent R&D resources by the new established private companies, who increased the purchasing of external technology in order to quickly achieve productivity gains from short-term projects.

Hence, the loss of most 'big state-owned firms' downsized the Italian presence in the high-tech sector and, in addition, reduced the necessity for private companies to grow in order to be competitive with the former. This facts encouraged the industrial system to develop through small-sized and low-tech focused firms, often grouped in industrial districts (Onida, 2004).

In parallel, within the 'new' European context, 'producer' States were converted into market 'regulator' ones. In that, national government action has been reduced to 'State aid' issued according to supra-national requirements and targeted to specific European 'horizontal' objectives of common interest, such as R&D and innovation, environmental protection and energy saving, and SME's including risk capital, etc.

As documented by the European State Aid Scoreboard, which is annually published by the European Commission on the basis of the expenditure reports provided by Member States, over the period 2002-2013, Italy, Spain and Portugal registered major falls in State aid, a trend in contrast with France and the northern Europe countries over the same period, who significantly increased their expenditure.

Italian public funding for industry, in particular, has been cut by 72%. The few resources employed were allocated to the Northern and Central regions, where firms were encouraged in their internationalization strategies and R&D expenditures. Conversely, the main tool of industrial policy in supporting firms belonging to the Southern area became Europe's structural Funds, aimed to create the conditions needed to sustain firms in less favoured areas (Brancati, 2015). In this framework, the lack of national measures, such as public investment and direct support to firms which are not allowed by the Europe's Structural Fund's regulations, has dramatically increased the regional disparities between Northern and Southern Italy during the last ten years (SVIMEZ, 2017).

3. *The new interest on industrial policy in Europe and Italy*

After at least two decades of 'marginalized' industrial policies, the Europe 2020 strategy marks an important turning point towards 'active' industrial policies. In the context of Europe 2020 strategy two main initiatives have been taken: *Innovation Union* (European Commission, 2010a) and *An integrated industrial policy for the globalization era* (European Commission 2010b). The former is aimed at ensuring the conditions for firms to innovate, while the latter is targeted at supporting manufacturing production's transition towards more-sustainable patterns of development.

In addition to other EU 2020 initiatives, such as Horizon 2020 R&D programme, COSME[2] and Structural Funds, the *Industrial Compact* was issued in 2014 with the mission of returning industrial activities to 20% of GDP. This has been followed by the creation in 2015 of The European Fund for Strategic Investments (EFSI) and the subsequent launch of the 21 billion *Juncker Investment Plan*.

In accordance with the renewed attention towards industrial policies aimed at revitalizing the European economy, Italy has carried out several measures to align its policies with the horizontal objectives of European programmes, namely Horizon 2020, the European Digital Agenda and the seven European Grand Challenges. More specifically, the measures to support Italian firms until 2020 in different fields such as R&D and innovation, internationalization, new entrepreneurship, local and production de-

[2] The Competitiveness of Small and Medium-sized Enterprises.

velopment are encompassed within the *Italy's Industria 4.0 Plan*, which has been drawn up by a multi-stakeholder steering committee[3] and explicitly avoids vertical or sector based measures in order to focus on 'horizontal' actions directed at sustaining firms' innovative investments and promoting technological advances and productivity.

The most important actions implemented in Italy in this policy framework are synthetically described in the following section.

3.1 *Government support to firms*

Corporate Tax rate.

Since the 2017 fiscal year, the rate of corporate taxation, IRES (Imposta sul reddito delle società), has been cut from 27,5% to 24%. This measure falls within the inclusive fiscal intervention launched by the Italian Government to reduce the fiscal burden on families and companies by cutting the principal taxes, such as IRES, IRAP (Imposta regionale sulle attività produttive) and property tax.

The estimated effects of the IRES tax rate cut provided by ISTAT (2017) and IRPET (2017), indicate a linear cut by 12,7%, corresponding to 9 billion of euros over the three-year period. However, the cost of these tax reliefs are lower if the reduction to the ACE (Support to economic growth) launched with the Law Decree 201/2011 is taken into account (see Tab. 1).

Iper and super-ammortamento.

The so-called *Hyper and Super-depreciation*, have been designed within the *4.0 framework* in order to incentivize firms' investments in new capital goods, tangible and intangible assets. The first measure consists in allowing a depreciation for 240% of the investment value for high-tech purchases that are recognized as 4.0 goods, such as 3D printers, 3D scanners, nanotechnologies, big data, robotics and smart materials. The latter allows

[3] Including the Presidency of the Council of Ministers, the Ministry of Economy and Finance, the Ministry of Economic Development, the Ministry of Education, University and Research, the Ministry of Labor and Social Policy, the Ministry of Agriculture, the Ministry of Environment and Protection of Land and Sea and Representatives of Regional Governments in collaboration with Leading Italian University and CRUI, Research Canters, National Promotion Banks, Association of Manufacturing and Service companies and Trade Unions.

a notional increase of the purchase cost related to new investments on capital goods of 40%.

This measure, issued by 2016 Italian Stability Law, has been confirmed by the 2017 Italian Stability Law for 2017 and 2018 and has been modified by the 2018 Italian Budget Law, which has established both a 10% cut in the rate and the exclusion of motor vehicles (also as instrumental goods) from depreciation.

The evaluation of costs associated with these measures over the three-year period 2017-2019 performed by IRPET is around 3,5 billion (IRPET, 2017), without considering the aforementioned recent 10% cut for the super-depreciation instrument.

R&D tax credits.

Launched by 2015 Stability Law and reinforced by 2017 Stability Law, the adopted R&D tax credit considers incremental R&D. More specifically, this measure supports private investment in R&D for product and process innovation to ensure the competitiveness of companies. This measure provides a 50% tax credit on increases in R&D costs up to an annual ceiling of 20 million euros a year per beneficiary, calculated on the basis of the average expenditure on R&D in the years 2012-2014. The tax credit can be used to cover a wide range of different taxes and contributions, even if companies report losses. Furthermore, this measure is applicable to R&D expenditure borne in 2017-2020, consisting in basic research, industrial research and experimental development.The cost of this instrument as estimated by IRPET (2017) amounts to 1,4 billion in terms of reduced tax revenues (727 million of euros for both 2018 and 2019).

Patent box.

The patent box regime has been implemented by the Italian Government with the twofold purpose of encouraging the relocation in Italy of IP assets held abroad and to attract inward investment by Italian companies and Italian branches of foreign entities. It was introduced with the 2015 Stability Law and enhanced by the Law Decree 29/2015. The patent box consists in the exclusion from IRES and IRAP's tax bases of a percentage of the income sourced from the direct use or license of intellectual property (IP) assets by companies and commercial entities which carry out research and development (R&D) activities. In detail, the qualifying intangible assets entitled for the Italian patent box regime include (I) trademarks, (II) industrial patents, utility models, biotech inventions, patents for plant

varieties, semiconductors and topographies (III) business, commercial, industrial and scientific information and know-how (IV) formulae and processes, (V) design models (VI) and software protected by copyright.

The percentage of IP income subject to tax relief, has been currently set at 50%, while it was equal to 30% and 40% for 2015 and 2016, respectively. Specifically, the IP income is calculated differently according to its sources, including royalties from IP rights, profits originating from the direct use of IP assets and capital gains arising on the transfer of IP ownership.

Support for Start-up firms.

This policy pillar includes a series of policy measures implemented in order to create favourable conditions for the development of new innovative enterprises. The regulatory framework has been set by the *Italy's Startup Act* issued by the Law Decree 179/2012 which provides several actions to support innovative enterprise at each stage of the whole lifecycle. These measures are applied without sectorial restriction and encompass all new established innovative enterprises (less than 5 years), identified by at least one of the following criteria:

- at least 15% of the company's expenses are devoted to R&D activities;
- at least 1/3 of the total workforce represented by Ph.D. students, holders of a Ph.D. or researchers or 2/3 of the total workforce holding a master's degree;
- the enterprise is the holder, depositary or licensee of a registered patent or the owners and authors of a registered software.

The main benefits for the identified innovative start-ups involve:

- Cuts to costs associated with the Business Register and to the annual fee due to the Chamber of Commerce;
- Exemption from fiscal penalties, such as the computation of a minimum income and taxable base for corporate taxation purpose;
- Deduction from taxable income on revenues resulting from stock options offered as remunerations;
- Cost exemptions for compensation of VAT credit;
- 30% deduction on personal income tax (IRPEF) and 30% deduction on the taxable income for company tax purposes;

» Fast-track, simplified and free-of-charge access to the SME Guarantee Fund.

Other measures include:

Fondo Nazionale di Garanzia.

The *Fondo Nazionale di Garanzia* (FG) was launched in 2000 with the mission to create funding opportunities for creditworthy, but rationed SMEs, by insuring up to 80% of the value of a bank loan through a public guarantee, up to a maximum of 1,5 million euros.

According to EU regulation on competition, the only beneficiaries should be SME firms belonging to manufacturing sectors, construction and services. In contrast, agriculture, automobile and financial services are excluded from the measure.

In 2008, the volume of bank loans public guaranteed by Italian FG was 11 billion but, after the credit crunch stemming from the global crisis, it increased rapidly to 54 billion in 2014. It currently covers over 658.000 operations and from 2018 the public guaranteed percentage will be differentiated according to a rating system. The 2017 Italian Stability Law has restored the found with 895 million, about 7,3% of the total cost of the measures adopted to support firms in Italy over the period 2017-2019 (see Table 1).

New Sabatini Law.

This measure was created by the Law Decree 69/2013, with the purpose of strengthening competitiveness in the Italian production system and facilitating access to credit for SMEs operating in all sectors of production, including agriculture and fishing, as well as finance leasing operations.

In detail, the New Sabatini Law allows Italian SMEs to access grants for the acquisition of machinery, plant, and other capital goods, including digital technologies, such as hardware and software. The measure covers interests paid on loans provided by intermediary banks or by using leasing linked to the MISE. The grant ranges from € 2.000 to 2 million € and is calculated at a facilitated 2,75% interest rate. Additionally, a 30% increase in the grant is provided for 4.0 purchasing.

As shown in Table 1, the new industrial policies supporting firms' investments and innovation consist of tax incentives for both machinery and innovative investments. Without considering the recent changes in-

Table 1. Estimated cost of the measures adopted to support firms in Italy 2017-2019.

ESTIMATES (SOURCES)	MEASURE	TYPOLOGY OF ACTION	2017	2018	2019	TOTAL 2017 2018 2019
ISTAT 2017	**IRES reduction**	Legal tax rate cutting	**3.000**	**3.000**	**3.000**	**9.000**
ISTAT 2017	**ACE reduction***	Tax relief	**(+) 908**	**(+) 908**	**(+) 908**	**(+) 2.724**
IRPET 2017	**Superammortamento** and Iperammortamento**	Tax relief	**0**	**1.131**	**1.923**	**3.054**
IRPET 2017	**Loan guarantees for SMEs (FG)**	Public guarantee on bank loans	**895**			
IRPET 2017	**New Sabatini Law**	Public grant	**28**	**84**	**112**	**224**
IRPET 2017	**R&D tax credit**	Tax relief	**0**	**727**	**727**	**1.454**
IRPET 2017	**Support for Start-up firms**	Distinct measures	**50**	**122**	**97**	**269**
						12.171 billion

** Calculated at 2.3 % rate*
***Calculated at 40% rate*
The estimates do not take in account last changes introduced by 2018 Budget Law on ACE and "superammortmento".

troduced by 2018 Budget Law referring to ACE and superammortamento, the overall cost of the most important industrial policies launched by the Italian government amounts to around 12 billion euros.

The relevant part of these resources is going to be provided as public subsidies in the prevalent form of tax credits, which seems to be preferred to direct grants by Italian policy makers. On this specific aspect some considerations might be worth.

On the one hand when compared to selective grants, tax credits have less administrative costs. Moreover, in the absence of any pre-selective procedure, tax credits are neutral with respect to industry or sector and firms' characteristics. Thus, the adoption of R&D tax credits allows for the minimization of discretional decisions, which can affect the selection procedure required for the allocation of R&D direct grants (Bozeman and Link, 1984).

On the other hand, R&D tax credits have been criticized by much literature, which has emphasized the importance of discretionary procedures in ensuring successful innovation activities. Such claims arise around the advantages that are thought to be associated with the selectivity procedure for R&D grants. Firstly, the selection procedure represents a guarantee against the inclusion of non-R&D activities in deductible costs and increases the chances to select most innovative research projects (Antonelli and Crespi, 2013). Moreover, as argued by David *et al.* (2000), tax credit users tend to adopt such incentives to fund projects with the highest private rate of return and which, thus, require short-term research efforts. In contrast, the public funding of R&D by means of direct selective grants seems to increase firms' probability of undertaking projects with a high social rate of return. Hence, the allocation of direct grants on the basis of a discretionary procedure aimed at the evaluation of the actual content of private firms' research projects, is potentially better suited to fill the gap between the private and social returns of innovation investment.

4. *Insights from the literature*

The policy framework described so far suggests that the new interest in industrial policy in Italy is involving a significant amount of public resources to sustain firms innovative and development strategies, and that these are distributed mainly through tax instruments. In this section we argue that this type of policy actions represents only a part of a modern industrial policy according to most recent economic analyses, that mainly focussed their attention on innovation and technological change as the main driving forces for industrial development and competitiveness (Fagerberg *et al.*, 2004). In particular, a first stream of research refers to the proactive-entrepreneurial role that public sector should have to drive technological progress and industrial transformation, by creating, rather than only fixing, markets for innovative goods (Mazzucato, 2015). A second stream relies on the idea that innovation is essentially an 'holistic' process and, by definition, its support implies the adoption of 'holistic' innovation policies instead of linear ones (Edquist, 2014).

The first line of research tries to go beyond the narrow interpretation of the role of the State in supporting innovation and industrial development associated with a *market-failures policy based* perspective. Indeed, this traditional view depicts public sector as a mere fixing entity whose objective is to solve substantial market failures by providing the appropriate incentives to private firms to invest in innovative activities for the generation of technological and scientific knowledge (Arrow, 1962; Nelson, 1959). In this perspective, innovation is seen as a linear process going from research activities to the market introduction of new products or processes. Thus, the main policy issue is to increase the propensity of firms to invest in innovation activities, which is harmed by several factors: limited appropriability of research outputs, sunk costs in innovative investments, risks and the uncertainty associated with innovative investments. The central argument here is that the presence of different forms of market inefficiencies leads to a gap between the private and social returns of innovation. In order to balance such a trade-off, innovation policies, mainly targeted towards private firms, are adopted. Most of these measures include grants and concessional loans which are aimed at increasing the marginal rate of return of innovative investments, or tax reliefs that create a reduction in the marginal costs associated with innovative investments.

However, public sector funding can, and actually often does, much more than fixing market failures (Mazzucato, 2015). For example, government funded the riskiest research and led to the most radical innovations (for instance internet technology and nanotechnology), by founding the early stage development of technologies through large scale and long-term investments. By creating new products and related markets, public sector can push forward the boundaries of technologies, drive industrial renewal and structural change processes rather than just incentivizing or stabilizing existing markets or sectors (Mazzucato, 2015).

On the other hand, going beyond the conception of innovation as a linear process by adopting an 'holistic' perspective in the analysis of innovation, allowed the understanding of the role of innovation systems and of the importance of multiple actors involved in the knowledge generation process. This aspect has been largely emphasized by both institutional tradition of innovation studies (e.g., Freeman, 1987; Lundvall, 1992) and evolutionary theories (e.g., Metcalfe, 1995; Nelson and Winter, 1982) according to which, innovation is the result of the interactive process between many individual actors whose interactions are regulated by institu-

tions, therefore it stems from the interdependence between institutions (habits and practices), learning processes, and networks (Freeman, 1987)[4].

According to the 'holistic' approach, «innovation is not just about basic research but is also about basic education, demand-side factors (such as innovation procurement and product quality requirements), creation of new organizations (such as the stimulation of entrepreneurship and the formation of policy organizations), interactive learning between organizations, the development of new regulations (e.g. for patents or public procurement), and incubators to support new companies and venture capital for innovation, to name a few of the most crucial elements» (Edquist, 2014: 4). In that, the innovation process works as a 'system' which encompasses «all important economic, social, political, organizational, institutional, and other factors that influence the development, diffusion, and use of innovations» (Edquist, 1997: 28).

In other words, this approach rejects the idea of an optimal state of the system as an achievement target for policy, since it considers innovation policy as a process continuously on the run, whose interactive nature includes a plurality of public and private actors. The interaction process recognises the possibility of 'system failure', rather than 'market-failure',

[4] The first theorization of the systemic nature of innovation comes from the seminal contribution by Chris Freeman (1987). In describing the congruence in Japanese society's institutional networks interactions in managing new technologies, he emphasized four main innovation system elements. The first refers to the role of policy in creating comparative advantage by means of strategic industrial policies. The second involves the specific role of corporate R&D in order to assimilate external knowledge, while the third element relates to the importance of human capital in the successful implementation of large technological systems. Finally, the fourth factor is related to the conglomerate structure of Japanese industry, which is composed of large firms and, thus, able to internalize the externalities associated with innovations in supply chains.
Many contributions since those of Freeman, have provided a number of particularly useful insights, enriching the systemic innovation theory. Lundvall (1992) draws attention to the role of non-R&D-based innovation, such as buying machinery, training of workers, or design, whose systemic interactions and complementarities have been deeply investigated within the innovation systems framework.
Edquist and Johnson (1997) shed light on the role of institutions in shaping the innovation setting and coordinating the innovation process. They list the different types of institution that matter for innovation systems on the basis of a series of characteristics, i.e. formal versus informal (customs, traditions, and norms), basic (e.g., laying down basic arrangements on property rights, conflict management rules, etc.) versus supportive (the specific implementation of basic institutions), hard (binding, and policed) versus soft (more suggestive), and consciously or unconsciously designed.

leading to low innovation performance due to a lack of coordination between the elements of the 'innovation system'.

In this view, the traditional justifications linked to the market failure-based policies associated with R&D policies is enlarged by adding further goals associated with the recourse to public support for innovation, including the distribution of knowledge, the coordination of different agents and the possibility of increasing the cognitive capacity of firms.

Therefore, this perspective overrides the traditional view of innovation in terms of the market failure approach to R&D policy and puts more emphasis on the crucial role played by the institutions in creating, both jointly and individually (Metcalfe, 1995), the 'proper' institutional conditions needed to sustain technological improvements and innovation (Nelson, 1993). Hence, compared to the traditional industrial technology frameworks, the 'holistic' view of innovation provides a more complex setting for industrial policies by adding further economic and institutional elements concerned with learning as well as searching and exploring (Lundvall, 1992).

The central point of the systemic approach is that, in addition to all the instruments that are traditionally the domain of science and technology policy, the policy toolbox must also include a public research investment program and education-oriented policies, while paying, at the same time, particular attention to the general industrial and regional policy setting. Hence, industrial policies aiming at fostering the industrial transformation of the economies and at fuelling structural change processes based on the generation and adoption of new technology should consider a vast array of instruments including not only tax incentives but also:

- Public R&D spending for universities and other public research institutions;
- Funds for mission-oriented programs (defense, space, agriculture, health, energy or Industrial technology) and general purpose technologies (GPTs) that have an impact on a wide variety of sectors;
- Financing programs for tertiary education;
- Selective, public subsidies for specific innovative projects pursued by firms and other research actors;
- Innovative public procurement, which occurs when public contracts present innovative characteristics.

With respect to the latter instrument, the so-called *Innovative Public Procurement* appears particularly important in stimulating demand-driven

innovative investments since it ensures the conditions to create or consolidate markets by reducing the level of uncertainty (Edquist, 2015; Geroski, 1990). This is especially true in those industries characterized by high R&D sunk costs and uncertain demand conditions (Chang and Andreoni, 2016; Edler and Georghiou, 2007; Edquist, 2015; Georghiou *et al.*, 2014)[5].

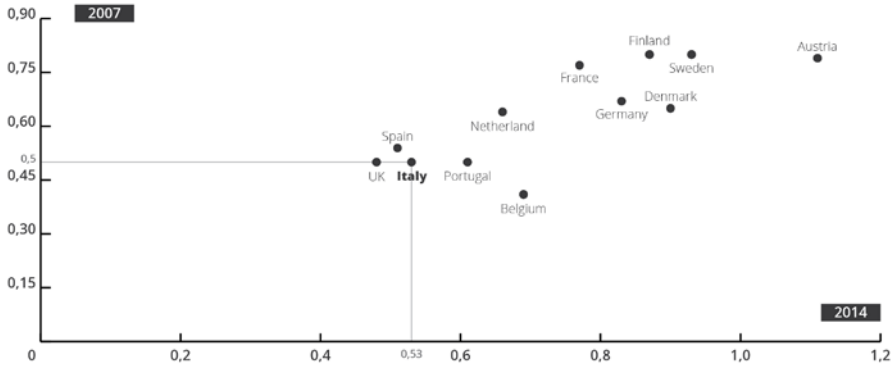
Building on these considerations, in the next section we analyse how such systemic policies have been implemented in Italy in recent year, in order to evaluate how the Italian industrial policy mix is balanced in terms of the intensity of adoption of different policy pillars. In particular, we will present figures regarding the funding levels of public research and tertiary education system, as well as the rate of diffusion of innovative procurement practices.

5. *The systemic elements of industrial policy in Italy*

A first way to look at systemic aspects of industrial policy is to consider the intensity of public sector effort towards research activities which is represented by the share of R&D public funding relative to GDP. As shown in Figure 5, over the period 2007-2014, the highest level of this indicator was recorded in Austria (0,79% in 2007; 1,11% in 2014), followed by Sweden. High values for this indicator are registered also in Finland, Germany and France, while the lowest levels are recorded in Portugal (0,5% in 2007; 0,6% in 2014), Italy (0,5% in 2007; 0,56% in 2014), Spain (0,5%, in 2007; 0,51% in 2014) and UK (0,5% in 2007; 0,48% in 2014).

[5] With regard to the role of demand in pulling innovation, after the seminal contribution by Schmookler (1966), it has been largely neglected by most of literature. However, some exemptions can be found in recent evolutionary works (Andersen, 2001; Metcalfe, Foster, Ramlogan, 2006; Metcalfe, 2001; Saviotti, Pyka, 2004) which, by including demand conditions among the determinants of innovative performances, have pointed out the importance of demand and consumption practices in relation to innovation and productivity growth. In his path-breaking study, Schmookler (1966) claimed the importance of demand dynamics in influencing investment in inventive activities across products and industries by arguing that demand conditions influence the desirability and realization of inventions. In that, the existence of expected profitability and the potential expansion of market demand represents the key stimulus for inventive activities.

Figure 5. Public R&D expenditures (% of GDP).

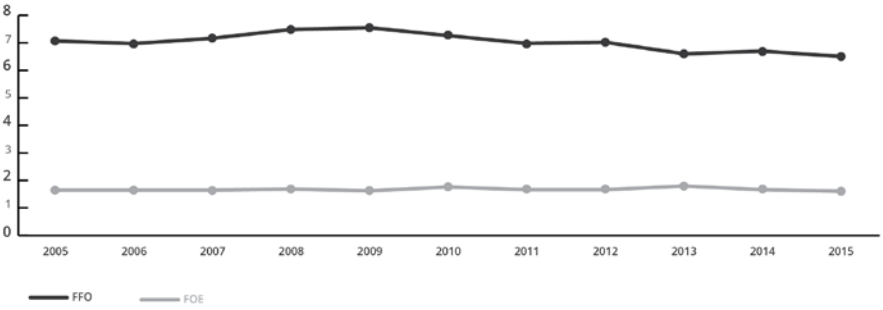


Source: Eurostat, Science, Technology and Digital Society, Statistic on Research and Development.

More specifically, Figure 6 shows that the financial funds for universities (FFO) and other research institutions (FOE) have gradually decreased after 2008. The recent reforms of Italy's higher education system determined a serious costs-cutting. In this regard, the FFO trend declined, by moving from a maximum of 7,48 billion in 2009 to a minimum of 6,43 billion in 2015. Similarly, also the public financing of FOE dropped, by losing 172 million in 2015 with respect 2010 value (1,73 billion).

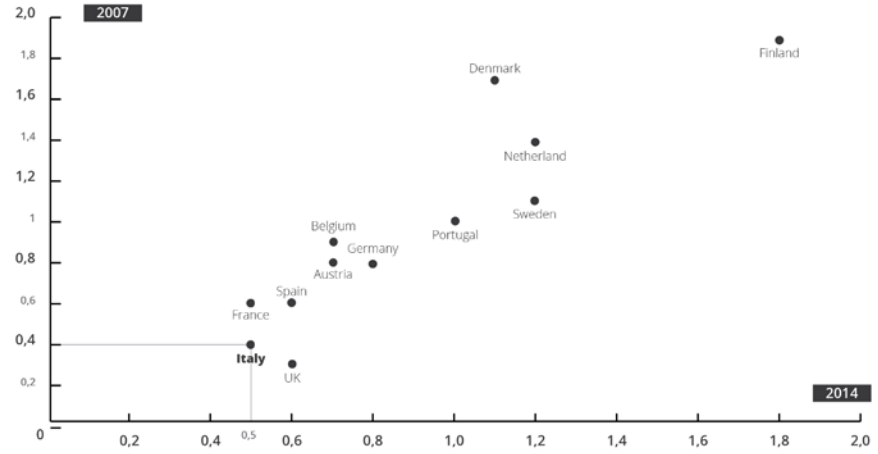
High education policy is a key pillar of a modern, systemic industrial policy. Figure 7 shows that also Italy's propensity to invest in higher educa-

Figure 6. Public founding for universities (FFO) and research institutions (FOE).



Source: Authors' elaborations from ministerial acts.

Figure 7. General government expenditure in tertiary education.



Source: Eurostat, Economy and Finance, General government expenditure by function.

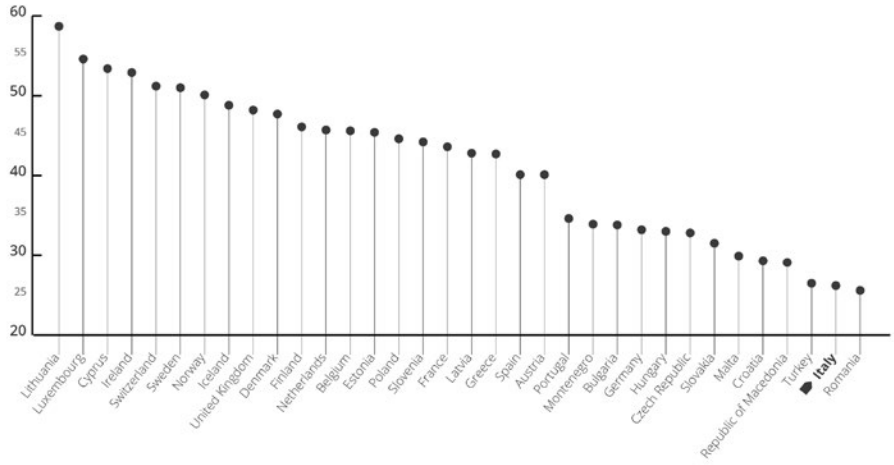
tion represents an issue. The graph reports the statistics referring to public expenditure on tertiary education from universities and other higher education institutions for 12 EU Member States over the period 2007-2015.

The highest level of public spending on tertiary education relative to GDP is observed in Finland followed by Denmark. High levels are also recorded in the Netherlands and Sweden, but also in Portugal (1,0%, both in 2007 and 2015). Italy (0,5% in 2007 and 0,4% in 2015) and UK (0,6% in 2007 and 0,3% in 2015) registered the lowest levels.

These data have important implications in terms of the quantity and quality of human capital available for the economic system, a driving factor for industrial development, transformation and competitiveness. As shown in Figure 8 referring to the share of graduates on the total population between 30-34 recorded in 2016, Italy reports a percentage equal to 26,2, which is lower only than Romania (25,6). In contrast, with percentages higher than 50, the best performance have been registered by Lithuania (58,7), Luxemburg (54,6), Cyprus (53,4), Ireland (52,9), Switzerland (51,2) and Sweden (51).

By focussing our comparisons on Germany, the industrial leader in Europe, during the last fifteen year Italy's gap in tertiary education expenditure has been large and fairly stable if considered in terms of GDP ratios. Germany invests more than 25 billion euros per year (0,8% of GDP), while Italy less than 6 billion (0,4% of GDP). A significant gap, which

Figure 8. Tertiary education attainment, age 30-34, year 2016.



Source: Eurostat, Regional Statistics, Education and Training.

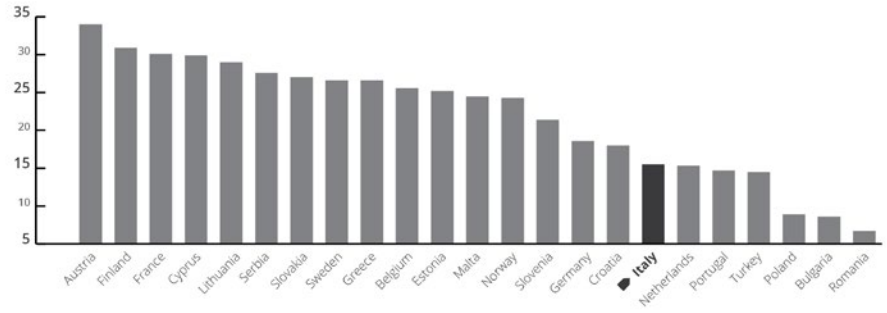
however can be filled in a limited time span and reasonable resources, considering that 5,7 billion are needed to reach the 0,8% of GDP and that, as previously discussed, new public resources to sustain private firms amount to 12 billion euros in the 2017-2019 period.

Finally, Figure 9, Figure 10 and Figure 11 allow us to evaluate the role of public demand in shaping innovation activities. Data have been drawn from the Community Innovation Survey and cover the three-year periods 2010-2012 and 2012-2014.

While general public procurement can play a broad positive influence on innovation activities by increasing demand potential (Crespi and Guarascio, 2017), Innovative Public Procurement (IPP) occurs when the public sector deliberately acts as an early adopter of innovative solutions that are not yet available on a large-scale commercial basis. On the one hand, IPP provides the critical mass of demand needed to foster industry in investing in innovative solutions by helping companies to reach economies of scale and enlarge their business. On the other hand, the public sector benefits from such innovative solutions, since they improve and modernize public services by creating higher quality and more cost efficient solutions.

By looking at Figure 9 referring to 2010-2012 CIS (for which data are available for most relevant EU countries), it emerges that in Italy the percentage of innovative firms with a procurement contract is modest (15,5%) with respect to countries like Austria (34%), Finland (30,9%)

Figure 9. Public sector procurement and innovation in the enterprises.

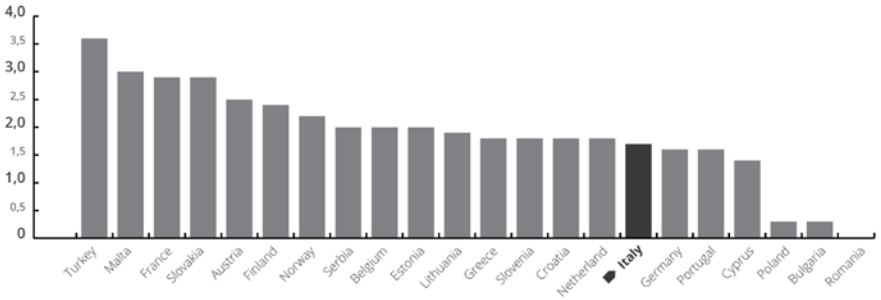


Source: Eurostat, Community Innovation Survey 2010-2012.

and France (30,1%), but also Greece (26,6%), Sweden (26,6%) and Belgium (25,6%). This suggests that in Italy the role of public demand in shaping innovation activities has been, in general, lower than in other EU countries. Moreover, the instrument of innovative public procurement as a demand side innovation policy has been rarely adopted if only 1,7% of innovative firms introduced innovations because required by the procurement contract (Figure 10).

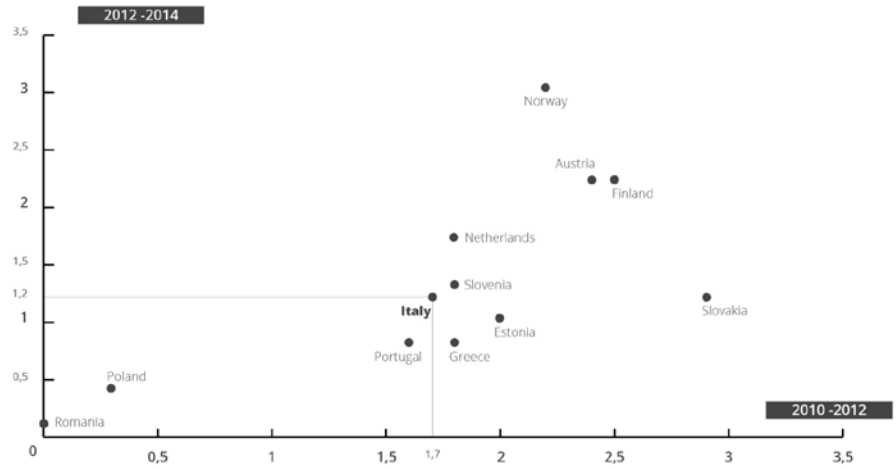
The marginal role of IPP in Italy is confirmed when data for the 2012-2014 period is considered (Figure 11), suggesting that such instrument is still not adequately adopted in Italian industrial policy, though it would imply the use of additional public resources only associated with the quality of competences of contracting authorities.

Figure 10. Percentage of innovative enterprises with Innovative Public sector procurement (2010-2012).



Source: Eurostat, Community Innovation Survey 2010-2012.

Figure 11. Percentage of innovative enterprises with Innovative Public sector procurement (2010-2014).



Source: Eurostat, Community Innovation Survey 2010-2012 and 2012-2014.

6. *Conclusions*

This essay provided a description and discussed the characteristics of the main industrial policies adopted in Italy in recent years. The analysis showed that tax incentives appear to be the main tool adopted, asmost measures implemented for the next three-years will consist of tax reliefs to sustain firms' investment activities, innovation and competitiveness. However, it has been argued that the current industrial policy mix is not in line with the suggestions emerging from relevant economic literature, which emphasized the key role of systemic instruments in a modern industrial policy.

In particular, by looking at the efforts made by main EU members towards systemic policies, it has been shown that Italy severely lags behind leading countries with respect to public investment in R&D and high education programs. Moreover, Italy showed a limited ability to use public

demand as an effective industrial policy tool to favour the emergence and development of new markets and to sustain innovative activities by firms.

According to the reviewed literature, the limited use of systemic policies does not allow to fully exploit the potential of the public sector to sustain the industrial recovery of the country. Moreover, the effectiveness of the tax tools already adopted risks to be harmed by the weakness of complementary framework policies. In this respect, the main suggestion emerging from the above discussion concerns the need to move toward a more balanced mix in Italian industrial policies, by paying more attention to the contextual factors, whose relevance in sustaining structural change process fuelled by the generation and diffusion of new technologies has been widely acknowledged in the scientific debate. Considering that in terms of public resources the costs of tax tools already adopted in the current industrial policy strategy are significant, we believe that there is enough room to re-balance the current policy mix in this direction.

References

Andersen, E.S. (2001). Satiation in an evolutionary model of structural economic dynamics. *Journal of Evolutionary Economics*, 11(1), 143-164.

Antonelli, C., Crespi, F. (2013). The "Matthew effect" in R&D public subsidies: The Italian evidence. *Technological Forecasting and Social Change*, 80(8), 1523-1534.

Antonelli, C., Amidei, F.C., Fassio, C. (2014). The mechanisms of knowledge governance: State owned enterprises and Italian economic growth, 1950-1994. *Structural Change and Economic Dynamics*, (31), 43-63.

Arrighetti, A., Ninni, A., eds. (2014). *La trasformazione 'silenziosa'*, <http://www.industrialpolicy.net/wp-content/uploads/2014/11/La_trasformazione_silenziosa-Arrighetti_Ninni1.pdf> (last access 19.10.2017).

Arrow, K.J. (1962). The Economic Learning Implications of by Doing. *The Review of Economic Studies*, 29(3), 155-173.

Bozeman, B., Link, A.N. (1984). Tax incentives for R&D: a critical evaluation. *Research Policy*, 13(1), 21-31.

Brancati, R., ed. (2015). *Le strategie per la crescita. Imprese, mercati, governi. Rapporto MET 2015*. Roma: Donzelli Editore.

Celi, G., Ginzburg, A., Guarascio, D., Simonazzi, A. (2018). *Crisis in the European Monetary Union: A Core-Periphery Perspective*. London: Routledge.

Chang, H.J., Andreoni, A. (2016). Industrial Policy in a Changing World : Basic Principles. *Neglected Issues and New Challenges. 40 Years of the Cambridge Journal of Economics Conference*, 1-52.

Cirillo, V., Guarascio, D. (2015). Jobs and Competitiveness in a Polarised Europe. *Intereconomics*, 50(3), 156-160.

Crespi, F., Guarascio, D. (2017). The demand-pull effect of public procurement on innovation and industrial renewal. *LEM Papers*, n. 20/2017 (*Laboratory of Economics and Management*, Sant'Anna School of Advanced Studies, Pisa, Italy).

Edler, J., Georghiou, L. (2007). Public procurement and innovation-Resurrecting the demand side. *Research Policy*, 36(7), 949-963.

Edquist, C. (1997). Systems of innovation approaches − Their emergence and characteristics. In Edquist, C. (ed.), *Systems of innovation: Technologies, Institutions and Organizations*, London, UK: Pinter Publishers.

Edquist, C., Johnson, B. (1997). Institutions and Organizations in Systems of Innovation. In Edquist, C. (ed.), *Systems of Innovation: Technologies, Institutions and Organizations*, London, UK: Pinter Publishers.

Edquist, C. (2014). Striving Towards a Holistic Innovation Policy in European Countries - But Linearity Still Prevails!. *Science, Technology, and Innovation Policy Review*, 5(2), 1-19.

Edquist, C. (2015). Innovation-related Public Procurement as a Demand-oriented Innovation Policy Instrument. *CIRCLE Working Paper*, n. 28/2015 (Center for Innovation, Research and Competences in the Learning Economy, Lund University, Sweden).

European Commission (2010a). *Europe 2020. A strategy for smart, sustainable and inclusive growth*. COM (2010) 2020 final, Brussels.

European Commission (2010b). *An integrated industrial policy for the globalization era*. COM (2010) 614, Brussels.

European Commission (2012). *A stronger European industry for growth and economic recovery industrial policy - Communication update*. COM (2012) 582, Brussels.

European Commission (2014). *For a European industrial renaissance*. COM (2014) 14, Brussels.

Fagerberg, J., Mowery, D., Nelson, R. (2004). *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.

Freeman, C. (1987). *Technology policy and economic performance: lessons from Japan*. London: Pinter.

Georghiou, L., Edler, J., Uyarra, E., Yeow, J. (2014). Policy instruments for public procurement of innovation: Choice, design and assessment. *Technological Forecasting and Social Change*, 86, 1-12.

Geroski, P.A. (1990). Procurement policy as a tool of industrial policy. *International Review of Applied Economics*, 4(2), 182-198.

Howells, J., James, A., Malik, K. (2003). The sourcing of technological knowledge : distributed innovation processes and dynamic change. *R and D Management*, 33(4), 395-409.

IRPET (2017). *Le novità della Legge di Bilancio 2017*, <http://www.irpet.it/wp-content/uploads/2017/01/sa-legge-di-bilancio-2017.pdf> (last access 19.10.2017).

ISTAT (2017). *Il mercato del lavoro: la lenta ripresa e la disparità nei gruppi sociali. Rapporto Annuale 2016*. May 17th. <https://www.istat.it/it/archivio/199318> (last access 19.10.2017).

ISTAT (2017). *Gli effetti dei provvedimenti fiscali sulle imprese*. June 16th. <https://www.istat.it/it/archivio/201365> (last access 19.10.2017)

ISTAT (2017). *Stima preliminare del Pil*. November 14th. <https://www.istat.it/it/archivio/213741> (last access 19.10.2017).

Kleinknecht, A., Verspagen, B. (1990). Demand and innovation: Schmookler re-examined. *Research Policy*, 19(4), 387-394.

Lucchese, M., Nascia, L., Pianta, M. (2016). Industrial policy and technology in Italy. *Economia e Politica Industriale*, 43(3), 233-260.

Lundvall, B.A. (1992). *National systems of innovation: An analytical framework*. London: Pinter.

Malerba, F. (1985). Demand structure and technological change: The case of the European semiconductor industry. *Research Policy*, 14(5), 283-297.

Mazzucato, M. (2015). Innovation systems : from fixing market failures to creating markets. *Revista do Serviço Público*, 66(4), 627-640.

Metcalfe, J.S. (1995). Technology systems and technology policy in an evolutionary framework. *Cambridge Journal of Economics*, 19(1), 25-46.

Metcalfe, J.S. (2001). Consumption, preferences, and the evolutionary agenda. *Journal of Evolutionary Economics*, 11(1), 37-58.

Metcalfe, J.S., Foster, J., Ramlogan, R. (2006). Adaptive economic growth. *Cambridge Journal of Economics*, 30(1), 7-32.

Mowery, D., Rosenberg, N. (1979). The influence of market demand upon innovation: a critical review of some recent empirical studies. *Research Policy*, 8(2), 102-153.

Munari, F., Oriani, R., Sobrero, M. (2010). The effects of owner identity and external governance systems on R&D investments: A study of western European firms. *Research Policy*, 39(8), 1093-1104.

Munari, F., Roberts, E.B., Sobrero, M. (2002). Privatization processes and the redefinition of corporate R&D boundaries. *Research Policy*, 31(1), 31-53.

Nelson, R.R. (1959). The simple economics of basic scientific research. *Journal of Political Economy*, 67(3), 297-306.

Nelson, R.R. (1993). *National systems of innovation*. New York: Oxford University Press.

Nelson, R.R., Winter, S.G. (1982). *An evolutionary theory of economic change*. Cambridge MA: Belknap.

Onida, F. (2004). *Se il piccolo non cresce*. Bologna: Il Mulino.

Pastorelli, S. (2006). Lo stato imprenditore e la qualificazione tecnologica dello sviluppo economico italiano. L'esperienza dell'IRI nei primi decenni del secondo dopoguerra. *Banca d'Italia. Quaderni dell'Ufficio Ricerche storiche*, n. 12, <https://www.bancaditalia.it/pubblicazioni/quaderni-storia/2006-0012/Q12_Pastorelli.pdf> (last access 19.10.2017).

Peltzman, S. (1976). Toward a More General Theory of Regulation. *The Journal of Law and Economics*, 19(2), 211-240.

Pianta, M. (2014). An industrial policy for Europe. *Seoul Journal of Economics*, 27(3), 277-305.

Rosenberg, N. (1974). Science, invention and economic growth. *The Economic Journal*, 84(333), 90-108.

Saviotti, P.P., Pyka, A. (2004). Economic development by the creation of new sectors. *Journal of Evolutionary Economics*, 14(1), 1-35.

Simonazzi, A., Ginzburg, A., Nocella, G. (2013). Economic relations between Germany and southern Europe. *Cambridge Journal of Economics*, 37(3), 653-675.

Stöllinger, R., Foster-McGregor, N., Holzner, M., Landesmann, M., Pöschl, J., Stehrer, R. (2013). A "Manufacturing Imperative" in the EU – Europe's Position in Global Manufacturing and the Role of Industrial Policy. *Wiiw Research Report*, 391 (October).

SVIMEZ (2017). *Rapporto SVIMEZ 2017 sull'economia del Mezzogiorno. Introduzione e sintesi*, <http://www.svimez.info/images/RAPPORTO/materiali2017/2017_11_07_linee_app_stat.pdf> (last access 19.10.2017).

Van Den Ende, J., Dolfsma, W. (2005). Technology-push, demand-pull and the shaping of technological paradigms - Patterns in the development of computing technology. *Journal of Evolutionary Economics*, 15(1), 83-99.

Vergeer, R., Kleinknecht, A. (2014). Do labour market reforms reduce labour productivity growth? A panel data analysis of 20 OECD countries (1960-2004). *International Labour Review* 153(3), 365-393.

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The 2017 Budget Law and recent changes in corporate taxation[1]

Introduction

The 21st century has opened with huge pressures for a profound transformation of economic systems. The progressive integration of the Eurozone and the ongoing massive worldwide movement in financial and real capital boosted economic growth and high profits for larger firms, at the expense of a prudent assessment of the economic fundamentals of stock, credit and housing markets. In this phase, economic and fiscal policy tried to empower the growth process, taking into account expanding economic integration and increasing tax competition. It is well known that the financial crisis abruptly halted this pattern and the European economy contracted sharply after the credit bubble burst. Member countries have been hit differently and recovered with different speeds, thus making evident dissimilar structural problems, especially for those countries in which the financial crisis triggered a sovereign bond crisis. Beyond the country-specific situation and policies, the general difficulty of EU countries in recovering from the crisis lead to a decreasing trust in the EU integration process and consequently in the tax harmonisation attitude of member countries. EU policy makers, compelled by the concurring need to consolidate public budgets and to deal with tax competition at financial and corporate level, have generally favoured firms with the aim of consolidating economic recovery.

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In this general framework, Italy exhibited a specific structural weakness and GDP growth rate is still lagging behind other economic peers. After the severe sovereign bondcrisis in 2011, Italian governments have been forced to focus on fiscal consolidation; nonetheless, budget bills included tax incentives and other measures to encourage firms to expand their workforce and to invest in assets. Moreover, to narrow the productivity gap[2], specific incentives to increase research and development activity and to embrace digital transformation of production processes have been progressively launched. Notwithstanding the fact that four different governments have been in power between 2011 and 2017, the choice to invest in the enhancement of economic activity has been steadily maintained. However, the effects of these stimuli have been much slower to appear than expected, so confirming the predominant role of expectation and business confidence over pure monetary incentives. Notwithstanding this difficulties, we do think that several measures can contribute to a long-run strengthen of economic activity in Italy, whereas in some areas it is still difficult to identify a clear path.

In this paper, we try to assess the main provisions that intervened on the corporation tax regime in the recent years, with a focus on the 2017 budget law. The paper is built on the identification of four structural hurdles to the robust growth of Italian firms (competitiveness, undersized dimension, debt bias and investment gap) and on the analysis of recent tax provisions designed to deal with these issues. The paper is organised as follows: the first paragraph sketches the four problems and the general content of the 2017 budget law; paragraph 2 discusses the trend in corporation tax burden and the recent statutory tax rate change; paragraph 3 describes the new optional regime available for unincorporated firms; paragraph 4 analyses the more recent changes in the Allowance for Equity regime, considering the effectiveness of this measure; paragraph 5 discusses the general framework of investment incentive policies in Italy. Sections 6 concludes.

[2] The structural weaknesses of the Italian economy have been analysed by copious literature, recently attempting to identify the cause of low GDP growth. Among the key drivers of this sluggish growth - a productivity gap has been identified in the data (see OECD, 2017). TFP in Italy declined by 0,3% per annum in 1998-2014, while increasing in other Eurozone countries, and even more in non-EU countries.

1. *A brief overview of recent changes in corporate taxation*

After the introduction of the profit corporate tax (IRPEG and then IRES) in the early 1970's, corporate tax rates have been increasing until the mid 1990's, so worsening the long-lasting competitiveness problem of Italian firms[3]. In the framework of Monetary Union, the exchange devaluation policy being unavailable, the tax rate component arose as a key factor of competitiveness. Italy, as other highly taxed European countries, has tried to face competitiveness issues and tax competition by recurrent adjustments to the tax system. Since the end of the 1990's, Italy's several tax cuts can be observed but the statutory tax rate always remained above the EU average. Nevertheless, the high level of economic integration and the de-materialisation of production process makes tax competition even harder.

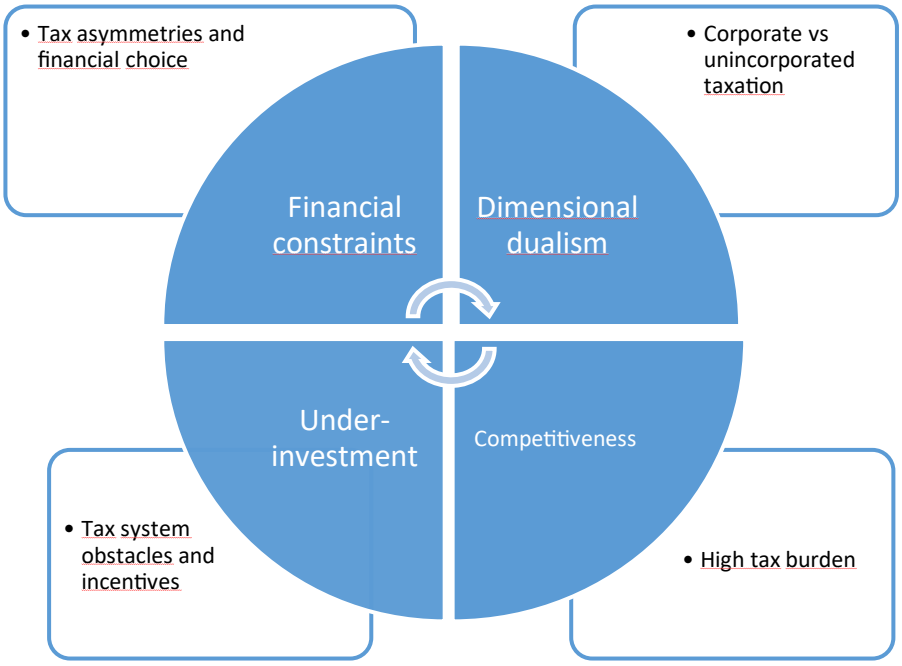
The competitiveness gap has been exacerbated by a historical dualism of firm dimension in the Italian economic system. On the one hand, the larger firms, competing in a multinational framework are forced to operate in several jurisdictions. On the other hand, industrial districts and small flexible firms, the traditional backbone of an export-led growth, have been recently challenged by globalisation and the digital innovation wave, so exhibiting high mortality rates, especially during the financial crisis. The Italian tax system has traditionally seconded the dichotomy by designing a sort of dual tax system, which favoured small firms but at the same time introduced disincentives to dimensional growth.

The relatively underdeveloped Italian capital market has amplified this dimensional dualism and has triggered financial fragility: on the one hand, high leverage ratios are indissolubly linked to tax advantage for debt financing – proportional to the tax rate level – and implicit in the definition of profit tax. Moreover, family based governance and capital market imperfections push firms, especially small and medium sized enterprises (SMEs), towards self-financing and bank debt. During the recent financial crisis, the resulting high leverage of Italian firms has favoured banking system fragility and credit crunch[4].

All the aforementioned distortions contribute to a structural underinvestment in fixed capital and R&D, so affecting the general innovation

[3] It is worth noting that, notwithstanding the slowdown of productivity and the connected loss in competitiveness have been extensively analysed in empirical literature, there is no agreement on causes and appropriate measurements (see for instance IMF, 2013).
[4] See Bonaccorsi di Patti and Finaldi Russo (2017).

Figure 1. The Italian economic system: structural problems and tax biases.



absorptive capacity. Indeed, financial constraints, high tax rates and a lack of a well-designed and consistent industrial policy – considering both financial and tax incentives – did not encourage capital expenditure.

Figure 1 summarises – in the inner circle – these four structural problems and – in the outer boxes – the related tax biases. The impact of the recent financial crisis disclosed the extreme fragility of Italian economic system, showing how structural problems have been interacting, so hampering a fast economic recovery.

Since 2011, Italian governments have intervened – mainly through the budget laws – to amend some of the tax distortions and to enlarge investment incentives, but the effectiveness of these reforms on economic activity level is still not satisfactory. More precisely, the last two years have seen a number of significant changes to profit tax rules, which can be distinguished into two groups of measures. The first group modifies the general structure of the profit tax in line with the objectives of the

reforms implemented in the last fifteen years; the second group includes some short-term measures aimed to incentivize private investments.

These changes have been introduced thorough Budget Laws. Table 1 shows the revenue impact of the main tax changes for the corporate sector included in the Stability Law for 2016 (law 208/2015, upper part of the table) and in the Budget Law 2017 (law 232/2016, bottom part of the table). Jointly considered, the two Budget Laws cut the tax burden on firms by 2,5 billion in 2017 and more than 8 billion in 2018 and 2019. The most significant changes concern the decrease in corporate tax rate (from 27,5 to 24%) and the investment tax incentives introduced with the Stability Law for 2016 and expanded by the Budget Law for 2017.

Table 1. Tax changes on firms introduced by Stability Law 2016 and Budget Law 2017.

Main Fiscal Measures on Corporate Sector

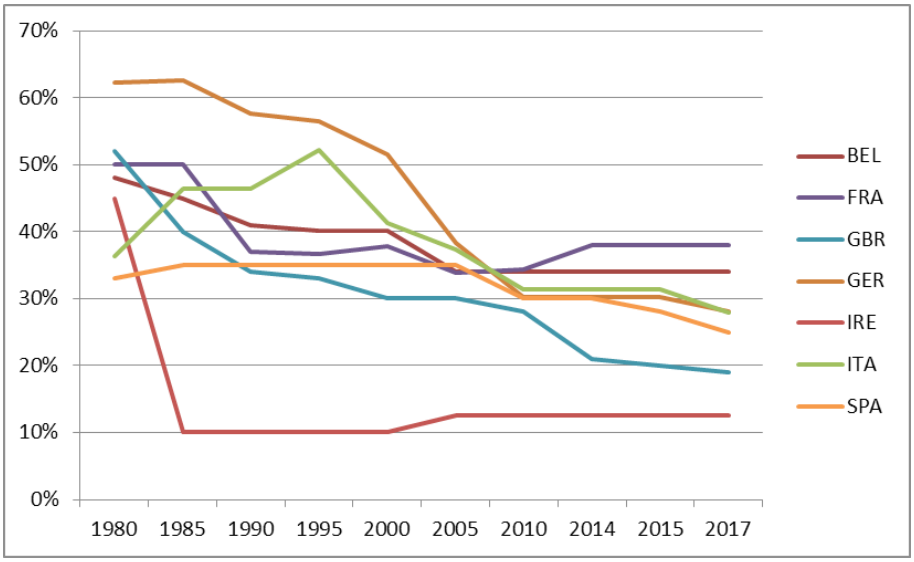
Budget Law 2016	**2017**	**2018**	**2019**
Decreases in Revenue	**-4,538**	**-5,832**	**-5,832**
Tax rate cut from 27,5% to 24% (excluding financial sector)	-2,978	-2,938	-2,938
Interest deduction from IRES and IRAP for financial sector	0	-1,020	-1,020
Increase in depreciation deductions	-943	-1,258	-1,258
Tax Credit for New Investment in the *Mezzogiorno*	-617	-617	-617
Budget Law 2017			
Decreases in Revenue	**-78**	**-4,278**	**-4,681**
IRI - Partnerships proportional tax option (24%)	0	-1,986	-1,236
Increase in depreciation deductions (extension)	0	-1,131	-1,923
Group VAT and small enterprises	0	-228	-586
Tax Credit for R&S Investment	0	-727	-727
Subsidy for SME and innovative start ups	-78	-206	-209
Increases in Revenue	**2,026**	**1,687**	**1,583**
Change in ACE deduction (Aiuto alla Crescita Economica)	1,706	1,527	1,423
Purchase value of land and equity investments (extension)	320	160	160
Total impact on Net Borrowing	**-2,590**	**-8,423**	**-8,930**

Source: Authors' elaboration on MEF data.

2. *Competitiveness and high tax burden*

Italy, Germany and France are generally considered high tax rate countries. Indeed, in the early 1980's Germany and France levied at least 50% of corporate profits, whereas the Italian total statutory tax rate (IRES and ILOR/IRAP) was below 40% (Figure 2). In Italy, the total statutory tax rate on corporate profits reached the maximum level in 1996 (53,2 percent), against the flow of other EU member countries, which had started to react to international tax competition in the early 1990's, by reducing tax rates and enlarging tax bases. Figure 2 illustrates these tax rate trends for Italy and the main EU countries.

Figure 2. Statutory corporate tax rates. Selected EU countries (1980-2017).



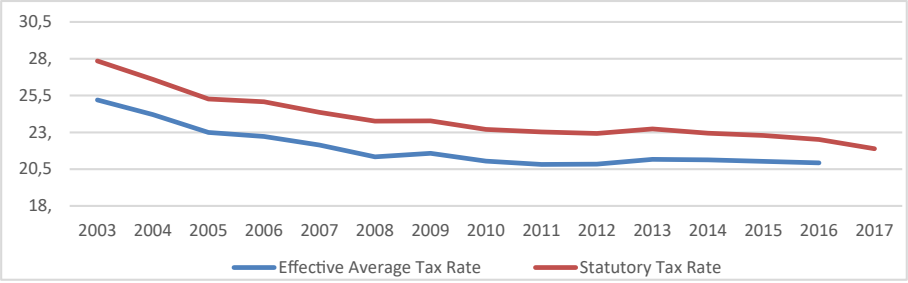
Source: Authors' elaboration on OECD (Revenue Statistics) and Eurostat (Taxation Trends) data.

As Germany kept on reducing tax rates, Italy joined the tax competition contest with the reform entered into force in 1998[5], which reduced

[5] The Visco reform (dlgs. 461/97) modified several aspects of the tax system among which it is worth referring to the introduction of IRAP (Imposta Regionale sulle Attività Pro-

both the statutory and effective tax rate[6]. Several other tax rate adjustments took place in the last two decades in all member countries, showing a convergence to an average level slightly above 20% (Figure 3).

Figure 3. EU 28 Top Statutory and Effective Average Tax Rates (Non-weighted averages 2003-2017).



Source: Authors' elaboration on Eurostat (Taxation Trends) data.

As for Italy, the 2016 Stability law envisaged a decrease in the non-financial corporation tax rate − a 3,5 point reduction in IRES from 27,5% to 24% by 1 January 2017 − which can be considered the last step in the long process of decrease in the statutory tax rate[7] (Figure 4).The decrease in the IRES tax rate obviously benefits corporations[8], so leaving apart Small and Medium-size enterprises, generally set as unincorporated entities and so liable to progressive personal income tax rate. In 2017 only four EU countries (Belgium, France, Germany and Malta) still have a statutory tax rate above 30%, so Italy decreased its rank-

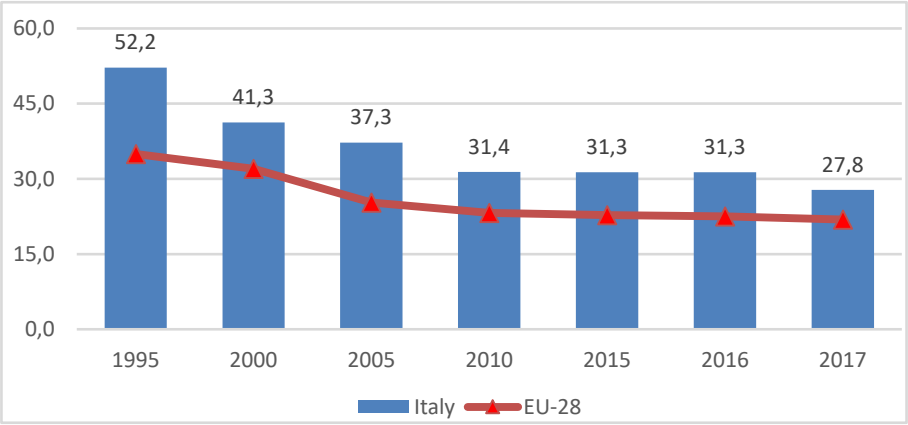
duttive), the Dual Income Tax (a system under which ordinary equity income was taxed at a lower rate) and the concurrent abolition of ILOR (Imposta Locale sui Redditi), health related social contributions and other minor taxes. See also footnote 21 and Crespi *et al.* (2013).

[6] European Commission (2001).

[7] Tax rate for financial firms has been frozen at 27,5%, with the burden mostly offset by an adjustment to the interest expense deduction regime. This special provision is linked to the role of deferred tax assets (DTAs) in capital ratio under Basel III regulation. A decrease in tax rate would affect the amount of DTA and therefore of capital ratios. For an estimation of the share of DTA on Italian financial firm total assets, see Ricotti *et al.* (2014).

[8] As shown in Table 1, the government estimated that this change will cost approximately 3 billion, but the net impact should be assessed only by considering the other measures set by the Budget Law, especially the change in the ACE regime, discussed in paragraph 4.

Figure 4. Evolution of corporate tax rates in Italy and EU average (1995-2017).



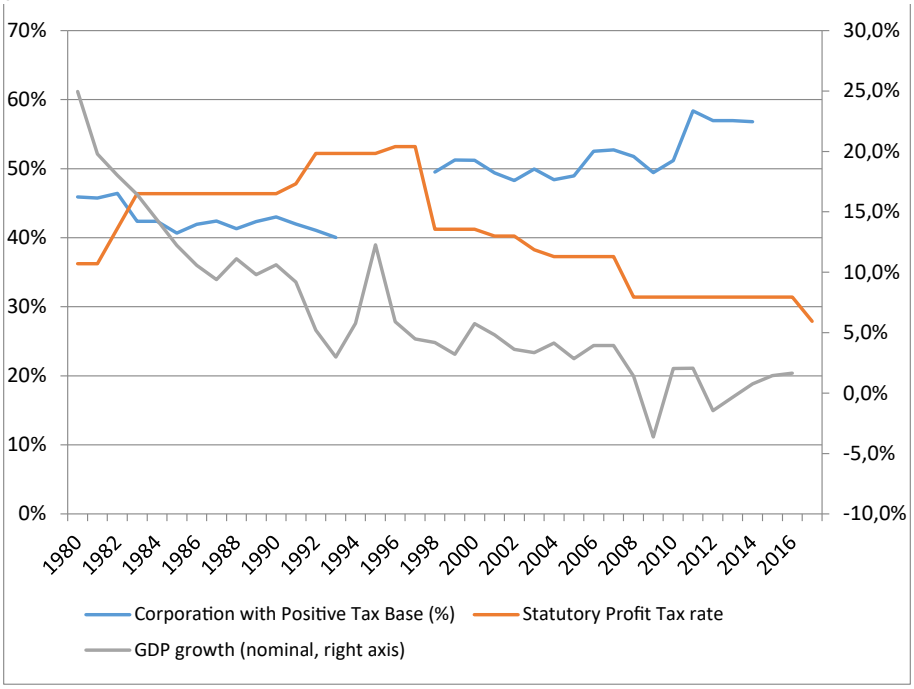
Source: Authors' elaboration on Eurostat (Taxation Trends) data.

ing position among high tax countries from 4th in 2016 to 7th in 2017. Figure 4 shows the declining trends both in EU and Italy. As for Italy, the figure considers the overall levy on profits, thus including IRES and the standard IRAP tax rates[9].

The relative long phase of high tax rates in Italy have markedly triggered behavioural reactions, clearly aimed at cutting the tax burden by reducing the tax base. As an example, standard corporate income tax systems favour the choice of debt over equity because of interest deductibility, and this incentive increases with the tax rate level (see paragraph 4 for a discussion). The strategic choice of the legal status, which includes among others incorporation as well as the setting up of a fiscal group – to use a consolidated tax regime – can also be included under tax-defensive behaviour. Therefore, the availability of several tax shields may produce very low tax bases even in presence of high profitability. Figure 5 shows the inverse relationship between tax rates and the share of firms with positive taxable income; GDP fluctuations do not seem to be directly related to the number of incorporated firms paying taxes.

[9] The IRAP (Regional Tax on economic activity) has a 3,9% standard tax rate (tax rates can vary on regional basis) and a tax base which includes financial expenses and labour cost. Data shown in Figure 4 also includes a 10% deduction of IRAP paid from IRES tax base introduced in 2008. It is worth stressing that unincorporated firms are also subject to IRAP.

Figure 5. Corporations with positive taxable income (%), statutory tax rate and GDP growth in Italy (1980-2017)[10].



Source: Authors' elaboration on Tax Authority and ISTAT data.

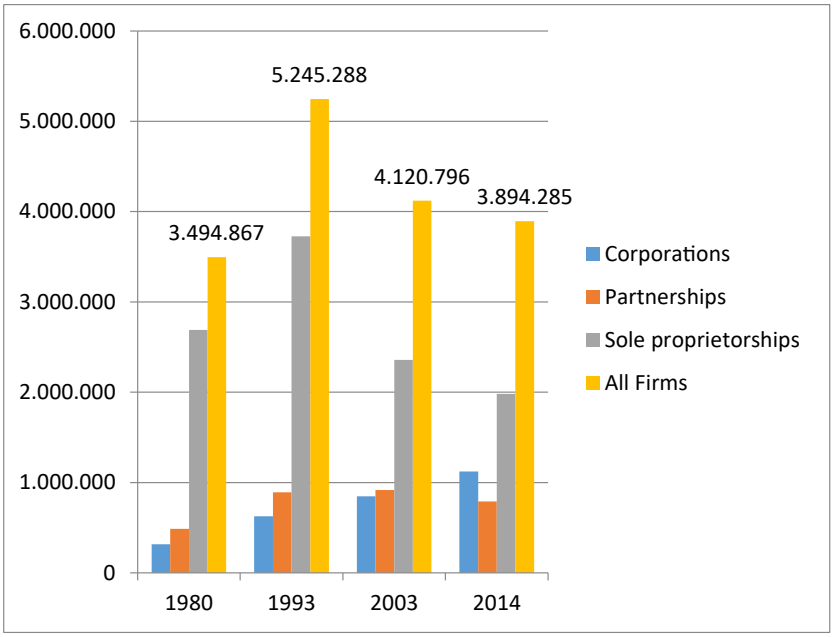
3. *Firms dimension duality, legal status and tax regimes*

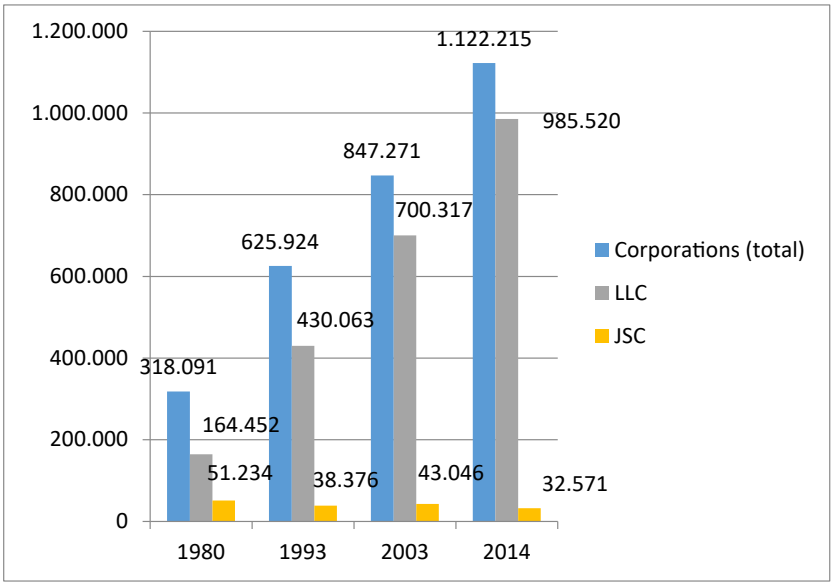
Economic literature shows that since the mid-1970's the main industrial European countries – with the notable exception of Germany – have experienced a notable reduction in the average size of manufacturing firms[11]. This trend appears particularly remarkable in the Italian manufacturing sector, for which the level of fragmentation is among the highest in EU countries: in 2014, 95% of all Italian firms have less than 10 employees[12].

The overall number of firms in Italy reached five million at the beginning of the '90s and at the end of the financial crisis decreased to 3,8

[10] The number of firms exhibiting positive corporate tax base are drawn from tax files database. Unfortunately, that data is not available for the 1995-1997 period.
[11] See Traù (2003).
[12] Small Business Statistics data, EU Commission.

Figure 6. Italian Firms by legal status (1980-2014).





Source: Authors' elaboration on Tax Authority data.

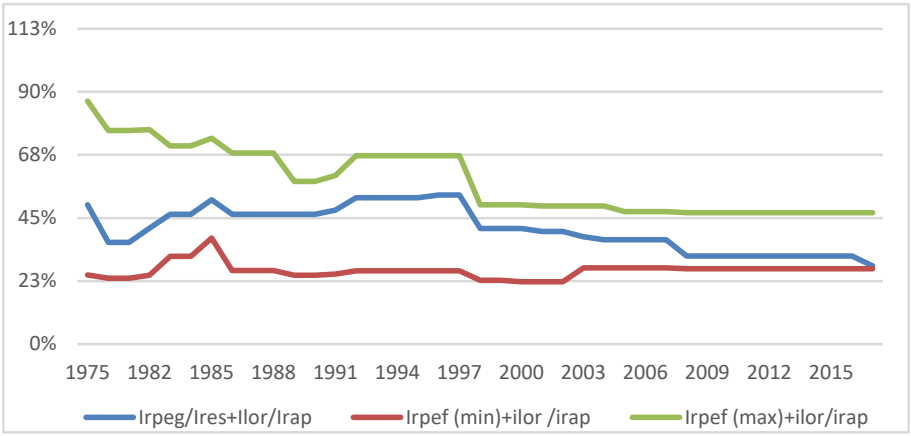
million. Sole proprietorships are the most important legal status, although corporations' share exhibits a steady progression (currently representing more than 25%). However, this remarkable corporation growth conceals a profound heterogeneity of dimensions and organisational setups: joint-stock companies (JSC, Società per Azioni) constitute less than 3% whereas limited liability companies (LLC, Società a Responsabilità Limitata) and cooperatives represent the residual 97%.

As is very well known, the general dualism between unincorporated and incorporated firms reflects, in the Italian tax system, two different tax regimes: incorporated profits are taxed through the proportional corporation tax (IRES) whereas the unincorporated entities through the partnership criteria. For unincorporated entities, therefore, profits have been directly taxed by progressive income tax (IRPEF), regardless of the profit distribution decision[13]. Until 2004, both dividends and unincorporated profits were part of income tax and a sort of legal status neutrality was in force thanks to a shareholder credit system (an income tax credit at the shareholder level for taxes paid at the corporate level).

Since 2004 Tremonti's reform[14], two separate regimes have been in force: on the one hand a double taxation regime hits corporate profits (IRES and a flat tax rate of 26% on dividends); on the other hand, taxes are levied on unincorporated entity profits according to progressive income tax schedules (between 23% and 43%). Since the IRES tax rate has been reduced to 24% by the budget law for 2017, a remarkable difference may arise in the case of firm's financial decisions focusing on self-financing. Corporations' retained earnings are always taxed at a 24% tax rate (27,8% including IRAP), whereas earnings reinvested in a sole proprietorship or simple partnerships are currently taxed progressively through personal income tax and they are in fact subject to a higher tax burden than corporations (a 43% levy − 46,9% including IRAP − operates on high-profitable unincorporated entities). Figure 7 shows the long-run evolution of statutory tax rates on retained earnings by legal status. It is evident that the statutory tax rate on corporate profits has been generally set as a medium point between the bottom and top income tax rates. Since 2008, however, a clear disadvantage for high-profitable unincorporated entities emerges, since the incorporated tax rate is equal to the bottom unincorporated one.

[13] In case of a partnership, partners are taxed on their share of the partnership's profits, according to their own tax rates.
[14] Delegation Law n.80/2003.

Figure 7. Statutory tax rates on retained earnings by legal status (1975-2017).



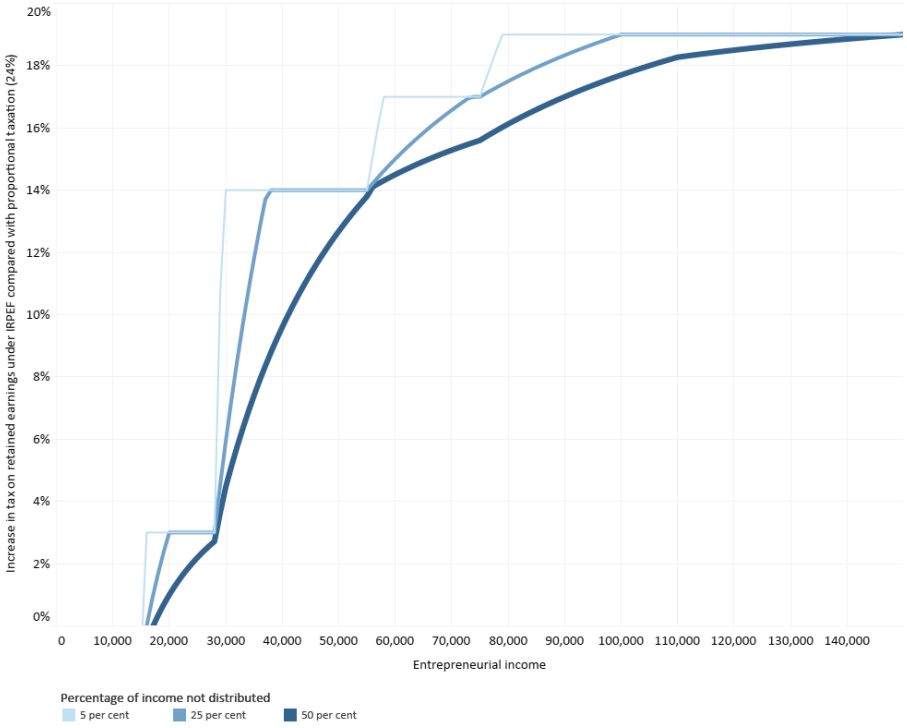
Source: Authors' own elaboration.

With the aim of reducing this disadvantage, the budget law for 2017 provided for a new profit tax regime (IRI, Imposta sul Reddito di Impresa) for individual entrepreneurs and partnerships operating with ordinary accounting system[15]. Under the IRI regime, the partnership criterion is partially deferred and retained profits are not regarded as a part of the entrepreneur's (or partners') overall income; those retained profits are subject to separate taxation at a rate of 24%, the same as IRES. All dividend payments to owners (or partners) are, on the contrary, fully taxable at a personal level under the income tax progressive schedule[16].

As a result, the IRI optional regime provides greater neutrality between different organisational forms and regarding retained profits and distributed ones[17]. Actually, by reducing the taxation of reinvested profits, the measure also seeks to bolster the capitalisation of enterprises with their own funds. Figure 8 shows the magnitude of the difference in tax treatment of retained earnings in the progressive system (under IRPEF) com-

[15] The IRI tax regime is optional. This option lasts for five tax periods and is renewable.
[16] It is worth noting that a similar tax system already existed under Italian law. Introduced by Law 244/2007, it did not enter into force as the implementing decrees were never issued. Again, Law 24/2014 provided for the introduction of a proportional tax on entrepreneurial income, which should have been extended to the self-employed (arts and professions). Here too, the enabling legislation (now expired) was never implemented.
[17] As a general rule, a 26% tax rate is applied on dividends, so that the overall burden on corporate profits is 43,7%, very close to the top IRPEF tax rate (43%).

Figure 8. Difference in the tax treatment of undistributed earnings under a progressive tax system compared with a proportional system.



Source: UPB, 2017 Budgetary Planning Report

pared with the new proportional system with a tax rate of 24 per cent. The tax differential is expressed considering a different percentage of retained earnings. The penalty emerges for incomes over € 15.000 and rises as income increases, reaching an overall differential of 19 percentage points of tax for the highest incomes[18]. For a given level of entrepreneurial income, the additional tax is lower as the share of retained earnings increases. According to the Ministry of Finance estimation (Table 1), the IRI options would cost about 2 billion.

Finally, it should be noted that the IRI regime enables businesses to 'smooth' distributed income over time in the presence of irregular revenue, a phenomenon that specifically regards the recipients of income from en-

[18] Municipal and regional surtaxes on personal income tax have been not included in this figure. If considered, the differential rate would be higher than shown by Figure 8.

trepreneurial activities, so allowing a lower effective tax rate due to the lower concentration of distributed income, subject to a progressive tax rate[19].

However, this restored tax neutrality among legal status is more apparent than tangible. Several concurrent tax schemes are in force, depending on firm dimension, accounting regimes, the presence of conglomeration, country of residence and, more recently, the digitalisation degree of the economic activity. The rationale behind this 'Menu of Taxation' is twofold: on the one hand it is the result of the stratification of different tax provisions; on the other hand, it is the attempt to face new productive transformations, where large firms and multinationals rapidly change the configuration, partly dematerialising and partly using new organisational forms.

4. *Allowance for corporate Equity*

In tax design, corporation tax generally incentivises debt over equity, because interest payments are deductible for corporate income tax purposes, while dividends are not[20]. This asymmetry among firm financial sources has been particularly important in Italy, as the incentive for debt increases as the tax rate increase. The introduction in 2011 of an Allowance for Corporate Equity (Aiuto alla Crescita Economica: ACE)[21] has eased the tax bias toward debt finance and made equity injections more attractive, by providing a tax deduction[22] to all firms to be computed as the product of a notional return by a net equity base. In addition to neutrality with respect to financial choices, ACE is neutral with respect to marginal investment decisions. By providing a deduction for both debt interest expenses and

[19] It is worth noting that the 2018 Budget Law postponed the IRI optional regime to 2018 fiscal year.

[20] Amongst others, see De Mooji (2011).

[21] It is worth stressing that Italy experimented between 1998 and 2004 with another mechanism aimed at reducing the tax disincentive on equity finance called – quite improperly – Dual Income Tax (DIT). In the DIT case the notional return applied to additional equity was taxed at a reduced tax rate (19% rather than 37%) and not fully deductible as in the current mechanism.

[22] The neutrality between financial sources hold if firm specific interest rate on debt is not different from the notional rate. The tax deduction only refer to CIT tax base – IRES in Italy – and not to IRAP, the IRAP tax base being unaffected by debt bias.

the opportunity cost of equity, this mechanism becomes a tax on economic extra-profit, i.e. on economic rent. Moreover, the ACE mechanism can be considered neutral with regard to inflation – because higher price will affect both debt interest rate and risk-free reference rate – and to asset depreciation policies[23].

The ACE mechanism originally implemented in 2011 was differentiated by legal status: unincorporated entities had the equity stock as the base of calculation, whereas corporations referred to additional equity – meaning equity invested starting from October 2010 – as the base to compute tax deduction[24]. By considering only additional equity, therefore, Italy chose the 'soft' ACE version for corporations, so designing an incentive to immediately increase risk capital invested in the firm and, at the same time, to reduce the short-run potential negative impact on corporation income tax revenue[25]. Due to the year by year incremental calculation of equity injection (either by shareholder new cash and by retained earnings), the impact on CIT revenue can be approximated by snowball dynamic. At the same time, if this mechanism is able to incentivise investment expenditure, an increase in economic activity and therefore an enlargement in tax base can offset the negative effect on public revenue.

In order to gain the aforementioned neutrality characteristics[26], the notional return should be set with reference to the opportunity cost of capital, e.g. the risk-free interest rate, and so it is expected to automatically follow money market evolution. The notional rate has been set to 3% for the period 2011-2013 and between 4% and 4,75% for the period 2014-2016. It is worth stressing that the 2016 notional rate (4,75%) was markedly higher than the risk free interest rate[27] and therefore the ACE mechanism in that year (and in all previous years) can be considered a tax incentive – a tax expenditure – and not only a way to reduce the tax favour for debt.

[23] The 2016 proposal by the EU Commission on Corporate Tax (COM 685/2016) envisages an Allowance for Investment and Growth (AGI) that is very close to the ACE implemented in Italy. As stressed by Klemm (2007), the irrelevance of depreciation method under ACE system helps tax harmonisation process in EU, because differences in national depreciation rules would become irrelevant.

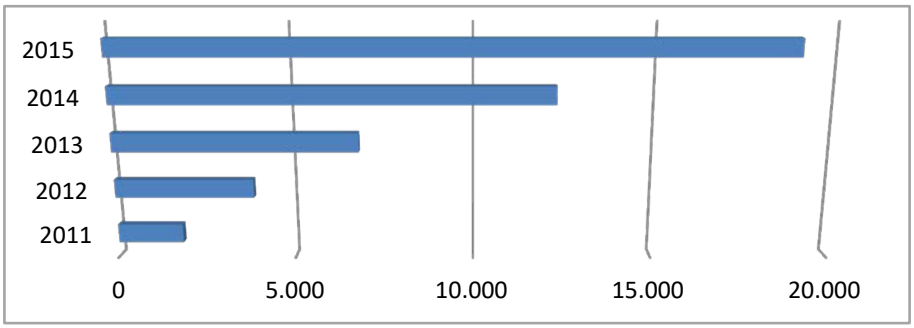
[24] Interestingly, the EU proposal limits the equity incremental accumulation to 10 years.

[25] See Petutschnig and Runger (2017) for a classification of hard and soft ACE.

[26] The *Mirlees Review* (Mirlees *et al.*, 2011) identified the ACE system as one of the most efficient instrument to address the debt bias. There is a vast corpus of international literature on the economic impacts of ACE in several countries. For a recent contribution see Shafik and Ruf (2017) and Petutschnig and Rünger (2017).

[27] In 2016 the interest rate on short run Treasury bond in Italy – usually used to identify risk free rate – was negative or very close to zero.

Figure 9. ACE gross tax deduction (2011-2015; million euros).



Source: Authors' elaboration on Tax Authority data.

The cumulative nature of ACE base and the very high notional return set by Italian Ministry of Finance have incentivised firms – especially medium and large ones – to increase equity capital to accumulate tax deduction. This behavioural response led to a very fast increase in the gross ACE tax deduction, as shown in Figure 9: the gross deduction for corporations was less than 2 billion in 2011 and became slightly less than 19 billion in 2015[28], for a potential revenue loss of more than 5 billion.

Among all firms, financial corporations took great advantage of this tax incentive because of the concomitant need to improve capital ratios. Table 2 highlights that in 2015 37% of total tax deductions belonged to corporations operating in the financial sector, whereas manufacturing incorporated firms reached about a quarter of the total. Indeed, it is worth noting that the average value of the tax deduction in the financial sector is more than ten times the average tax deduction for corporations.

Table 2. Total Tax deduction and mean values for total economy, manufacturing and Financial Services (2015).

All Firms			Manifacturing			Financial Services		
Tax Deduction (000 €)	Frequencies	Mean Tax Ded. (000 €)	Tax Deduction (000 €)	%	Mean Tax Ded. (000 €)	Tax Deduction (000 €)	%	Mean Tax Ded. (000 €)
18,942	302,766	62.6	4,533	24%	83	7,010	37%	769

Source: Authors' elaboration on Tax Authority data.

[28] Data for the 2015 tax year is the last officially released data.

Table 3. Tax advantage by sector and leverage classes.

Sector	Below 10	From 10 to 30	From 30 to 60	From 60 to 100	Grand Total	% tot. allow.
Agriculture	-14,1	-21,9	-25,2	-25,6	-22,0	2,21%
Manifacturing, mining, water, electricity	-3,6	-6,4	-8,8	-12,1	-7,0	38,87%
Construction	-3,9	-7,2	-10,7	-16,2	-7,6	8,80%
Wholesale and retail trade	-4,0	-7,1	-10,7	-14,6	-8,0	15,07%
Transport	-7,6	-11,2	-13,6	-17,2	-11,7	5,61%
Accomodation, food and beverages	-5,2	-8,8	-12,6	-14,6	-9,3	2,76%
Communications	-11,6	-13,2	-14,3	-16,2	-13,9	3,92%
Other services	-4,5	-8,3	-11,3	-13,7	-9,4	22,76%
Grand Total	-4,5	-7,8	-10,9	-14,2	-8,7	100,00%

Source: Authors' elaboration on the MEDITA Model.

Table 4. Tax advantage by firm dimension and leverage classes (*).

Turnover classes	Below 10	From 10 to 30	From 30 to 60	From 60 to 100	Grand Total	% tot. allow.
Below 10k	-7,8	-16,6	-19,0	-20,9	-14,5	0,22%
From 10 k to 100 k	-6,3	-11,6	-14,3	-15,8	-12,1	2,22%
From 100k to 250k	-5,3	-8,9	-11,6	-13,8	-9,7	3,42%
From 250k to 500k	-4,4	-7,3	-10,3	-12,9	-7,9	4,28%
From 500k to 1m	-3,8	-6,9	-9,9	-13,2	-7,3	5,21%
From 1m to 2m	-3,2	-6,2	-9,8	-13,2	-6,7	6,05%
From 2m to 5m	-2,8	-6,0	-8,9	-11,5	-6,3	9,49%
From 5m to 10m	-2,3	-5,2	-7,8	-10,3	-5,8	8,18%
From 10m to 50m	-2,6	-5,4	-7,2	-9,3	-6,0	19,96%
From 50m to 250m	-4,5	-4,6	-8,5	-10,9	-6,8	18,84%
Above 250m	-2,3	-8,8	-12,1	-18,8	-10,2	22,15%
Grand Total	-4,5	-7,8	-10,9	-14,2	-8,7	100,00%

(*) Financial and non-financial holdings (ATECO sector 64.2 and 70.1) excluded.
Source: Authors' elaboration on the MEDITA Model.

In order to assess the effective economic impact of the ACE provision, we use the UPB-MEDITA microsimulation model for Italian non-finan-

Table 5. Tax advantage (left panel) and share of tax relief (right panel) by leverage classes in 2010 and 2014.

Tax advantage — Lev. class. 2014

Lev. class. 2010	Below 10	From 10 to 30	From 30 to 60	From 60 to 100	Grand Total
Below 10	-4,3	-10,4	-21,7	-35,7	-7,5
From 10 to 30	-4,0	-6,8	-12,6	-24,0	-8,3
From 30 to 60	-4,7	-5,4	-8,8	-15,2	-9,3
From 60 to 100	-4,0	-6,6	-7,8	-10,3	-9,3
Grand Total	-4,2	-7,5	-10,7	-13,2	-8,5

Share of tax relief — Lev. class. 2014

Lev. class. 2010	Below 10	From 10 to 30	From 30 to 60	From 60 to 100	Grand Total
Below 10	2,5	5,6	4,0	2,7	14,7
From 10 to 30	1,6	9,3	9,7	8,6	29,2
From 30 to 60	0,3	3,2	18,6	11,3	33,4
From 60 to 100	0,3	0,7	3,1	18,7	22,8
Grand Total	4,7	18,7	35,3	41,3	100,0

Financial and non-financial holdings (ATECO sector 64.2 and 70.1) excluded.
Source: Authors' elaboration on the MEDITA Model.

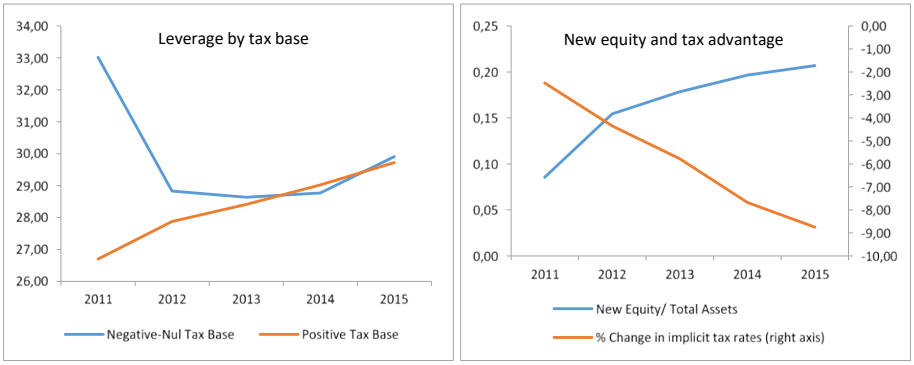
cial corporations, based on financial statement data (CERVED database)[29]. A first assessment of the impact of the ACE provision on corporation financial choices can be found in Table 3, which shows an increasing tax advantage with rising leverage level, from a 4,5 percentage decrease in the implicit tax rate for the lowest class, to 14,2 for the highest[30]. The sectoral breakdown shows a higher tax advantage for the firm in agriculture and holding company sectors. Not surprisingly, holding companies concentrate also the highest percentage, more than 32%, of the total tax relief, while agriculture represents only 1,5%.

Table 4 shows that the tax advantage follows a U-shape pattern, being relatively higher for smaller and larger firms. As expected, as shown in the latter column of Table 4, a very large share of the total allowance is allocated to the group of larger companies: about 60 per cent of the total allowance indeed flows to companies with more than 10m euros of turnover.

The left side panel of Table 5 shows the breakdown of the tax advantage in 2014 by leverage classes in 2010 and in 2014. As expected, the highest reduction in tax rates is recorded by firms in lower leverage class in 2010 and in the higher class in 2014 (35,7% on average). On the other hand, firms moving in the higher leverage class in 2014 concentrate a very low share of total tax relief. Moreover, well-capitalised firms benefit from the largest share of the total tax relief.

[29] A brief description of the MEDITA model can be found in the Appendix.
[30] Tax advantage has been calculated as the percentage reduction of the implicit tax rates due the ACE deduction. Leverage has been computed as the ratio of equity on total assets.

Figure 10. Leverage by tax base (left panel) and New equity and tax advantage (right panel), 2011-2015.



Balanced panel (2010-2015). Financial and non-financial holdings (ATECO sector 64.2 and 70.1) excluded.
Source: Authors' elaboration on the MEDITA Model.

As tax advantage is associated with new equity injection and a positive tax base only those firms with positive tax base, or short run profit expectations have immediately modified financial choices to increase risk capital. Indeed Figure 10 shows that, on average, firms with non-positive tax base started to increase equity capital only in 2015. The inverse link between new equity injections and change in the implicit tax rates (a result of the cumulative tax deduction) is shown on the right-hand panel of Figure 10.

The 2017 Stability Law provided for the revision of the ACE with changes aimed at both rationalising the system and reducing public revenue loss. As for the first aim, the law introduced a unique calculation method for all firms: irrespectively of their legal status, the ACE base is computed on equity accumulation, so becoming a 'soft' ACE for all firms. At the same time, the Stability Law introduced a reduction of the notional rate from 4,75% in 2016 to 2,3% in 2017 and to 2,7% from 2018[31]. Moreover, new anti-avoidance provisions have been introduced, for entities other than banks and insurance, in order to exclude from the benefit the net equity increase corresponding to the growth of securities other than equity. This provision applies retrospectively as from the whole 2016 tax year. Finally, in case of extraordinary operations (as mergers or demerg-

[31] Actually, during 2017 the notional tax rate was changed again by law decree 50/2017. The notional rate – set by the 2017 Budget law – was changed and became 1,6% for 2017 and 1,5% for 2018.

ers), the possibility to carry forward surplus of ACE deduction is now subject to the same limits operating for tax losses and interest expenses[32].

The stability law, therefore, has intervened to empower the anti-avoidance clauses and to reduce the revenue impact, which, as discussed before, has become higher than initially predicted. However, the use of a retrospective law change together with the modification of the notional return previously announced, may have interfered with investment plans, causing damage linked to time inconsistency of tax design policies.

5. *Investment Incentives*

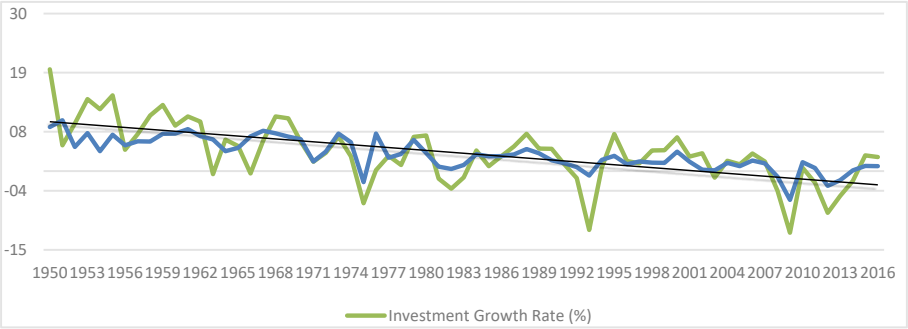
Figure 11 shows the long-run trend of investment growth rate related to the real GDP growth rate. Besides economic cycle fluctuations, a steady declining trend of investments is evident.

The Italian high corporation tax rates have been considered an important determinant of low investment rates, even if different types of preferential tax regimes and tax incentives have been used after the Reform in the 1970's, such as reduced tax rates, tax allowances and tax credits[33]. Since the 1990's, the consensus on the beneficial discipline of integrated markets and the pressure of increasing international tax competition pushed tax policies towards more neutrality for capital taxation, focusing on the reduction on tax rates and the enlargement of tax bases. Investment-related tax reliefs remained mainly in the form of tax credits, also due to the limits of EU regulation on state aids. As an example, several temporary tax incentives for investment – designed as tax credits – have been introduced to recover from cyclical downturns (1994, 2001 and the 2009 'Tremonti Laws').

Besides preferential tax regimes, the overall corporate tax system is not neutral as prevailing corporate tax systems have a tax base definition which differs in several ways (financial source costs deductibility, depreciation rules, loss offsets among the most important) from economic profit, so dis-

[32] These limitations, specified in art. 96 of the Italian Income Tax Code (TUIR), refer to an Equity Test (the amount of ACE to be carried forward should not exceed the net equity) and a Vitality Test (related to the relevance of turnover and employment costs).
[33] For a retrospective analysis of corporate taxation in Italy, see Gastaldi and Pazienza (2010).

Figure 11. Investment and GDP growth rates (1950-2016).



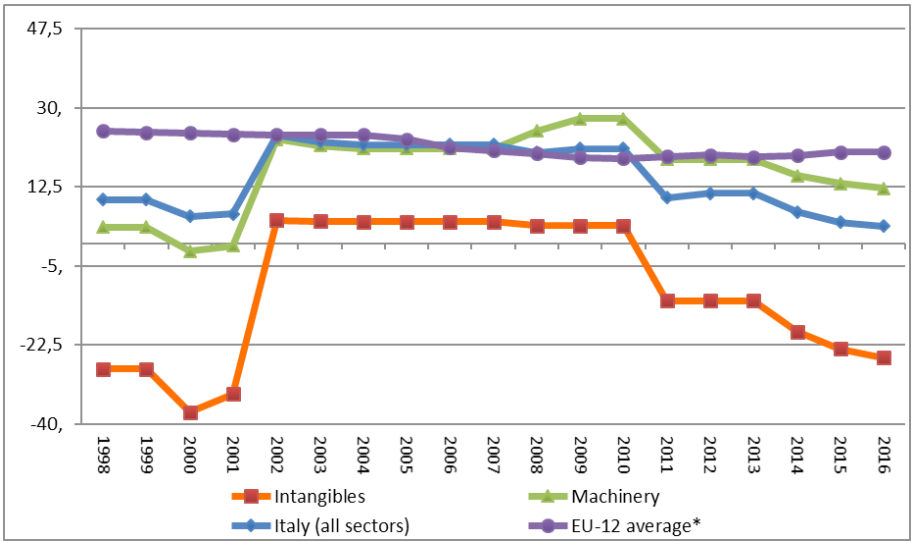
Source: Authors' elaboration on ISTAT data.

torting investment decisions[34]. Actually, current tax rules – generally complex because of concurring special regimes – can produce too small or too large a tax base and on balance, one cannot say *a priori* if investments are encouraged or discouraged at the margin. An assessment of the incentive/disincentive role of specific tax rules – corresponding to the difference between pure profit and current tax base – is usually made by considering effective marginal tax rates (EMTR)[35] or effective average tax rates (EATR)[36]. Although these kinds of rates rely on several strong hypotheses (such as perfect competition in markets), it can be useful to refer to those rates to have a general picture of the role of the tax system on investment choices. Figure 12 shows Italian EMTRs for fixed investment in machinery, intangibles and the average for all investment categories. During the first decade of this century, the average EMTR in Italy was very close the average level for main EU partners, while before 2001 and after the financial crisis, the levels have been well below the average, with an EMTR for intangible becoming negative. Before 2001 EMTR were pushed downward by the incentive for new equity financing (DIT); after 2011, a mix of ACE and specific investment-related provisions drove the drop of all EMTR values.

Focusing on machinery investments in the last two decades, EMTRs exhibit some impact on investments: during the phases in which EMTR

[34] See Boadway *et al.* (1984).
[35] EMTRs are calculated by considering the difference between pre-tax and post-tax the user cost of capital, defined as the minimum rate of return required on the marginal investment project. The basic assumption is that a firm will invest up to the point at which the marginal product of capital is just equal to the cost of capital.
[36] Devereux and Griffith (2003).

Figure 12. Effective Marginal Tax Rates. Italy and Selected EU countries (1998-2016).

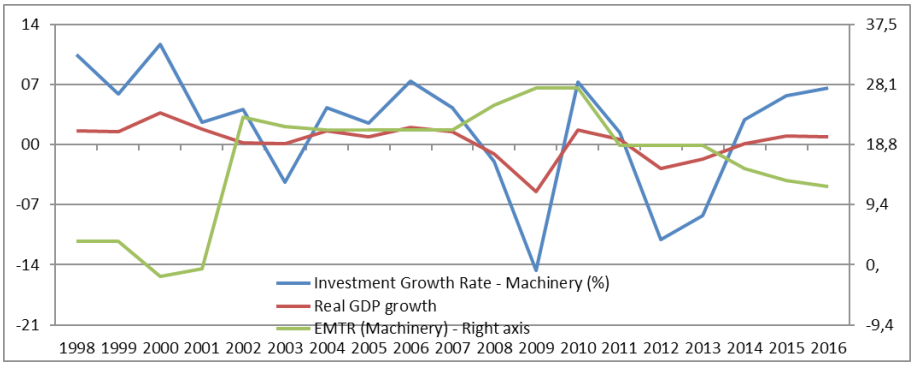


(*) Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherland, Spain, Sweden, UK.
Source: Authors' elaboration on European Commission data (2016).

changed more noticeably – when a form of Allowance for Corporate Equity was introduced – an inverse relationship between marginal tax rate and investment changes can be detected (Figure 13).

The financial crisis that started in 2008 has had distressing consequences for Italy, worsening the long run investment stagnation. As a way to speed up the recovery of economic system, the 2016 Stability Law introduced the 'super' depreciation mechanisms, extended by the 2017 Budget Law. These provisions state that the purchase cost for investments in new tangible assets (plant, machinery and equipment) in 2015-2017 is notionally increased by 40% (i.e. bringing the taxable base to 140%) for the determination of tax depreciation for income tax purposes (i.e. IRES and IRPEF, not for IRAP). At the same time, the 2017 provisions restrict the eligibility of investment in transport equipment, which must be used for the purposes of the business. It increases also the benefit from 40 to 150 per cent for a list of very high tech capital goods ('iper' depreciation for industry 4.0). Finally, for those making investments in this latter category, the increase of 40 per cent is also extended to purchases of business-related intangible assets, such as software used to drive the transition towards

Figure 13. Investment growth rate and EMTR in Italy (1998-2016).



Source: Authors' elaboration on European Commission (2016) and ISTAT data.

technological innovation. The revenue loss is estimated at 2,3 billion euros a year in the period 2018-2025.

This type of incentive represents a sort of grant for the purchase of capital goods equal to 40 per cent (150 per cent for specified assets) of the expenditure, distributed proportionately over the useful life of the asset and disbursed in the form of tax savings and is thus dependent on the fiscal capacity of the firm. The increase in allowable depreciation introduced in the Stability Law can essentially be considered a tax incentive even though the manner in which it is delivered makes it more like a form of aid. From an economic point of view, this type of incentive differs from accelerated depreciation[37] and from traditional tax credits for investments[38]. Compared with the former, the proposed incentive is more generous in that,

[37] Until 2008, Italy had a system of accelerated depreciation, which allowed firms to deduct up to twice the amount of ordinary depreciation charges in the first three years of the life of the capital good, leaving the asset's depreciable amount unchanged. This acceleration of depreciation represented a temporary postponement of revenue by the government. In the most extreme case, this permitted the deduction of the entire cost of investment in the year of acquisition. If a company has sufficient profits to offset this increase in deductibility, we can say that the government participates in the financing of private investment spending in a percentage determined by the statutory tax rate. Subsequently, however, it participates to the same extent in the reduction of pre-tax profits.

[38] The investment tax credit is a reduction in a firm's tax liability in an amount proportional to the cost of new capital goods: businesses can deduct a certain proportion of the investment cost directly from their tax liability. Changes in the percentage credit granted or in investments change the amount of the tax savings/revenue loss in each period and thus affect the internal funds available to firms.

within the limits of the taxable income of the firm, it effectively brings forward depreciation with greater tax savings in the first years of life of the asset, without leading to higher taxes in subsequent years. Essentially, the incentive represents, like a tax credit, an investment grant.

Summing up, more generous deductions for capital expenditure increase the present value of depreciation allowances and they may affect investment via two main channels: by lowering the cost of capital and, for cash-constrained firms, by increasing the availability of cash due to reduced tax liabilities (Hall and Jorgenson, 1967).

In the present Italian context, the impact of the incentive may not be negligible, not only in terms of reducing the cost of capital but also with regard to the self-financing capacity of firms, easing the borrowing constraint. Nevertheless, some aspects can be taken into account for its economic evaluation. On the one hand, the tax relief can be effective for accommodating the signs of recovery and the improving confidence of economic agents that have emerged in recent months. On the other hand, the recession has reduced corporate profits, generating more losses in recent years. Moreover, to the extent that new investments are financed with own resources, the effects of the tax relief in terms of the erosion of the tax base are amplified by the ACE deduction. Then, the ability to use losses carried forward can be limited, diminishing the attractiveness of the incentive in the short term. A 'dead weight' effect of the subsidy is implicitly accepted. In general, an investment incentive should be distinguished from a mere subsidy for its selective capacity to stimulate 'additional' investments, also enabling the government to minimise its cost in terms of lost revenue. In this case, the formulation of the incentive implies a subsidy for both new investments and investments already planned by firms. It is clear a broader objective of supporting and consolidating the signs of economic recovery.

Other incentives have been confirmed and extended. The R&D tax credit is extended through 31st December 2020 and is increased to 50% (previously, it was 25% or 50% depending on the type of cost) of the annual R&D incremental expenditure (of any type) exceeding the average spending of fiscal years 2012, 2013 and 2014. As of 1st January 2017, the benefit may also apply to resident companies (and Italian permanent establishments of non-resident companies) that carry out R&D activities through contracts with entities that are resident for tax purposes in EU/European Economic Area (EEA) countries or in other countries that allow an adequate exchange of information with Italy.

Figure 14. Private Investment growth rate in Italy by sector (2005-2016).

Source: Authors' elaboration on ISTAT data.

Notwithstanding the policy intervention mix (high ACE notional return, statutory tax rate cut, and super/hyper depreciations and R&D tax credits)[39] progressively introduced since 2011, the effect on investment expenditure was unsatisfactory until 2016. From Figure 14 it is evident that overall investment growth was quite small in 2015 and 2016 and only vehicle and transport means expenditure exhibits vivid percentage changes.

6. *Concluding remarks*

Financial crisis has severely impacted on the Italian economy. The magnitude of the impact can also be explained by the fragility of an economic system characterised by dimensional dualism, low productivity and investment growth and undercapitalisation. All these structural weakness have been worsened, until recently, by high statutory tax rates and an erratic tax framework design, with discontinuous incentives to strengthen capital ratios – the former DIT experience and the current ACE mechanism

[39] It is worth noting that these benefits may be combined with other policies designed to stimulate firms investments. 'Nuova Sabatini', Patent Box, Incentives for investment in innovative start-ups and Central Guarantee Fund are among the most relevant ones.

– and to invest in fixed and intangible capital (accelerated depreciation, tax credits and the current super depreciation mechanisms). Recent policy measures try to both alleviate the economic recession and to put some order in the profit taxation system. In details, we selected high tax rates, dimensional dualism, tax preference for debt finance and investment stagnation as the most important issues and so we analysed how recent tax provisions addressed these problems. As for the tax burden, we discussed how the current IRES tax rate (24%) makes Italy a medium tax country: the statutory tax level is only slightly above the EU average. The 2017 tax rate cut would have benefitted corporations, so leaving apart small and medium-sized enterprises, generally set as unincorporated entities. With the aim of reducing the tax disadvantage for unincorporated retained profits, the budget law for 2017 provided for a new tax option (IRI, Imposta sul Reddito di Impresa) for individual entrepreneurs and partnerships in an ordinary accounting regime. Besides the delay in the IRI implementation it's worth stressing that the neutrality among legal status is very difficult to implement: several concurrent tax schemes are in force, depending on firm dimension, accounting regimes, the presence of conglomeration, country of residence and, more recently, digitalisation degree of the economic activity. The tax advantage of debt – typical of corporation tax system – makes cheaper for firms to use debt than equity, and the incentive increases as tax rate increases. To strengthen capital ratio, an ACE mechanism has been introduced in 2011 and this was designed as a tax incentive, being the notional tax rate higher than the risk free reference rate. This incentive proved to be effective in pushing firms to increase equity capital, but the associated revenue loss has been growing year by year. We took advantage of MEDITA model to scrutinise the link between structural firm variables, financial choices and tax advantage. The analysis shows that this benefit has been mainly concentrated among larger firms operating as a tax group or in manufacturing and financial service sector. These trends call for an extraordinary maintenance adjustment of the mechanism and therefore Budget Law enlarged anti-avoidance provisions and reduced notional rate. The ACE mechanism also proved very effective in influencing user cost of capital and − hopefully − investment decisions. The combination of IRES tax rate cuts, ACE and investment-related tax incentives have produced a large drop in EMTRs since 2014 and therefore an increase in investment growth has been expected. Unfortunately, all these efforts – more than an 8 billion euros revenue loss estimated for 2018 − have not produced a remarkable change in firms' investment expenditure as far as 2016 is con-

cerned, a clear indication that expectations more than user cost of capital are among key ingredients. Moreover, with lower tax rate, investment tax incentives, such as the increasing depreciation allowances, could be less effective than in the past experience. A more time consistent policy pattern seems an essential requirement to increase firm investment in fixed capital and new technology.

Bibliography

Boadway, R., Bruce, N., Mintz, J. (1984). The Role and Design of the Corporate Income Tax. *The Scandinavian Journal of Economics*, 86(2), 286-299.

Bonaccorsi di Patti, E., Finaldi Russo, P. (2017). Fragilità finanziaria delle imprese e allocazione del credito. *Banca d'Italia. Questioni di Economia e Finanza*, n. 371, <https://www.bancaditalia.it/pubblicazioni/qef/2017-0371/QEF_371.pdf> (last access 19.10.2017).

Crespi, F., Di Majo, A., Pazienza, M.G. (2013). Le riforme dell'imposizione diretta sulle imprese italiane. *Economia dei Servizi*, 2, 109-126.

De Mooij, R.A. (2011). Tax Biases to Debt Finance: Assessing the Problem, Finding Solutions. *IMF Staff Discussion Note*, n. 11/11, <https://www.imf.org/external/pubs/ft/sdn/2011/sdn1111.pdf> (last access 19.10.2017).

Devereux, M.P., Griffith, R. (2003). Evaluating tax policy for location decisions. *International Tax and Public Finance*, 10(2), 107-126.

European Commission (2001). *Company taxation in the Internal Market*, Comm 582 2001 final.

Gastaldi, F., Pazienza, M.G. (2010). Sistema produttivo e sistema tributario: accumulazione di capitale e tassazione delle società. In Gallo, F., Pedone, A. (eds.), *Imposte e sviluppo economico*, Bari: Laterza, 65-130.

Hall, R.E., Jorgenson, D.W. (1967). Tax policy and investment behavior. *American Economic Review*, 57(3), 391-414.

IMF (2013). Italy: Article IV Consultation, *IMF Country Report*, n. 13/299.

Klemm, A. (2007). Allowances for Corporate Equity in Practice. *CESifo Economic Studies*, 53(2), 229-262.

Mirrlees, J., Adam, S., Besley, T., Blundell, R., Bond, S., Choter, R., Gammie, M., Johnson, P., Myles, G., Poterba, J.M. (2011). *Tax By Design*. Oxford: Oxford University Press.

OECD (2017). *OECD Economic surveys: Italy*, <https://www.oecd.org/eco/surveys/italy-2017-OECD-economic-survey-overview.pdf> (last access 19.10.2017).

Petutschnig, M., Rünger, S. (2017). The Effects of a Tax Allowance for Growth and Investment – Empirical Evidence from a Firm- Level Analysis. *WU International Taxation Research Paper Series*, n. 9.

Ricotti, G., Burroni, M., Cuciniello, V., Padovani, E., Pisano, E., Zotteri, S. (2016). The tax burden on banks over the period 2006-2014. *Banca d'Italia. Questioni di Economia e Finanza*, n. 314, <https://www.bancaditalia.it/pubblicazioni/qef/2016-0314/QEF_314_16.pdf?language_id=1> (last access 19.10.2017).

Hebous, S., Ruf, M. (2017). Evaluating the Effects of ACE Systems on Multinational Debt Financing and Investment. *Journal of Public Economics*, 156, 131-149.

Traù, F. (2003). *Structural Macroeconomic Changes and the Size Pattern of Manufacturing Firms*. Basingstoke: Palgrave Macmillan.

UPB (2017). *Budgetary Planning Report*.

Appendix

The MEDITA model: a brief description of the data and the model

The MEDITA, developed by the Italian Fiscal Council (Ufficio Parlamentare di Bilancio, UPB), is based on the balance sheets of a very large sample of Italian corporations made available by the Italian Chamber of Commerce[40]. The sample excludes banks and insurance companies. Table A1 shows the structure of the sample that includes more than 900k companies, representing around the 87,9 per cent of the companies who filled out tax returns in 2014, a percentage that rises for the 92,8 of companies with positive profits.

The representativeness of our sample is higher in the manufacturing sector (96,8 of firms with positive profits filling tax returns) and in the classes of turnover between 1m to 10m in which virtually all companies are included in the sample (year 2014). Lower representativeness is shown in agriculture and among the firms with lower turnover. In the latter case the low representativeness is due to the presence in this group of inactive companies[41].

[40] Italian corporations are obliged to transmit their balance sheets to the 'Registro delle imprese' held by the national Chamber of Commerce.

[41] The obligation to transmit the balance sheet concerns both active and inactive companies, but is more likely that inactive companies would fail to accomplish to that.

Table A1. Structure of the sample – Year 2014.

Sector	Companies			Positive Profit Companies		
	Frequencies (000)	%	Companies with tax return %	Frequencies (000)	%	Companies with tax return %
Agriculture	16	1.7	79.9	8	1.5	87.4
Manufacturing , mining, water, electricity	149	16.5	92.3	98	18.4	96.8
Construction	133	14.6	79.4	73	13.7	89.7
Wholesale and retail trade	178	19.6	86.1	114	21.4	90.8
Transport	30	3.4	88.5	20	3.7	93.8
Accommodation, food and beverages	50	5.5	81.3	24	4.6	86.9
Communications	43	4.7	87.4	27	5.1	91.7
Other Services	307	33.9	93	167	31.5	94.7
Total	905	100.0	87.9	905	100.0	92.8

Turnover	Companies			Positive Profit Companies		
	Frequencies (000)	%	Companies with tax return %	Frequencies (000)	%	Companies with tax return %
To 10k	157	17.4	69.8	30	5.7	70
From 10k to 50k	107	11.8	85.8	55	10.3	83.7
From 50k to 200k	191	21.1	89.4	118	22.3	89.4
From 200k to 1M	255	28.2	96.4	176	33.2	97.1
From 1M to 10M	166	18.4	99.9	128	24.2	99.9
From 10M to 50M	22	2.5	99.9	18	3.4	99.9
From 50M to 250M	5	0.5	98.7	4	0.7	97.6
Over 250M	1	0.1	95.6	1	0.1	95.3
Total	905	100.0	88.6	905	100.0	92.8

Source: MEDITA model and Italian Tax Authority.

For the companies included in the sample, we collected the available balance sheets for the previous four years and for the next one. Table A2 shows the share of the companies in the 2014 sample by availability of the balance sheet in the period 2010-2015. The 62,9 per cent of the companies has a balance sheet for the whole period, while for the 72 percent the data are available for the four years prior to 2014.

Table A2. Share of the companies (sample 2014) by availability of balance sheets in the period 2010-2015.

Year 2010	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015
72,0	78,0	83,6	89,7	100,0	62,9

The population of Italian incorporated companies consists mainly of limited liability companies, that represent about 89 per cent of the total number of companies of our sample, while the joint-stock companies make up only 3,2 per cent. LLCs are usually very small in size (more than two third of them employs less than 4 workers) thus representing only the 42 per cent of total turnover, while the 30k JSCs generate more than of the half of it.

Table A3. Companies by legal status.

Legal Status	Companies		Turnover %	Employees %	Tax Due %
	Frequencies (000)	%			
JSC	29	3.2	51.2	34.7	47.8
LLC	804	88.9	42.3	51.9	49.8
Coop.	59	6.6	4.4	12.2	1.7
Other	12	1.3	2.0	1.2	0.8
Total	905	100.0	100.0	100.0	100.0

In this context of heterogeneity, in which the top 1% of the companies[42] make up 60 per cent of the total turnover (Figure A1) and the top 20 companies make up more than 10 per cent, very large enterprises play a key role in influencing the corporate taxation for the whole group of incorporated business in Italy. This heterogeneity is in fact reflected in a high concentration of the total tax revenue: the top 5 percent of companies (in terms of turnover) pays about the 70 per cent of total IRAP and 60 per cent of the total IRES. For this reason we perform a specific data calibration for the subsample of the very large enterprises data (with more than 50 M of turnover) with the official tax return statistics.

Using the property shares among the companies of the sample, we identify fiscal groups, allowing the simulation of the consolidation mechanism of profits and losses inside the group. The identification of the fiscal groups among the set of the potential groups of companies is performed by an algorithm that maximise the tax relief due to the consolidation mechanism.

[42] Ordered by turnover.

Figure A1. Turnover Lorenz curve and IRAP and IRES concentration curves.

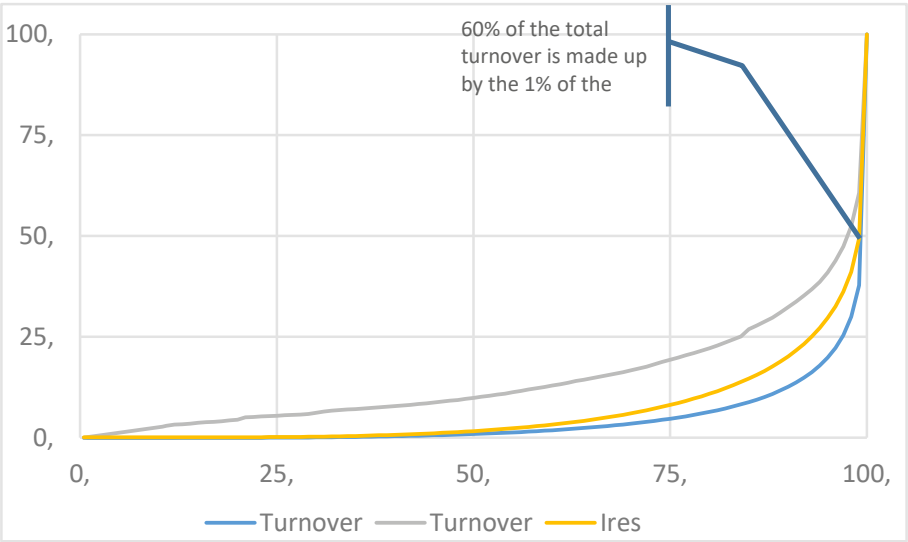
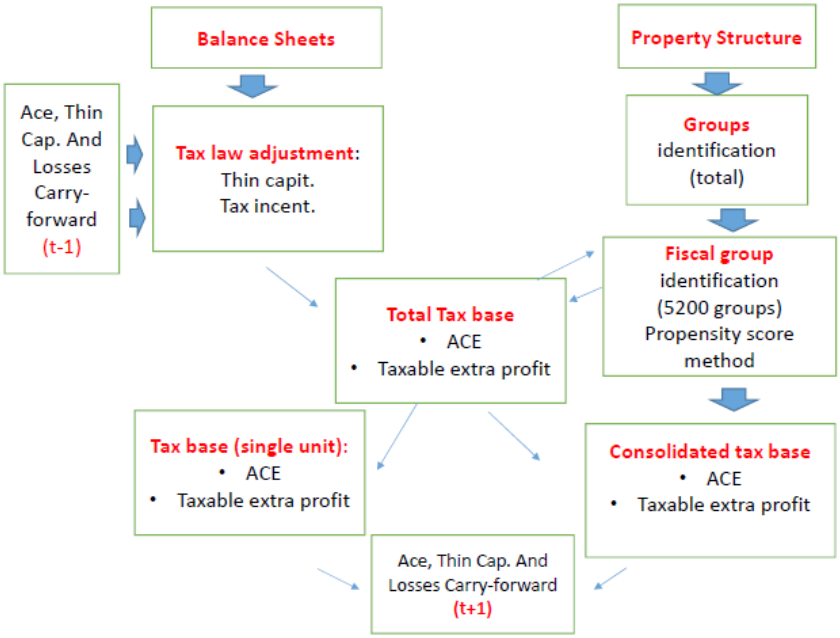


Figure A2. The Model.



The Figure A2 briefly describe the structure of the model, in which tax liabilities are simulated from the balance sheet data of the each company and the fiscal groups, according to the current, or alternative, legislation.

In order to take into account the effect of carrying forward losses (the previous year tax losses on current tax liabilities), as well as the other fiscal rules that are affected by the past realisation of some variable, for each company we dynamically simulate the sequence of tax legislations starting from the year 2011.

Giacomo Ricotti[1]

Taxing corporate income: a tax halfway across the ford?

1. *The evolution of tax rates and of tax base*

Starting this analysis from tax rates, the *Race to the bottom* is a well-known aspect (see Table 1 and Figure 1): in the period 2001-2018, 32 out of 35 OECD countries decreased the rate; there was a fast reduction of the average rate (around 6 p.p., from 31,6% to 25,8%) from 2001 to 2008; a stop during the crisis (2009-2014); a restart of the downtrend in the last years (around 2 p.p. from 2015 to 2018). It is worth noting that the reduction does not imply a convergence of the rate: the differences between maximum and minimum rate did not vary substantially, stabilizing at around 25 p.p.; the coefficient of variation grew up from 0,20 to 0,23. In other words, the incentives to the profit shifting remained unchanged even amongst OECD countries.

The CIT rate decrease did not imply a CIT revenue reduction (see Table 2 and Table 3): from 2001 to 2016, the latter fluctuated, on average, around 3% of GDP; the differences between countries shrank in 2015 and 2016. The ratio between CIT revenue and total revenue carried out the same path, showing that in this period the CIT revenue did not lose importance vis-à-vis other taxes.

[1] Bank of Italy, Tax Directorate. The views expressed in the articles are those of the author and do not involve the responsibility of the Bank of Italy.

The stability of the revenue has been mainly achieved via the enlargement of the tax base. The analysis of the change that occurred in the last decades in the most important EU countries and in the US shows that similar modifications have been introduced, mainly aiming at broadening the tax base (or at avoiding its reduction due to the international competition).

Examples of a common behavior in tax base broadening can be found in the most relevant G20 countries (France, Germany, Italy, UK, USA); two of these are the earning stripping rules and the limitations to the loss deduction.

The earning stripping rules provide for a limit to the interest expense deduction, linked to a profitability measure (EBIT or EBITDA); they generally do not apply to SMEs, as a full interest expense deduction is allowed up to a given threshold, or to companies not belonging to a group[2]. These characteristics show that the earning stripping rule is used more as an anti-base erosion measure than as a means to reduce the debt-equity bias; the inclusion of the earning stripping rules among the measures suggested by the BEPS Action 4 confirm this analysis (OECD, 2016).

The limitations to loss deduction have been introduced, in most countries, during the economic crisis, in order to avoid a large reduction in tax revenue. Indeed, the new rules allow companies to deduct losses up to only a limited part of the tax base, by providing, in some cases, that the limitation to the loss offset apply only to losses exceeding a certain amount[3].

[2] The limitation on the deduction of net financial expenses (i.e., the amount of interest expenses exceeding interest income) is generally equal to 30% of the EBITDA (in Germany since 2008, in Italy since 2008, in the UK since 2017, in the USA from 2018; in the USA it will be equal to 30% of the EBIT from 2022). In France, since 2012 when the net financial expenses exceed 3 million EUR, a 75% deductibility limitation has applied to the entire amount of the net financial expenses. In some countries (Germany, UK) the limit applies only if the company belongs to a group. In Germany, if the total amount of net financial expenses is less than 3 million EUR, a company can deduct the full amount of interest expenses. In the UK the rule does not apply to groups having less than 2 million GBP of net financial expenses. In the USA small companies (i.e., companies with a turnover of less than 25 million USD) can deduct the full amount of interest expenses. Germany, Italy, the UK and the USA allow companies to carry forward the non-deductible net interest payments indefinitely.

[3] In France losses set-off has been limited to 1 million EUR since 2012; only 50% of the tax year profit exceeding 1 million EUR can be set-off against available tax losses. Also in Germany, since 2008 the limit has been set to 1 million, but the quota of the exceeding tax profit that can be set-off is set to 60%. In the UK from 2017 there has been a 5 million GBP allowance; beyond this amount, only 50% of the tax profit can be set off against

The necessity of defending or expanding revenue has exacerbated the international competition on tax base. An example of this competition is the introduction of patent box regimes, that provide for a lower taxation of the income (i.e., royalties) generated by intangibles, via either a partial exemption of the taxable income, or a separate taxation of the royalties, leading to an effective tax rate varying between 0% and 20%. A patent box regime is currently in force in France, Hungary, Belgium, Luxemburg, Netherlands, Spain, Malta, Cyprus, Portugal, Italy.

In order to reduce the tax base erosion, caused *inter alia* by the international tax competition, the G20 Finance Ministers called on the OECD to develop an action plan to address base erosion and profit shifting issues. The implementation of some of the suggestions included in the OECD BEPS package, endorsed by G20 in 2015, is leading to a homogenization of the tax base.

As regards European countries, the EU Anti-Tax Avoidance Directive[4] obliges Member States to introduce five measures that encompass both anti-avoidance and anti-base erosion and profit-shifting rules: interest expense deductibility, general anti-abuse rule, controlled foreign companies and hybrid mismatches[5] rules will apply from 2019; exit taxation provision from 2020. The US tax reform also embraced the suggestions of the BEPS project, introducing both limitations on income shifting through intangible property transfers, and measures against hybrid mismatch arrangements[6].

carried-forward losses. In the USA (from 2018) and in Italy (since 2008) carried-forward losses can set off just 80% of the tax profit.

[4] Council Directive (EU) 2016/1164 of 12 July 2016.

[5] Council Directive (EU) 2017/952 of 29 May 2017 introduced rules on hybrid mismatches between Member States and third countries, with effect from 2020, thus complementing the Anti-Tax Avoidance Directive.

[6] Even the diverted profit tax adopted by the UK and Australia can be seen as a way to avoid the tax base erosion.

2. *The taxation of digital economy and the US tax reform: a tale of two tax base competitions*

In a scenario marked by initiativestowardsthe reduction of tax base competition, two factors could destabilize this search for a balance: the digitalization of the economy, and the international issues of the US tax reform.

Digitalization poses particular challenges for CIT, above all for international taxation issues. In a nutshell, the current framework of direct taxation does not allow to tax profits made in market-countries by companies operating in the digital economy, due to the absence of a permanent establishment. Even if a permanent establishment were recognized, the international allocation of profit, based on the arm's length principle, would be difficult because the main source of profit comes from intangible, highly mobile and hard-to-value assets. Current criteria for transfer pricing do not encompass the new sources of value exploitable in the digital economy such as, for example, the users' data collected through websites without an explicit financial exchange: revenues deriving from those data should be taxed where the value is created, that is in the country where they are collected. In other words, the three pivots of CIT international taxation (permanent establishment definition, arm's length principle and transfer pricing criteria) are not suited to the digital economy value chains; the digital economy, exacerbating the effects of base erosion and profit shifting activities, exposes the weaknesses of the current tax system based on separate accounting.

Even though taxation problems related to digital economy are by now well identified, there are still no internationally agreed solutions; in the meanwhile, several countries have adopted unilateral initiatives, introducing levy on turnover deriving from some digital activities, that do not solve the problem of how to tax the digital economy in the CIT framework, but simply allow to raise tax revenue, bringing out double taxation issues and worsening tax uncertainty problems[7].

The US tax reform aligns the US corporate tax system to international standards, mainly repealing the existing worldwide tax system and adopting a territorial tax system. As these shifts could increase base erosion incentives, the reform provides for some measures that significantly expand cross-border contribution to CIT base: most relevant are GILTI (global intangible low taxed income) and BEAT (base erosion and anti-abuse tax).

[7] Levy on turnover have been introduced in Italy and India.

The former can be seen as a 'rough' controlled foreign companies rules (CFC): the income produced abroad by related companies and exceeding an 'ordinary return' is taxed in the US at a reduced rate (10,5%, rising to 13,125% from 2026), without regard to the distribution of this income or to the economic substance of the activity carried out abroad. It is worth noting that this kind of CFC does not affect only 'intangible income'; moreover, double taxation issues may arise, as the foreign tax credit is equal to only 80% of the foreign taxes paid abroad.

The BEAT is a minimum tax affecting multinational groups with a yearly consolidated turnover of no less than 500 million USD; it provides that US companies belonging to a multinational group pay at least a 10% tax (12,5% since 2026) on a modified tax base, calculated denying the deduction of any intragroup costs, with the exception of cost of goods sold[8]. BEAT implies not only a double taxation issue, but also a treaty override problem, as it does not comply with the non-discrimination clauses contained in most US tax Treaties[9]. The fact that in the USA tax legislation and treaties are on equal footing, with the result that the later in time prevails in case of clear conflict, suggesting that the new law is likely to apply, even that it would result in overriding existing tax treaties.

The US tax reform does not provide only for rules against base erosion, but also for incentivizing inbound investment. Indeed, the FDII (foreign-derived intangible income) rule reduces taxation on foreign sales of US companies, applying a 13,125% tax rate (16,406% from 2026) on profit from exports of goods or services.

By also taking into account the temporary full deductibility of the cost of some business assets, the tax system would foster investment in US-based production activities: it could determine the increase of inbound foreign direct investment into the US and the decrease of such investment in the EU; eventually, it may lead to an erosion of the EU tax base with a corresponding enlargement of the US tax base[10].

[8] The BEAT rule provides that a company must pay the difference between 10% of the modified taxable income and the regular tax liability, reduced by only some credits. The modified taxable income is the regular taxable income increased by any amounts (except cost of goods sold) paid or accrued to a foreign person that is a related party.
[9] Contrariwise, according to Avi-Yonah (2018) BEAT does not rise treaty override issues.
[10] ECB (2018). Heinemann *et al.* (2017).

3. *Some considerations*

The CIT trends analyzed above were marked by the need of national legislators to respond to international competition along the two dimensions of tax rate and tax base: if, on the one hand, this response entailed a constant reduction of the tax rate, on the other, national legislators have tried to expand the existing tax base while at the same time attracting a new one, both by combating international erosion and by reducing the possibility of internal deduction. The tax base erosion, causing distortions in international competition, is also countered by non-fiscal means, as the EU did with the opening of State aid procedures against the multinational web companies. The tax base competition has undermined one of the functions of the CIT, namely the allocation of revenues at the international level, causing, above all, an increase in the occurrences of double taxation.

As highlighted by the European Commission, the principle that «profits should be taxed where the value is created» is challenged in a digitalized world where «it is not always very clear what that value is, how to measure it, or where it is created» (European Commission, 2017). The mechanism of separate accounting is based on the arm's length principle and the transfer pricing technique and requires the existence of a permanent establishment. These characteristics make it unsuitable for managing the complexities of the digital economy; in order to achieve this goal, a new definition of permanent establishment needs to be adopted, based on the concept of 'significant virtual presence'. If it is clear that the actions of the BEPS project are not sufficient to solve the problems posed by the digital economy, common international solutions have yet to be defined. In the meanwhile, countries have introduced national measures. Even if these measures aim at taxing profits produced in the country, they are essentially indirect taxes on turnover, which entails plenty of risks of double taxation, as these forms of levy are not usually recognized by the tax treaties. Nor do they seem suitable to equalize the levy on the multinational web companies, because these levies do not affect all the cases in which added value is created. In a nutshell, unilateral initiatives increase the risk of double taxation; ultimately, they augment tax uncertainty. Furthermore, the difficulty of finding an internationally agreed solution, as recognized by the OECD too, implies that unilateral initiatives risk becoming definitive solutions.

More generally, the US reform, with the introduction of the BEAT, has shown substantial skepticism about the reliability of transfer pricing as a means of allocating revenue at the international level. From this point of

view, the strategic choice of basing the BEPS project on the improvement of the concept of permanent establishment and on the refinement of the transfer pricing techniques is rather outdated. Renouncing to analyze in depth the viability of systems based on formula apportionment is proving to be a perspective mistake[11]. Tax rules based on formula criteria would indeed reduce the difficulties in identifying and quantifying the value creation according to the arm's length principle. The momentum that had been determined within the G20, aimed at seeking a new framework for international taxation, was perhaps a missed opportunity to make more ambitious international reforms based on formula and not on transfer pricing.

What possible developments can we expect in this scenario?

The first step has in some ways already been achieved: an ever-increasing similarity of tax bases, due to a process of emulation amongst legislations, which could also be conducted explicitly through agreements between two or more countries. Obviously, this scenario would not solve the problem of international competition on the tax base: indeed, an emulation of measures such as those contained in the Trump reform, could tighten the tax base competition and bring the international taxation framework back to the beginning of the twentieth century, i.e. before the introduction of the double taxation treaties.

A possible evolution could be a widespread and coherent implementation of the measures envisaged by the BEPS, which may help address the challenges raised so far. However, the BEPS suggestions are not enough: it would be necessary to add *ad hoc* modifications in order to tackle the problems connected with the digitalization of the economy. If one remains in the conceptual framework of separate accounting, tax treaties must be modified by broadening the definition of permanent establishment, to envisage the possibility that the presence in a territory is exclusively virtual; the OECD, in the 2018 Interim Report on Digital Taxation (OECD, 2018), underlines the necessity to arrive at least at «a coherent and concurrent review of the 'nexus' and 'profit allocation' rules».

The difficulties of achieving this goal are evident: the implementation of the BEPS project is partial and stagnant, not least as a result of the substan-

[11] The alternative of a destination-based tax has been largely debated following the presentation of the House GOP tax reform blueprint (Ryan, 2016). Even though this kind of CIT could solve some of the problems posed by the digitalization, it is unlikely that it may gain large international consensus, because it relocates revenue in the countries where goods and services are sold: in fact, the destination-based CIT can be seen as a formula apportionment solution based on a single driver, the sales.

tial disengagement of the USA, which have neither signed the *Multilateral Convention to Implement Tax Treaty Related Measures to Prevent BEPS*, nor the *Multilateral Competent Authority Agreement for the automatic exchange of Country by country report*. An agreement on changes to the web tax is not expected before 2020; in the meantime, temporary measures – i.e. excise taxes able to guarantee the revenue that the CIT is not able to provide – could be introduced in a largest number of countries (e.g., in case of the introduction in the European Union of the interim indirect tax provided for by the 2018 Digital Tax Package)[12]; this would increase the risk of double taxation occurrences. In conclusion, even though some progress may occur in the near future, the current scenario doesn't allow one to believe that CIT is getting out of the ford.

[12] The Digital Tax Package presented by the EU commission on 21 March 2018 provides for two Directive proposals: the first contains a long-term solution, i.e. a common reform of the EU's corporate tax rules for digital activities, enabling Member States to tax profits that are generated in their territory, even if a company does not have a physical presence there; the second proposal provides for an indirect tax on certain revenue from digital activities.

References

Auerbach, A.J., Devereux, M.P., Simpson, H. (2010). Taxing Corporate Income. In Institute for Fiscal Studies (ed.), *Dimensions of Tax Design: The Mirrlees Review*, OUP Catalogue, Oxford: Oxford University Press.

Avi-Yonah, R.S. (2018). Beat It: Tax Reform and Tax Treaties. *University of Michigan Public Law Research Paper*, n. 587; *University of Michigan Law and Economics Research Paper*, 18(3).

European Central Bank (2018). *Economic Bullettin*, 1/2018.

European Commission (2017). *Communication from the Commission to the European Parliament and the Council: A Fair and Efficient Tax System in the European Union for the Digital Single Market*.

Griffith, R., Hines, J., Sørensen, P.B. (2010). International Capital Taxation. In Institute for Fiscal Studies (ed.), *Dimensions of Tax Design: The Mirrlees Review*, OUP Catalogue, Oxford: Oxford University Press.

Heinemann, F., Olbert, M., Pfeiffer, O., Schwab, T., Spengel, C., Stutzenberger, K. (2017). *Analysis of US Corporate Tax Reform Proposals and their Effects for Europe and Germany*, <ftp://ftp.zew.de/pub/zew-docs/gutachten/US_Tax_Reform_2017.pdf> (last access 19.10.2017).

OECD (2013). *Action Plan on Base Erosion and Profit Shifting*, Paris: OECD Publishing, <http://dx.doi.org/10.1787/9789264202719-en> (last access 19.10.2017).

OECD (2017). Limiting Base Erosion Involving Interest Deductions and Other Financial Payments, Action 4 - 2016 Update: Inclusive Framework on BEPS. *OECD/G20 Base Erosion and Profit Shifting Project*, Paris: OECD Publishing, <http://dx.doi.org/10.1787/9789264268333-en> (last access 19.10.2017).

OECD (2018). Tax Challenges Arising from Digitalisation – Interim Report 2018: Inclusive Framework on BEPS. *OECD/G20 Base Erosion and Profit Shifting Project*, Paris: OECD Publishing, <http://dx.doi.org/10.1787/9789264293083-en> (last access 19.10.2017).

Ryan, P. (2016). *A Better Way*, Washington DC: <http://abetterway.speaker.gov/_assets/pdf/ABetterWay-Tax-PolicyPaper.pdf> (last access 19.10.2017).

Table 1. CIT rates in OECD countries
(percentage points)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	CIT Rate decrease 2001-2018	
																			percentage points	%
Australia	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	0.00	0%
Austria	34.00	34.00	34.00	34.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	9.00	26%
Belgium	40.17	40.17	33.99	33.99	33.99	35.97	33.99	33.99	33.99	33.99	33.99	33.99	33.99	33.99	33.99	33.99	33.99	29.58	10.59	26%
Canada	40.48	38.02	35.87	34.38	34.18	33.93	33.95	31.40	30.90	29.40	27.70	26.10	26.20	26.20	26.70	26.70	26.70	26.70	13.78	34%
Chile	15.00	16.00	16.50	17.00	17.00	17.00	17.00	17.00	17.00	17.00	20.00	20.00	20.00	21.00	22.50	24.00	25.00	25.00	-10.00	-67%
Czech Republic	31.00	31.00	31.00	28.00	26.00	24.00	24.00	21.00	20.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	12.00	39%
Denmark	30.00	30.00	30.00	30.00	28.00	28.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	24.50	23.50	22.00	22.00	22.00	8.00	27%
Estonia	26.00	26.00	26.00	26.00	24.00	23.00	22.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	20.00	20.00	20.00	14.00	12.00	46%
Finland	29.00	29.00	29.00	29.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	24.50	24.50	20.00	20.00	20.00	20.00	20.00	9.00	31%
France	36.43	35.43	35.43	35.43	34.95	34.43	34.43	34.43	34.43	34.43	36.10	36.10	38.00	38.00	38.00	34.43	34.43	34.43	2.00	5%
Germany	38.90	38.90	40.22	38.90	38.90	38.90	38.90	30.18	30.18	30.18	30.18	30.18	30.18	30.18	30.18	30.18	30.18	30.18	8.73	22%
Greece	37.50	35.00	35.00	35.00	32.00	29.00	25.00	25.00	25.00	24.00	20.00	20.00	26.00	26.00	26.00	29.00	29.00	29.00	8.50	23%
Hungary	18.00	18.00	18.00	16.00	16.00	17.33	20.00	20.00	20.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	9.00	9.00	9.00	50%
Iceland	30.00	18.00	18.00	18.00	18.00	18.00	18.00	15.00	15.00	18.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	10.00	33%
Ireland	20.00	16.00	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	7.50	38%
Israel	36.00	36.00	36.00	35.00	34.00	31.00	29.00	27.00	26.00	25.00	24.00	25.00	25.00	26.50	26.50	25.00	24.00	23.00	13.00	36%
Italy	40.25	40.25	38.25	37.25	37.25	37.25	37.25	31.40	31.40	31.40	31.40	31.29	31.29	31.29	31.29	31.29	27.81	27.81	12.44	31%
Japan	40.87	40.87	40.87	39.54	39.54	39.54	39.54	39.54	39.54	39.54	39.54	39.54	36.99	36.99	32.11	29.97	29.97	29.73	11.14	27%
Korea	30.80	29.70	29.70	29.70	27.50	27.50	27.50	27.50	24.20	24.20	24.20	24.20	24.20	24.20	24.20	24.20	24.20	27.50	3.30	11%
Latvia	25.00	22.00	19.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	25.00	0.00	0%
Luxembourg	37.45	30.38	30.38	30.38	30.38	29.63	29.63	29.63	28.59	28.59	28.80	28.80	29.22	29.22	29.22	29.22	27.08	26.01	11.44	31%
Mexico	35.00	35.00	34.00	33.00	30.00	29.00	28.00	28.00	28.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	5.00	14%
Netherlands	35.00	34.50	34.50	34.50	31.50	29.60	25.50	25.50	25.50	25.50	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	10.00	29%
New Zealand	33.00	33.00	33.00	33.00	33.00	33.00	33.00	30.00	30.00	30.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	5.00	15%
Norway	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	27.00	27.00	25.00	24.00	23.00	5.00	18%
Poland	28.00	28.00	27.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	9.00	32%
Portugal	35.20	33.00	33.00	27.50	27.50	27.50	26.50	26.50	26.50	26.50	28.50	31.50	31.50	31.50	29.50	29.50	29.50	29.50	5.70	16%
Slovak Republic	29.00	25.00	25.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	23.00	22.00	22.00	22.00	21.00	21.00	8.00	28%
Slovenia	25.00	25.00	25.00	25.00	25.00	25.00	23.00	22.00	21.00	20.00	20.00	18.00	17.00	17.00	17.00	17.00	19.00	19.00	6.00	24%
Spain	35.00	35.00	35.00	35.00	35.00	35.00	32.50	30.00	30.00	30.00	30.00	30.00	30.00	30.00	28.00	25.00	25.00	25.00	10.00	29%
Sweden	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	26.30	26.30	26.30	26.30	22.00	22.00	22.00	22.00	22.00	22.00	6.00	21%
Switzerland	24.70	24.42	24.10	24.10	21.33	21.33	21.32	21.17	21.17	21.17	21.17	21.17	21.15	21.15	21.15	21.15	21.15	21.15	3.55	14%
Turkey	33.00	33.00	30.00	33.00	30.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	22.00	11.00	33%
United Kingdom	30.00	30.00	30.00	30.00	30.00	30.00	30.00	28.00	28.00	28.00	26.00	24.00	23.00	21.00	20.00	20.00	19.00	19.00	11.00	37%
United States	39.27	39.30	39.32	39.32	39.29	39.30	39.27	39.25	39.16	39.21	39.19	39.13	39.05	39.08	39.00	38.92	38.91	25.75	13.52	34%
average	31.57	30.46	29.88	28.96	27.91	27.33	26.77	25.77	25.50	25.45	25.39	25.29	25.39	25.21	24.92	24.66	24.18	23.85	7.68	24%
coefficient of variation	0.20	0.22	0.23	0.25	0.25	0.26	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.24	0.23	0.25	0.23		
min	15.00	16.00	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	9.00	9.00		
max	40.87	40.87	40.87	39.54	39.54	39.54	39.54	39.54	39.54	39.54	39.54	39.54	39.05	39.08	39.00	38.92	38.91	34.43		
max-min	25.87	24.87	28.37	27.04	27.04	27.04	27.04	27.04	27.04	27.04	27.04	27.04	26.55	26.58	26.50	26.42	29.91	25.43		

Source: OECD.Stat, IBFD Tax research Platform, PWC Worldwide Tax Summaries.

Figure 1. Maximum, average and minimum CIT rate in OECD countries (percentage points)

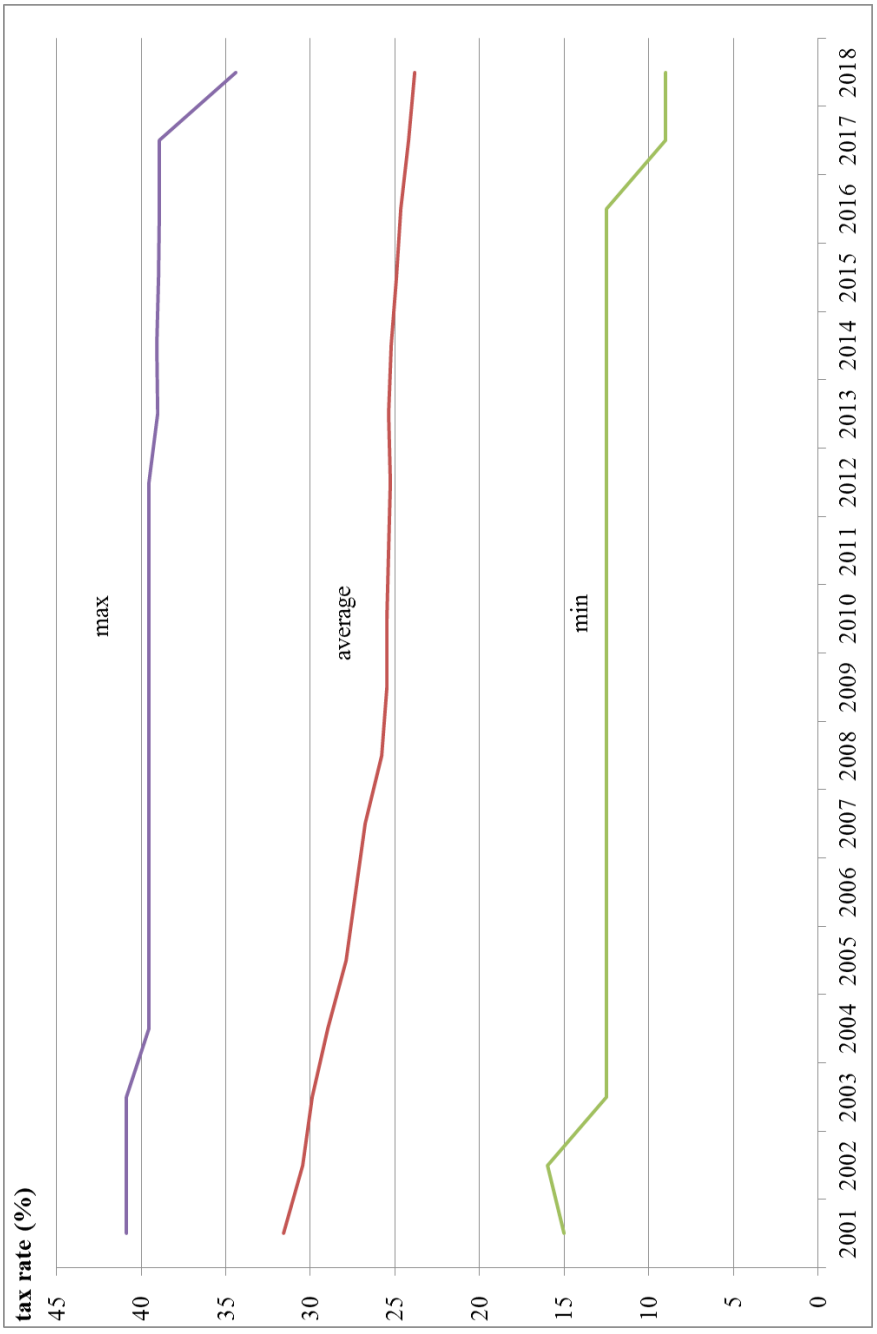


Table 2. CIT revenue on GDP in OECD countries (percentage points)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	4.3	4.9	5.0	5.5	5.8	6.3	6.7	5.7	4.6	4.5	5.0	5.0	4.8	4.5	4.3	n.a.
Austria	3.0	2.1	2.1	2.2	2.2	2.1	2.3	2.4	1.6	1.9	2.0	2.0	2.2	2.1	2.3	2.4
Belgium	3.0	3.0	2.8	3.0	3.2	3.5	3.4	3.3	2.3	2.5	2.8	3.0	3.1	3.1	3.3	3.4
Canada	3.2	2.9	3.1	3.4	3.3	3.7	3.4	3.3	3.3	3.2	3.1	3.2	3.3	3.3	3.2	3.2
Chile	2.0	2.0	2.4	3.2	4.6	6.3	6.7	5.1	4.3	4.0	4.9	5.8	4.4	4.2	4.3	4.3
Czech Republic	3.7	4.0	4.2	4.2	4.2	4.4	4.5	4.0	3.4	3.2	3.2	3.3	3.4	3.5	3.6	3.6
Denmark	2.7	2.8	2.8	2.9	3.4	3.7	3.1	2.5	1.9	2.3	2.2	2.6	2.8	2.8	2.6	2.7
Estonia	0.7	1.1	1.6	1.7	1.4	1.5	1.6	1.6	1.8	1.3	1.2	1.4	1.7	1.7	2.1	1.8
Finland	4.0	4.0	3.3	3.4	3.2	3.3	3.7	3.3	1.9	2.4	2.6	2.1	2.4	1.9	2.2	2.2
France	3.3	2.8	2.4	2.7	2.4	2.9	2.9	2.8	1.4	2.3	2.6	2.6	2.6	2.3	2.1	2.0
Germany	0.6	1.0	1.2	1.5	1.7	2.1	2.2	1.9	1.3	1.5	1.7	1.7	1.8	1.7	1.7	2.0
Greece	3.2	3.2	2.8	2.9	3.2	2.6	2.5	2.4	2.5	2.5	2.1	1.1	1.1	1.9	2.2	n.a.
Hungary	2.3	2.3	2.2	2.1	2.1	2.3	2.7	2.6	2.2	1.2	1.2	1.3	1.4	1.7	1.8	2.2
Iceland	1.0	0.9	1.2	1.0	1.9	2.3	2.4	1.8	1.7	0.9	1.7	1.9	2.1	3.3	2.4	2.5
Ireland	3.4	3.5	3.5	3.4	3.2	3.6	3.2	2.7	2.3	2.4	2.2	2.3	2.4	2.4	2.6	2.7
Israel	3.0	2.4	2.5	2.9	3.4	4.4	4.1	3.2	2.5	2.6	3.0	2.7	3.5	3.2	3.0	3.1
Italy	3.4	3.0	2.7	2.7	2.2	2.8	3.1	2.9	2.4	2.3	2.2	2.4	2.6	2.2	2.0	2.1
Japan	3.4	3.0	3.2	3.6	4.1	4.6	4.6	3.7	2.5	3.1	3.2	3.5	3.8	3.9	3.8	3.8
Korea	2.7	2.8	3.5	3.1	3.6	3.4	3.7	3.9	3.4	3.2	3.7	3.7	3.4	3.2	3.3	3.6
Latvia	1.9	2.0	1.4	1.7	1.9	2.1	2.5	3.0	1.6	1.0	1.4	1.6	1.6	1.5	1.6	1.7
Luxembourg	6.9	7.7	7.2	5.6	5.8	5.0	5.3	5.3	5.6	5.8	5.0	5.1	4.8	4.3	4.4	4.5
Mexico		1.7	1.6	1.4	1.4	1.6	1.9	1.8	1.6	1.9	2.1	1.8	2.4	2.6	3.3	3.6
Netherlands	3.9	3.3	2.9	3.1	3.4	3.4	3.4	3.3	2.2	2.3	2.2	2.1	2.2	2.6	2.7	3.3
New Zealand	3.6	4.1	4.5	5.3	6.0	5.6	4.8	4.3	3.3	3.7	3.9	4.5	4.4	4.3	4.6	4.7
Norway	8.7	8.0	7.9	9.7	11.5	12.6	10.8	12.0	9.0	9.9	10.8	10.3	8.3	6.6	4.4	3.4
Poland	1.8	2.0	1.8	1.9	2.1	2.4	2.7	2.7	2.2	1.9	2.0	2.1	1.8	1.7	1.8	1.9
Portugal	3.2	3.3	2.7	2.8	2.6	2.8	3.5	3.5	2.7	2.7	3.1	2.7	3.3	2.8	3.1	3.1
Slovak Republic	2.6	2.5	2.7	2.5	2.7	2.8	2.9	3.0	2.5	2.5	2.4	2.4	2.9	3.3	3.7	3.8
Slovenia	1.2	1.5	1.7	1.9	2.7	2.9	3.2	2.5	1.8	1.8	1.7	1.2	1.2	1.4	1.5	1.6
Spain	2.8	3.1	3.1	3.5	3.9	4.1	4.7	2.9	2.3	1.9	1.9	2.2	2.1	2.1	2.4	2.3
Sweden	2.6	2.1	2.3	2.9	3.5	3.5	3.5	2.8	2.8	3.3	3.1	2.6	2.7	2.7	3.0	2.5
Switzerland	2.7	2.4	2.2	2.2	2.2	2.7	2.8	2.9	2.8	2.7	2.8	2.8	2.8	2.8	3.0	3.0
Turkey	1.7	1.7	2.0	1.7	1.7	1.4	1.6	1.7	1.8	1.8	1.9	1.8	1.6	1.6	1.4	1.7
United Kingdom	3.1	2.7	2.6	3.0	3.4	3.5	3.3	2.9	2.6	2.9	2.9	2.7	2.6	2.5	2.5	2.8
United States	1.6	1.4	1.8	2.2	2.9	3.1	2.7	1.7	1.4	1.8	1.8	2.0	2.1	2.3	2.2	2.2
average	3.0	2.9	2.9	3.0	3.3	3.6	3.6	3.3	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8
coefficient of variation	0.52	0.53	0.50	0.51	0.54	0.54	0.47	0.54	0.53	0.57	0.59	0.59	0.47	0.38	0.32	0.30
min	0.6	0.9	1.2	1.0	1.4	1.4	1.6	1.6	1.3	0.9	1.2	1.1	1.1	1.4	1.4	1.6
max	8.7	8.0	7.9	9.7	11.5	12.6	10.8	12.0	9.0	9.9	10.8	10.3	8.3	6.6	4.6	4.7

Source: OECD.Stat; taxes on income, profits and capital gains of companies as % of GDP. Data extracted on 29 March 2018.

Table 3. CIT revenue on Total revenue in OECD countries
(percentage points)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	15.1	16.6	16.6	18.1	19.2	21.4	22.6	21.1	17.9	17.9	19.3	18.5	17.5	16.4	15.3	n.a.
Austria	6.7	5.0	4.9	5.2	5.2	5.2	5.8	5.7	4.0	4.6	4.8	4.8	5.0	4.9	5.2	5.6
Belgium	7.0	6.8	6.5	7.0	7.3	8.1	8.0	7.6	5.5	5.9	6.5	6.8	6.9	7.0	7.4	7.8
Canada	9.2	9.0	9.7	10.5	10.4	11.5	10.6	10.3	10.4	10.5	10.3	10.2	10.5	10.6	9.9	10.0
Chile	10.4	10.4	12.6	16.9	22.1	28.6	29.4	23.9	24.5	20.4	23.4	27.3	22.1	21.3	21.0	21.0
Czech Republic	11.3	11.9	12.4	12.2	12.1	12.9	13.1	12.1	10.5	10.0	9.7	9.9	10.1	10.6	10.8	10.6
Denmark	5.9	6.2	6.2	6.2	7.1	7.9	6.8	5.7	4.2	5.0	4.8	5.7	6.0	5.7	5.6	5.9
Estonia	2.3	3.6	5.1	5.3	4.7	4.8	5.1	5.1	5.2	4.0	3.8	4.4	5.5	5.3	6.2	5.1
Finland	9.4	9.3	7.7	8.1	7.6	7.7	9.0	8.1	4.7	6.0	6.2	4.9	5.4	4.4	4.9	5.0
France	7.6	6.6	5.7	6.4	5.5	6.7	6.8	6.7	3.5	5.6	6.1	5.8	5.8	5.1	4.6	4.5
Germany	1.7	2.9	3.5	4.4	5.1	6.1	6.2	5.3	3.7	4.3	4.7	4.7	4.8	4.7	4.7	5.3
Greece	10.1	10.0	9.1	9.6	10.3	8.6	7.9	7.8	8.2	7.9	6.1	3.1	3.2	5.2	5.9	n.a.
Hungary	6.1	6.1	5.8	5.7	5.6	6.3	6.9	6.5	5.6	3.3	3.3	3.3	3.6	4.3	4.6	5.5
Iceland	2.9	2.5	3.4	2.7	4.9	5.8	6.1	5.2	5.2	2.7	5.0	5.4	6.0	8.6	6.5	6.9
Ireland	11.9	13.0	12.7	11.8	11.0	11.7	10.7	9.5	8.4	8.7	8.0	8.2	8.4	8.3	11.3	11.6
Israel	8.6	7.2	7.6	8.8	10.2	12.7	12.0	10.0	8.5	8.6	9.6	9.1	11.3	10.2	9.5	9.9
Italy	8.4	7.5	6.6	6.9	5.7	6.8	7.5	7.0	5.7	5.5	5.2	5.5	5.8	5.0	4.7	5.0
Japan	12.9	12.2	13.0	14.2	15.5	17.0	16.8	13.7	9.6	11.6	11.8	12.5	13.2	12.9	12.3	n.a.
Korea	12.3	12.7	15.3	14.3	15.9	14.3	15.1	15.9	14.4	13.8	15.4	14.9	14.0	12.8	13.1	13.6
Latvia	6.7	7.0	5.3	6.1	6.8	7.4	9.0	10.8	5.6	3.5	5.1	5.7	5.7	5.3	5.5	5.5
Luxembourg	18.5	20.5	19.3	15.4	15.4	13.9	14.7	14.3	14.7	15.4	13.4	13.3	12.4	11.4	11.9	12.2
Mexico		12.4	11.8	11.1	11.9	13.4	15.2	13.3	12.2	13.9	15.7	14.1	17.7	18.0	20.1	n.a.
Netherlands	11.0	9.4	8.1	8.8	9.7	9.5	9.5	9.1	6.1	6.4	6.1	5.9	6.0	6.9	7.2	8.5
New Zealand	11.4	12.5	13.6	15.5	16.8	15.8	14.2	13.1	11.0	12.2	12.9	14.1	14.1	13.1	13.8	14.8
Norway	20.7	18.9	19.0	22.9	27.1	29.4	25.8	29.0	21.8	23.5	25.6	24.9	20.7	17.1	11.5	9.0
Poland	5.4	6.0	5.4	6.1	6.4	7.1	7.9	7.9	7.2	6.2	6.3	6.5	5.5	5.5	5.7	5.5
Portugal	10.5	10.4	8.7	9.3	8.5	9.0	10.9	11.1	9.2	9.0	9.7	8.6	9.6	8.3	9.0	8.9
Slovak Republic	7.8	7.6	8.3	8.1	8.5	9.7	10.0	10.5	8.5	8.7	8.4	8.3	9.4	10.6	11.5	11.6
Slovenia	3.4	4.1	4.6	5.0	7.2	7.7	8.6	6.8	5.0	5.0	4.5	3.4	3.3	3.9	4.0	4.4
Spain	8.4	9.3	9.3	10.2	11.0	11.5	13.0	8.9	7.8	6.2	6.0	6.8	6.4	6.2	7.0	6.8
Sweden	5.6	4.7	5.0	6.3	7.5	7.5	7.8	6.4	6.4	7.6	7.3	6.0	6.2	6.3	6.9	5.7
Switzerland	10.1	8.7	8.4	8.2	8.4	10.4	10.8	11.1	10.4	10.1	10.4	10.4	10.4	10.4	10.8	10.8
Turkey	6.8	7.2	8.0	7.3	7.1	6.0	6.8	7.3	7.7	7.3	7.5	7.4	6.3	6.4	5.7	6.5
United Kingdom	9.3	8.4	8.1	9.1	10.5	10.5	10.0	9.0	8.2	8.9	8.8	8.2	7.9	7.8	7.5	8.4
United States	5.8	5.7	7.5	9.1	11.0	11.5	10.0	6.6	6.0	7.6	7.4	8.4	8.3	8.8	8.5	8.6
average	8.9	8.9	9.0	9.5	10.3	11.0	11.2	10.4	8.8	8.8	9.1	9.1	9.0	8.8	8.9	8.4
coefficient of variation	0.46	0.46	0.46	0.46	0.50	0.52	0.49	0.51	0.55	0.54	0.58	0.61	0.53	0.49	0.47	0.43
min	1.7	2.5	3.4	2.7	4.7	4.8	5.1	5.1	3.5	2.7	3.3	3.1	3.2	3.9	4.0	4.4
max	20.7	20.5	19.3	22.9	27.1	29.4	29.4	29.0	24.5	23.5	25.6	27.3	22.1	21.3	21.0	21.0

Source: OECD.Stat; taxes on income, profits and capital gains of companies as % of total taxation. Data extracted on 29 March 2018.

Elena Granaglia*

Social policies between old and new inequalities

Social policies can be differently defined depending on the policies included. Furthermore, as any policy, they could be examined from the perspective of what has been decided or from that of policy drift, namely political inaction[1], and, in both cases, from the perspective of policy design and/or from that of actual implementation. Given the same financial resources and institutional design, a policy could, indeed, lead to quite different distributive results depending on the way it is administered. Inequalities, too, could be differently defined depending on the 'who' (the subjects of inequality), the 'what' (the object) and the 'when' (inequality now vs. inequality through time) taken into consideration.

Some delimitation and specification of the field are, thus, necessary. With respect to social policies, in this chapter, I focus mainly on income-support, be it general cash support or support for the buying of specific services/goods, with the exception of pensions, which are the topic of the next chapter (on pensions, see Ginebri in this book). The attention is concentrated on the evaluation of *ex ante* policy design rather than on implementation. I provide only some cursory remarks to policy drift. Coherently with the scope of the book, the policies at the core of the chapter are those brought about by the Budget Law for 2017.

With respect to inequality, the focus is on the 'who' and more precisely on inequalities 'within' families/individuals who are in conditions that are deemed similar, that is to say, horizontal inequalities, and inequalities 'between' families/individuals who are in different economic conditions (between those who have more and those who have less), that is to say,

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[1] On the notion of policy drift, namely, the attempts to block policy changes, see Hacker (2004).

vertical inequalities. I refer, and this to be underlined, to inequalities rather than inequities. Even though the definition itself of inequality requires value judgments in order to select the relevant variables to consider and value judgments are involved in the choice of the measure of inequality, value judgments entailed by inequality are weaker/thinner than those entailed by inequity. Inequity has to with the moral undesirability of a given distribution. Inequality only depicts aspect of inter-individual relations.

The main point of the article is that most of the income-support policies undertaken by the Budget Law for 2017 are categorical policies, meaning by them policies benefitting some categories of people while excluding others that are in a similar situation. These policies maintain old and create new horizontal inequalities between those receiving help, in so far as belonging to the category selected, and those not receiving it, in so far as not belonging to it, even though in need too. In some occasions, the category chosen as well as the design of the income-support pursued give rise even to vertical inequalities, excluding the more disadvantaged from the benefits. This reality is particularly worrisome in the light of the characteristics of the Italian Welfare State, a Welfare State historically afflicted by categorical fragmentation.

The chapter is divided into three parts. Part 1 presents the main measures that have been undertaken. Part 2 offers an evaluation in terms of the inequalities associated to them. Part 3 concludes.

1. *The main tax and transfer measures undertaken by Budget Law for 2017*

Child care support.

The main measures, to this regard, include the introduction of two new cash transfers, the *Bonus Mom Tomorrow* (*Buono mamma domani*) and the *Kindergarten Voucher* (*Buono asili nido*) as well as the confirmation of two pre-existing ones, the *Baby Sitter Voucher*, introduced experimentally in 2012, and the *Baby Bonus* (*Bonus bebè*) introduced in 2015.

The Bonus Mom Tomorrow corresponds to 800 euros, delivered in one solution. It is available to all women from the seventh month of pregnancy until the first year of life of the baby. The same conditions apply in

case of adoption. The Bonus does not enter the tax base of the personal income tax. Financing comes from a newly established *Fund to Support Child Birth* (*Fondo di sostegno alla natalità*), with an endowment of 4 million euros. The Kindergarten Voucher, addressed at children 0-3 years old born after 2016, amounts to 1.000 euros per year and can be spent both in public or private kindergarten. In case of children suffering from serious illnesses it could be used to subsidize home care. 144 million euros have been devoted to this end.

With respect to the old measures, the Baby Sitter Voucher has been extended for two years. It is addressed to working mothers returning to work immediately after the five months of compulsory maternity leave. It amounts to 600 euros per month. The voucher can also be spent for kindergarten (again either public or private). Given the success of the initiative, financing has doubled for mothers hired as employees, from 20 to 40 million euros, and it has more than tripled for self-employed mothers, from 3 to 10 million euros. Employee mothers can enjoy it for six months and the self-employed only for three months. This voucher cannot be cumulated with the Kindergarten Voucher or the kindergarten tax credit provided by the personal income tax (the tax credit amounts to 19% of the documented expenditure up to a threshold of 632 euros per child).

The Baby Bonus is restricted to families with children whose resources, considering both income and wealth according to the ISEE (the Indicator of the Equivalent Economic Situation), do not exceed the yearly threshold of 25.000 euros. Children, also in this case, cannot be more than three years old. For those whose resources are below 7.000 euros, the bonus is 160 euros per month (1920 euros on a yearly basis). It decreases to 80 euros (960 euros on a yearly basis) for those whose resources range between 7.000 and 25.000 euros.

Finally, a Fund has been established offering subsidized access to credit to families with children as well as providing public guarantees in case of access. The endowment, to be increased in the next years, is 14 million euros.

Anti-poverty measures.

Waiting for the new minimum income scheme to take place starting from January 1st, 2018, the *Reddito di Inclusione* (REI), the Budget Law for 2017 increases the resources devoted to the only national anti-poverty plan then in existence, the SIA (Support to Active Inclusion), and to the *Fund against Poverty* (*Fondo contro la povertà*), in charge of financing it. The increase represented more than the doubling of the resources compared to

2016: over 1,5 billion euros in 2017 compared to 750 million in 2016. This has allowed both to increase, from 600 euros to 900, the value of other transfers that the disabled can exclude from the means-test, thus *de facto* increasing the poverty line for this group of people, and, to decrease for everybody the threshold of the multidimensional indicator of needs that SIA utilized, together with the income/wealth/consumptions thresholds, to select the beneficiaries. The multidimensional indicator included, among other things, the age of the family members, the presence of disability, the economic situation. Previously one had to obtain 45 point; with the new revisions, 25 points became sufficient, thus allowing all families with children to benefit from SIA. It has also allowed some increase in the value of the benefit. This notwithstanding, SIA remains targeted to families with children up to the age of 18, children of any age if disabled and pregnant women. The transfer ranges from 80 euros a month for single person to a maximum of 400 euros for families with five or more components. Single parents are offered a further benefit of 80 euros per month.

Occupational welfare.

Another important element of welfare legislation has been the strengthening of the tax allowance for corporate welfare introduced in 2015. The allowance consists in the possibility for private employees to exempt from taxation wage increases linked to productivity gains and used to buy private welfare. The amount of the wage increase that is tax-free has gone from 2.000 euros (or 2.500 if trade unions participate with the employers in the definition of welfare deal) to 3.500 (or 4.000 euros in the latter case). The level of earnings not to be exceeded in order to enjoy the tax break has also been raised from 50.000 to 80.000 euros. This tax allowance comes in addition to many other subsides such as the possibility, for the employers, to deduct up to 3.615 euros if the sum is utilized to private health insurance for the workers.

Other miscellaneous measures.

Other income-support measures include the introduction of the *Culture Bonus* (*Bonus Cultura*) and of a no tax area for college students belonging to families with an ISEE (Indicator of the Equivalent Economic Situation) below 13.000 euros as well as the confirmation and even the stabilization, as a structural/permanent measure, of the 80 euros Bonus.

The Culture Bonus is a 500 euros voucher, destined to young people turning eighteen, that can be spent to buy books and to attend movies,

musical/artistic and cultural events and foreign languages courses. The 80 euros Bonus is a tax credit delivered monthly to dependent workers (and workers assimilated to them) whose total yearly income is between 8.000 and 24.000 euros. It starts decreasing from 24.000 euros until it cancels at 26.000 euros. Since the transfer is given on the basis of the expected income, if actual income, at the end of the year, exceeds either one or the other limit, workers have to give back the sum received in excess (the whole sum if total income exceeds 26.000 euros, a part of it, if total income remains below 26.000).

2. *The effects on inequality*

Most of the measures just presented are categorical, in the sense that they benefit only some groups of persons while excluding others that are in similar conditions. These policies produce horizontal inequalities between those receiving help and those not receiving it, even though in similar conditions.

Certainly, belonging to a given category (type) could also signal additional needs compared to the rest of the population. For example, disability signals the need for additional income. If so, targeting cash transfer to the disabled is a categorical measure, but it does not necessarily create horizontal inequalities. On the contrary, it could contribute to equality, in so far as disabled and able-bodied are not in the same conditions.

The crucial point is what happens to the rest of the population. If overall anti-poverty policies are realized and the disabled are given additional resources, then, at least *prima facie,* categorical policies in favor of the disabled could represent a response to differences in need that does not create horizontal inequalities. If, however, needy non-disabled people remain without help, then, categorical measures in favor only of the disabled create horizontal inequalities. Horizontal inequalities are exactly the product of most of the income-support measures undertaken.

Consider, first of all, child-care. The Bonus Mom Tomorrow, the Kindergarten Voucher, the Baby Sitter Voucher and the Baby Bonus they all benefit young children, up to three years of age, while no resources are given for older children, even though these latter cost, too.

One could argue that, in the long run, all families with children would benefit, all older children having passed through the first years of age. Thus, no horizontal inequalitywouldoccur: a policy that appearscategorical at a given point in time simplywouldbecome universal in a lifetime perspective. In other terms, current inequalities between families with children of different ages would be a temporary effect, destined to disappear as the policy develops.

This is true. Yet, one has also to take into consideration the current status of child support in Italy, where no help is offered to families with children over the age of three whose parents are not employees and, therefore, are unable to access child benefit (in Italy, the self-employed are excluded from the benefit) and/or are too poor to pay taxes, and, therefore, cannot benefit from the child tax credit (in Italy, the tax credit provided by the scheme income taxation is not refundable, which means that one needs to have enough tax revenue in order to be able to subtract the credit). In such a context, measures that only help families with small children do nothing else but maintaining existing horizontal inequalities.

And it is not all. On the one side, the way the Baby Sitter Voucher is designed discriminates between the mothers who were already working before childbirth and those who were not and, among the former, between mothers who are employees and those who are self-employed, to whom only smaller transfers are offered. On the other, the Kindergarten Voucher *de facto* discriminates between families living in areas where kindergartens are present and families living in areas where kindergartens are lacking. According to the last available data, in the Northern and Central Regions, kindergartens are able to accept 28,2% of the children 0-3 (in some Regions, the percentage rises to over 33%), while in the South, the percentage drops to 11,5% and, in any case, heterogeneity remains wide also within Regions (ISTAT, 2017). This means that the effective purchasing power of bonuses of the same amount greatly varies between areas: in some areas, it could even have a null value, as there are no kindergartens[2]. Finally, there is the overall risk of 'first come first served'. According to Sabatinelli (2017), for example, the resources allocated could cover around half of the approximately 300.000 places (summing places in public and private kindergartens) currently available. If so, further horizontal inequalities will arise within the families of children 0-3 years old, too.

Horizontal inequalities also beset tax allowances for corporate welfare as well as the 80 euros Bonus, both of these measures being restricted

[2] In any case, the Plan has yet to be realized.

to employees. Corporate welfare, moreover, is further restricted to a subgroup of employees, those belonging to the private sector and to firms where productivity gains are present, the employer is willing/capable to offer welfare plans and, in order to obtain the additional premium, trade union's participation is ensured. In the meanwhile, tax breaks entail a reduction in the tax yield, thus imposing a cost on those excluded from corporate welfare and are, instead, exposed to the trade-off between paying more taxes and suffering from a reduction of the expenditure that can be financed.

Finally, with respect to anti-poverty transfers, poor families who are childless receive no benefit from SIA, even if they are in dire poverty. To this regard, it is worth recalling that the increase in the financing of SIA is also the result of the reduction in the financing of ASDI (Social Allowance for Unemployment), a social benefit offering temporary help to those who have exhausted the right to unemployment benefits. These subjects included also childless people who, on the contrary, are denied assistance by SIA.

There are, then, vertical inequalities. Tax allowances,in the presence of progressive taxation, favour those with higher marginal rates. Similarly, some of the Bonuses introduced tend to favour families who are not among the most disadvantaged. Take the Kindergarten Bonus. If one is poor, a bonus of 1.000 euros per year could be very little compared to the sum that would remain to be borne privately[3]. Furthermore, dual-earner families tend to use mostly kindergartens and these families are often not among the most disadvantaged[4]. Finally, the first to access transfers often are the better informed who also tend to be the better off.

This obviously doesn't deny the role of kindergartens. Simply, if one wants to promote access to kindergartens for all, a bonus of the same amount, covering only a limited part of the cost and delivered on a 'first come first served basis' may not be the best way to proceed. To the extent that they are not enjoyed by the worst off, the subsidies to kindergartens further deepen the vertical inequalities today afflicting income-support for children.

Similarly, the workers benefitting from corporate welfare are not among the most disadvantaged. Precarious and less protected workers are excluded and, among employees, those who benefit the most are those belonging to the (relatively) better off group of the workers employed in the

[3] On the height of kindergartens' fees in Italy, see Gambardella, Pavolini, Arlotti (2015).
[4] On the social stratification of risks, see among others, Pintelon *et al.*(2011).

larger firms mainly located in the Northern and Central Regions[5]. With respect to the 80 euros Bonus, the more disadvantaged workers, those with earnings below 8.000 euros, do not receive it. Moreover, the bonus, being linked to individual income, may go to second earner of a rich family. Indeed, if we consider unadjusted family income, we see that more than half of the families in the 9th decile receive it and over 30% of the families in the 10th decile (the percentages drop respectively to 34 and 17 if we consider equivalent income)[6].

3. *Conclusion*

Overall, the income-support measures taken by the Budget Law for 2017 are categorical measures that maintain some existing horizontal inequalities and create some new ones. This is particularly worrisome in the light of the characteristics of the Italian Welfare State, a Welfare State historically afflicted by categorical fragmentation[7]. Corporate welfare benefits and the Bonus 80 euros are limited to dependent workers, while the measures undertaken to support child-care not only maintain the existing horizontal inequalities affecting cash benefits, but also introduce a variety of new ones.

Horizontal inequalities, then, are often intertwined with vertical ones. Even among dependent workers, those who benefit are often not the worst off, while the group excluded from child tax allowance are those too poor to pay taxes.

The weight of tax evasion in Italy has undoubtedly influenced these choices. The counterpart to be acknowledged is, however, the diffusion of horizontal and vertical inequalities. Especially, with respect to children support, the Italian fragmented and lacking policy marks a stark deviation from the situation of other EU member countries, where support is given to disadvantaged families also when their children are well over the third year of age.

The Budget Law for 2018 does not seem to change the situation. All the measures that were present in 2017 and have been previously exam-

[5] On the overall inequalities associated with corporate welfare, see Granaglia (2017).
[6] On this evidence, see Baldini *et al.* (2015).
[7] Among the many works, see Ascoli (1984) and Ascoli, Pavolini (2015).

ined have been confirmed. The Bonus 80 euros has even expanded the scope of application, the upper thresholds having risen to 24.600 and to 26.600 euros, respectively (the lower has become 8.174 euros).

The only exception concern the Baby Bonus (its duration has dropped to one year, the first one of the child) and anti-poverty policy. SIA has been abolished and substituted with a minimum income scheme, REI (Reddito di Inclusione)[8], that in the words of the Government should cover all the poor, meaning by them all people whose (equivalent) income does not exceed 3.000 euros (net of rents and 20% of earned income up to given thresholds) and liquid and illiquid wealth do not exceed respectively 6.000 and 20.000 euros (illiquid wealth is valued net of the house one lives in). For the time being, however, access, among the poor, is circumscribed to families with children (who are minor) or with some family members who are disabled or are at the same time unemployed and over fifty-five (the further constraint of having exhausted unemployment insurance has, however, been dropped and now all unemployed over fifty-five have access to REI). The alleged reason has to do with the budget constraints. Even though resources allocated to REI through the Fund against Poverty have increased to 2,059 billion euros, the sum remains largely insufficient to cover all those whose resources are below the established thresholds. In any case, the poverty threshold is very far from the poverty line, not only the relative one (60% of median equivalent income, around 750 euros), but also the absolute one (for a single individual, this line ranges from around 560 to around 650 euros depending on the area in which one lives). Indeed, only 38% of those who are absolutely poor will receive it (around 1,7 million euros individuals out of 4,7 million euors individuals who are poor). Furthermore, the increase in the resources devoted to the Fund against Poverty has come also at the expenses of ASDI, which has been abolished (after the cuts operated by the Budget Law for 2017).

Finally, the Budget Law for 2018 establishes a new indemnity for the person, in the couple, who offers care to a family member who is disabled or not self-sufficient. As I have previously acknowledged, policies targeted to the disabled, far from engendering horizontal inequalities, could be exactly a means to fight them. In addition, public support of disability in Italy is so lacking and the families are so overburdened that any help could be seen as an improvement. The Budget Law for 2018, moreover, offers

[8] The term minimum income scheme could be questioned, in so far as the sums delivered are very from those necessary to fight poverty. They go from 187,50 euros for a single person to 534,37 euros for a family with five or more components.

very little details, deferring the specification of the measure to successive decrees. On the one side, however, the resources allocated seem far from being able to coverall family caregivers as well as all disabled/not self-sufficient persons. As only some sub-groups of carers and/or recipients of care will benefit, other horizontal inequalities inevitably will arise. On the other side, horizontal inequalities are written in the law itself, this latter restricting the benefit to family caregivers. What about the disabled who do not have or do not want a family caregiver? No money would be provided to them, money being available only to family caregivers.

Cash transfers, the focus of this chapter, are one way to support income. In-kind transfers represent another option, although these transfers fulfil also other functions, such as promoting citizenship and ensuring access to specific goods and services that the market is unable to ensure (or would ensure at the cost of serious inefficiencies) even if one had the money to buy them. Now, if we consider in-kind transfers, in the 2017, the National Health Service has finally received 2 billion euros more, after years of cuts. 207 million euros have been allocated to a National Plan to build new kindergartens as well as to improve the existing ones (*Piano Nazionale Nidi*), and at least 15% of the resources of the National Fund against Poverty is earmarked for the improvement of local social services. In addition, the last Budget Laws have strengthened tax breaks to the donors to spur the provision of social services by the third sector. The tax credits for individual donors has increased from 26% to 30% up to 30.000 euros per year. Alternatively, the donor may deduct up to 10% of the income that is declared. Firms and organizations, instead, can only rely on deductions, again up to 10% of taxable income (donations in excess could be utilized in successive fiscal years)[9]. A 75% tax credit is available to Banking Foundations for expenditure made in favour of projects undertaken by the third sector (the State puts 100 million euros per year to this end)[10]. Finally, the third sector could also benefit from the newly founded *Fondazione Italia Sociale*, endowed by the State of a capital of 1 million euros.

These policies, however, do not seem able to counteract the inequalities associated with cash transfers. Most of the increase in the financing of the National Health Services has been devoted to the purchase of the so-called innovative drugs (between 2013-2016, pharmaceutical spending in the hospitals is the expenditure item that has grown the most, with an increase

[9] The former limit of 70.000 euros has been abolished.

[10] Before the last Budget Law, the tax credit was restricted to the transfers made to the *Fund against Educational Poverty*. Now the restriction has been removed.

of 8% compared to an increase of 1,2% in overall spending). It is hard to believe that this expenditure has contributed to ameliorating the scenario depicted by the Parliamentary Budget Office (UPB, 2015), namely the presence of 7,1% of Italians who, in 2013, had to renounce to health care either because of cost (including the cost of co-payments) or waiting times (also due to the insufficiency of public expenditure)[11]. The Kindergarten National Plan, on its part, is still on the paper, while the resources devoted to the Fund against Poverty come, at least in part, from pre-existing allocations. Besides the resources destined to ASDI, which, as we have seen, have been, first, partially diverted to finance SIA and, successively entirely utilized to finance REI (ASDI having being abolished), the Fund against Poverty also relies on resources previously allocated to the *National Fund for Social Policy* (whose endowment has, instead, decreased over time). Finally, the way the third sector is utilized (as an independent provider rather than within the overall infrastructure of public services) goes exactly in the direction of creating more categorical interventions and, with them, additional horizontal inequalities.

In sum, even taking into consideration the overall package of social measures undertaken, the categorical imprint of the cash transfers pursued by the Budget Law for 2017 (and for 2018) remains unchallenged and, with it, the presence of many horizontal and vertical inequalities.

[11] On the basis of the OECD data in 2014, pro capite public expenditure in health care in Italy was approximately 2.000 euros PPP compared to 4.000 and 3.500 euros respectively for Germany and France. More details are offered by Turati (2017).

References

Abrassart, A., Bonoli, G. (2015). Availability, cost or culture? Obstacles to childcare services for low-income families. *Journal of Social Policy*, 44(4), 787-806.

Ascoli, U., ed. (1984). *Welfare State all'Italiana*, Bari: Laterza.

Ascoli, U., Pavolini, E., eds. (2015). *The Italian Welfare State in a European Perspective: A Comparative Analysis*, Chicago: University of Chicago Press.

Baldini, M., Giarda, E., Olivieri, A., Pellegrino, S., Zanardi, A. (2015). Il "bonus" degli 80 euro: caratteristiche ed effetti redistributivi. *Rivista di Diritto Finanziario e Scienza delle Finanze*, 74(1), 3-22.

Gabriele, S. (2015). La revisione della spesa pubblica: il caso della sanità. *UPB. Focus tematico*, n. 9, <http://www.upbilancio.it/wp-content/uploads/2016/01/Focus_9.pdf> (last access 19.10.2017).

Gambardella, D., Pavolini, E., Arlotti, M. (2016). L'investimento sociale alle prese con disuguaglianze sociali e territoriali. In Ascoli, U., Ranci, C., Sgritta, G.B. (eds.), *Investire nel sociale. La difficile innovazione del welfare italiano*, Bologna: Il Mulino, 45-73.

Granaglia, E. (2017). Il welfare aziendale e la sanità complementare. Alcuni costi nascosti. *La Rivista delle Politiche Sociali*, 2, 37-46.

Hacker, J. (2004). Privatizing Risk without Privatizing the Welfare State: The Hidden Politics of U.S. Social Policy Retrenchment. *American Political Science Review*, 98(2), 243-269.

ISTAT (2017). *Asili nido e altri servizi educativi*.

Pavolini, E., Van Lancker, W. (forthcoming). The Matthew Effect in childcare use: a matter of policies or preferences?. *Journal of European Public Policy*.

Pintelon, O., Cantillo, B., Van den Bosch, K., Whelan, C. (2013). The Social Stratification of Social Risks: The Relevance of Class for Social Investment Strategies. *Journal of European Social Policy*, 23(1), 52-67.

Sabatinelli, S. (2017). In arrivo il bonus nido. *Welforum.it*, <https://welforum.it/arrivo-bonus-nido> (last access 19.10.2017).

Turati, G. (2017). Dopo i tagli: check up della sanità italiana. *Lavoce.info*, <http://www.lavoce.info/archives/46484/tagli-lo-salute-della-sanita-italiana/> (last access 19.10.2017).

Sergio Ginebri*

Softer eligibility requirements for the retirement of vulnerable workers and increased smaller amount pensions: income inequality, actuarial fairness

1. *Main innovations in pension policy*

The Budget Law for 2017 introduced a wide list of innovations in pension rules. The policy measures were focused on two main areas: the value of annuities of smaller amount; the age requirement for retirement. Other minor measures were addressed to: the possibility of summing up contributions to different pension schemes; the elimination of monetary penalties for retirees younger than 62 year old; the alignment of the contribution rates among different pension schemes; the eligibility requirements for anticipated retirement in the case of working women who accept pension computation exclusively based on defined contribution method. The budget impact of the main pension policy measures amounted to about 2 mln euros in 2017 (see Table 1), which is a small but significant part of the additional 15 mln euros expenditure and lower revenues brought in by the Budget Law[1] (UPB, 2017).

The measures in Budget Law for 2017 were the first relevant innovations in pension policy since the massive reforms carried out in years 2010-

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[1] We are considering lower revenues established by Budget Law, net of the de-activation of the safeguard clause included in previous budget law.

2011, when early retirement schemes were heavily restricted, retirement age between women and men were aligned, age and seniority requirements for retirement were linked to the increases in life expectancy. Pension policy reforms similar to the Italian 2010-2011 one have been carried out in other European countries in the last few years (EC, 2015), however some features of Italian reform made it peculiar in Europe, since the translation of increases in life expectancy to pension requirements is now automatic, integral and uniformly applied to all age and seniority eligibility conditions, no transitory period of gradual implementation of the new rules was taken into account, no possibility of an anticipation of pension age was envisaged even though at the cost of a penalty[2]. The roughness of 2010-2011 pension reforms has had several unintended consequences on labour market and productive system, and that has called for the need of further policy measures, aimed at mitigating the worse impacts. Some of them had already been accomplished, and all of the them introduced derogations from the pension requirements established in 2010-11, and opened the retirement opportunity to workers who were close to the old pension requirements. Seven measures in derogation were established between 2011 and 2015, and the eight one was included in the Budget Law for year 2017. The number of retirees involved had been about 137 thousands[3] till 2015, and further 31 thousands were allowed in 2016 (MEF, 2017). However, the need of a systemic approach to the eligibility requirements which might alleviate rigidities and roughness of 2010-2011 reform was still unresolved.

The second main area of measures on pension policy in 2017 Budget Law was the value of smaller amount pensions, which were unaffected by *bonus Irpef*, introduced by 2015 Budget Law and benefitting all the labour income smaller than 26.000 euros. The exclusion of pension incomes from the 2015 personal tax cut created the political need of some form of their compensation. Once acknowledged the appropriateness of some measures on both eligibility requirements and value of smaller amount pensions, government called for a negotiation session with major employee trade unions, which started in May 2016 and ended in September 2016 by the

[2] The reforms carried out in the last few years in European social security systems are surveyed in UPB (2016). In European countries various forms of flexibility have been introduced, all of them aimed at encouraging active ageing and at making more gradual the exit from labour market by older workers.

[3] In order to make a comparison, consider that total number of old age retirees was equal to 286 thousands in 2016 (ISTAT, 2017).

publication of an agreement document[4], where the main measures later brought about by 2017 Budget Law were sketched.

2. *The raise of smaller amount pensions*

Although the political need for an increase of smaller amount pensions was originated by the exclusion of pension incomes from *bonus Irpef* tax cut, the measure agreed by trade unions and government, and then carried out by Budget Law, modified only marginally the fiscal treatment of pension incomes. The increase of pensions of smaller amount was carried out by two measures: the raise of one of the welfare benefits targeted to older individuals, called *somma aggiuntiva*; the thorough alignment of no-tax area between labour and pension incomes.

Older individuals are eligible to two main welfare benefits: *assegno sociale* (AS) and *integrazione al trattamento minimo* (TM). Both of them are means-tested and the access to both of them requires to have personal incomes smaller than the amount of the benefit. AS is addressed to individuals older than 66 years and seven months, whereas TM is directed to all the retirees from an occupation and its amount is slightly higher than AS (see Table 2). Those two basic social treatments can be combined with additional welfare benefits[5]. On top of it, a specific welfare benefit, *somma aggiuntiva* (SA), is exclusively addressed to pensioners older than 64 years and who were enrolled in the public mandatory system and receive an annuity within that system. Thanks to SA the final and total benefit received by a seventy year old individual who was a poor worker is marginally larger than the one granted to somebody who never contributed to social security. 2017 Budget Law reformed SA benefit by raising its amount and by making the income requirement for eligibility less sever (see Table 3). For instance, a former employee with seniority up to 15 years and income up to 1.5 times TM was receiving 336 euros, and now she receives 437 euros. Furthermore, former employees with income between 1.5 and 2 times

[4] <http://www.lavoro.gov.it/notizie/Documents/Verbale-incontro-Governo-CGIL-CISL-UIL-28settembre2016.pdf> (last access 19.10.2017).

[5] Namely, *importo aggiuntivo*, *maggiorazione sociale*, *incremento della maggiorazione sociale*. All of them are conditioned on specific age and income requirements, more severe than AS and TM.

TM are now eligible to SA and receive 336 euros in the case of a seniority smaller or equal to 15 years. As a consequence of the reform, the number of recipients was estimated by government to increase from about 2,1 to 3,4 million.

The second measure in favour of lower pensions was the alignment of no-tax area between labour and pension incomes. Pension incomes bear a fiscal burden higher than labour incomes because of both tax allowances, which are differentiated by income origin, and *bonus Irpef*. The differential tax burden depends on the taxable income: its maximum amount is about 1.200 euros when taxable income is equal to 15.000 euros, it disappears for incomes higher than 55.000 euros (see Figure 1). 2017 Budget Law established the tax exempted income of pensioners older than 74 years to be equal to 8.000 euros, the same amount as in the case of the employees[6], but kept the additional burden for pensioners with income between 8.000 and 55.000 euros.

In the end, Budget Law reduced only marginally the additional fiscal burden on pension income, and supported low pensions by enhancing and enlarging one particular old age welfare benefit, whose principal aim is to diversify pension treatments of retired poor workers from the welfare benefit granted to any old poor individual. As a matter of fact, *somma aggiuntiva* is the unique benefit which allows retired poor workers to receive a treatment higher than any old poor individual, and therefore it represents the unique return of the contributions paid by poor workers. The need of thorough reform of pension treatments for poor workers in order to raise the implicit return of their social contributions has been pointed out by several papers (Raitano, 2011; Marano *et al.*, 2012). They argue that small implicit returns would discourage poor workers from contributing to social security system and would favour the development of shadow economy. Therefore, any measure which increases pension treatment of poor workers is reasonable.

Said that, the effectiveness of that measure in reducing income inequality could be argued, and that same objection was raised about *bonus Irpef* (Bazzoli *et al.*, 2017), introduced by government in 2015 Budget Law, and which brought about the political need of a compensating measure in favour of pensioners. Evidently, the main aim of both measures was not the alleviation of poverty and the reduction of economic inequality, but the support of low income workers. If anything, the flaw of the measure on *somma aggiuntiva* rests on the paucity of the remedy. Despite its enhance-

[6] No-tax area of pensioners younger than 75 years was aligned in 2015.

ment and enlargement, the gap between the pension treatment of a retired poor worker and that of an old individual who never contributed to social security system keeps on being restrained between 3 and 6 per cent of the total benefit received by a 70 year old pensioner. Further interventions will be necessary in the future.

3. *Softer eligibility requirements for retirement*

As above mentioned, the many derogations from eligibility requirements introduced since the harsh 2010-2011 reforms called for a more systematic approach, which could address the unintended consequences on labour demand and factor productivity of a higher retirement age. In fact, the policy drive towards longer working lives and active ageing rests on empirical evidence which exclusively focuses on long run trends, does not consider employment flows and concentrate only on the supply side adjustment to population ageing (Gruber, Wise, 2010). Within that approach, the cross-country correlation between employment rates of older individuals and youth employment rates is often mentioned as a proof that higher labour market participation by older workers does not crowds out younger workers, supports potential output and helps to bear the social costs of an ageing population.

However, when short-run effects of pension reforms are taken into account, labour demand emerges as the dominating factor. In a short run framework and in the presence of employment protection legislation, a raise of legal retirement age forces an increase of old workers' employment and that impinges on the performance of the firms and so on their demand of younger workers. Two are the economic forces that lead the short-run reaction of profit maximizing firms to a raise of retirement requirements (Boeri, Garibaldi, Moen, 2016; Bertoni, Brunello, 2017): first, the marginal returns on labour decreases, and that lowers the economic performance of the firms and the demand of younger workers. That effect is even stronger when an increasing gap exists between the age profile of labour productivity and the age profile of contractual wages (Ilmakunnas *et al.*, 2010), or if employers are more probable to retain productive employees when they are eligible to early retirement, and they encourage the others to leave (Gabriele *et al.*, 2017). Second, the complementarity/substitut-

ability among workers of different age determines the specific effect of higher retirement requirements on the demand of young labour. In other words, even though the forced raise of old employment curtails the labour demand of all the other workers, at the same time the labour demand of the very young workers could increase if old and very young workers are complementary between each other.

As a matter of fact, in the last years, and in parallel with the raise of national retirement ages, the employment rates of younger and older workers have shown significantly diverging trends, and that it is true in the whole Europe and with even a stronger intensity in Italy (Boeri, Garibaldi, Moen, 2016). That evidence is obviously affected by the impact of the Great Recession on labour market, however, in the light of the above mentioned literature, it can be interpreted as the result of a short-run, labour demand driven reaction to higher retirement ages as well, and it raised the political support by trade unions and by business organizations to policy reforms which could make it the retirement requirements softer, in order to help both workers and firms to adjust to rough increase in retirement age brought about in 2010-2011.

We focus on the six main measures addressed to retirement eligibility requirements introduced by 2017 Budget Law: advance pension (APE), advance supplementary annuity (RITA), social advance pension (Social APE), anticipated retirement of early workers (EW) and of workers in arduous and hazardous jobs (WAHJ), and finally, as already mentioned, the eighth measures in derogation form the pension requirements established in 2010-2011 (8th MID). Two out of six measures modified already existing retirement schemes by enlarging their eligibility requirements, WAHJ and 8th MID, while the other four measures established new retirement schemes. The most innovative measure was APE, which allows to anticipate old age retirement up to 3 years and seven months earlier than legal retirement age. During the pension anticipation period and as a form of incentive, the employer may keep on paying the social security contributions of the worker in order to increase her old age pension when she reaches the legal age of retirement. Applicants to the new retirement scheme have to be at least 63 years old and their social security account has to show payments for at least 20 years. The advance pension is paid by a financing institution, and the loan is returned in 20 years, starting from the date when worker is eligible for old age pension. The financing institution is covered from mortality risk of the pensioner by a mandatory insurance policy. There are two income requirement to have access to APE: first, the

monthly repayments, inclusive of loan principal, interests and insurance premium, has to be lower than 30 per cent of net old age pension; second, pension net of monthly loan repayment has to be higher than 1.4 times the TM[7]. APE is essentially a financial transaction and consequently its costs for public finances are very limited, because they only relate to the personal tax deducibility of interest payments on the loan. Very similar to APE is RITA[8]. Workers who participate to supplementary pension schemes may apply to an advance supplementary pension, and requirements to access it are analogous to the ones above presented in the case of APE.

Social APE is a temporary measure reserved to specific types of workers at least 63 years old, and which covers the income gap before the old age pension. The work seniority requirement to access the scheme is 30 years for workers who are in need of social help: (I) unemployed individuals without a social safety net in the previous three months; (II) those taking care of severely disabled family members; (III) seriously disabled workers. The seniority eligibility requirement is 36 years of social security payments in the case of workers who in the previous six years were employed in particularly demanding activities, such as construction and mining, driving trucks and trains, nurses, kindergarten teachers, tanning and cleaning industries, porters. The temporary allowance is received until the worker is eligible to old age pension and it amounts to the value of the old age pension up to a maximum limit of 1.500 euros a month. Social APE is expected to be granted to about 40 thousand retirees in 2018, given the financial resources available in Budget Law for that specific measure.

More favourable eligibility requirements were established for specific types of early workers. EW are individuals who had worked one year before their nineteenth birthday, and they were allowed to retire after 41 years of social security payments, provided that they either in the previous six years have been employed in particularly demanding activities, as defined above, or have worked in in arduous and hazardous jobs, as defined below. The 41 years seniority requirement is a significant reduction with respect to the standard requirement for anticipated retirement, which was 42/41 years and 10 months for men/women. However, the EW seniority requirement is still subject to be adjusted to variations in life expectancy

[7] *Trattamento minimo* is the minimum amount of social security pension for a retiree. See Table 2 for its annual amount.
[8] Rendita Integrativa Temporanea Anticipata.

at 65 years. EW scheme is expected to be granted to about 25 thousand retirees[9].

Workers in arduous and hazardous jobs were spared some of the effects of 2010-2011 pension reforms, and in 2011 they kept the right to anticipated retirement when the age of sixty-two and the seniority of 36 years were jointly reached[10]. However, those age eligibility requirements were subject to the adjustment to life expectation variations, and so before the 2017 Budget Law the eligibility age was sixty-two years and seven months[11]. WAHJ are identified as those involved in the following activities: underground miner workers, frogmen divers, workers exposed at extreme temperatures, shipbuilding workers operating in confined spaces, asbestos workers, assembly line workers, night workers, public transport drivers. In order to be eligible to anticipated retirement, those arduous and hazardous activities had to be undertaken for 7 years in the last ten ones, and for half of the working career. 2017 Budget Law introduced various innovations to previous rules on WAHJ: the eligibility conditions based on years of exposures to arduous and hazardous jobs were eased; the age eligibility requirements were reduced by one year for employees and one year and half for self-employed; the adjustment of age requirements to variations of life expectancy was called off till 2025. The easier eligibility conditions are expected to increase the number of the new beneficiaries by 5.5 thousand units, which amounts to about 15 per cent of the previous annual flow. Finally, the 8th MID granted the pre-2011 retirement eligibility conditions to workers fired, or involved in company bankruptcies, or receiving social security transfers, even though the employment relationship was interrupted several years later than 2011.

In summary, the measures in 2017 Budget Law provide new forms of anticipated retirement, which may be arranged in two broad sets: on one side, the measures which have a universal nature and are accessible to old workers, whatever the industrial sector, or the job where they were active. This is the case of APE and RITA. The absence of any occupational or professional requirement, however, is counterbalanced by quite demanding income eligibility requirements. On the other side, there are the measures

[9] In the documentation attached to Budget Law an interesting information was published: in 2015 the 70 per cent of 200 thousands early retirees had worked at least one year before their nineteenth birthday. In other words, most of the early retirees are early workers.

[10] For a survey of retirement regimes in Europe for WAHJ, see Natali *et al.* (2016).

[11] Those requirements applied to employees. Self-employed workers were eligible one year and half later.

directed to workers employed in demanding activities, or in arduous and hazardous jobs: Social APE, anticipated retirement for EW and WAHJ. For those measures the absence of income eligibility requirements is counterbalanced by binding occupational and professional requirements. In the middle, there is only one measure whose eligibility requirements are based neither on income, nor on occupation or profession, and that is Social APE directed to unemployed. Social APE could become the retirement scheme favoured by old workers who bear the effects of increasing retirement age, and the connected short-run fall of labour demand, and who are not protected by employment legislature, because self-employed, or working on a temporary basis, or in very small firms. Said that, a final evaluation has to be expressed on the new measures and their appropriateness to answer the political and social needs that they were supposed to address.

4. *Income inequality, actuarial fairness*

The reduction of income inequalities among workers and retirees does not seem to be the main aim of the set of measures above described. Actually, their overall impact on income inequality is ambiguous, given that some of them, typically Social APE, support the wellbeing of workers in vulnerable conditions, but others could have a neutral impact on distribution, as in the case of SA, which will benefit many high income households because household income is not among its eligibility requirements, or even a regressive impact, given that APE and RITA have a significant private cost[12], which will concentrate anticipated pensions and connected interest payments' tax allowance among medium-high income workers.

However, welfare inequality has many dimensions and inequality in income is just one of them. Growing inequalities in health status and life expectancy have been drawing an increasing attention by researchers (Marmot, 2015; NASEM, 2015) and international bodies (WHO, 2012) and many policy proposals have lately been put forward to tackle that issue (OECD, 2016; Holzman *et al*, 2017; Lee, Sanchez-Romero, 2017). The innovative nature of some of the new measures in 2017 Budget Law can be better appraised if we consider their impact not on income inequality,

[12] See <https://www.progetica.it/simulatore-ape/> (last access 19.10.2017). Any year of anticipation of retirement is evaluated to reduce net pension by about six per cent.

but on the principle of actuarial fairness, which underpins the whole Italian pension system. In allegiance to that principle the main parameters of Italian pension system rest on population life expectancy and its variations. In 1995 the computation formula of younger workers was based on population life expectancy; in 2010-2011 the periodical adjustments both of computation formula and of age and work-seniority eligibility requirements for retirement were linked to variations in population life expectancy. Actuarial fairness vows that the present value of the benefits which any individual is expected to receive from social security equals the present value of contributions collected in his name. As a consequence, in an actuarially fair, mandatory social security system longevity risk is supposed to be shared among members without any equitable redistribution of net benefits in favour of disadvantaged groups, and progressive redistribution is left to other measures. Now, in presence of wide and growing ex-ante social differences in life expectancy, the pledge of fairness breaks down and social security brings about a redistribution of resources from low-income to high-income individuals.

In other words, social differences in life expectancy represent a major challenge for social security systems, and a relevant feature of social inequalities. In Italy, till 2017 Budget Law the principle of actuarial fairness based on population life expectancy had been applied rigidly and uniformly to all the retirees, and ex-ante life expectation differences had been taken into no consideration. On the contrary, Social APE, anticipated retirement for EA and WAHJ apply softer eligibility requirements to workers in harsh occupations, and in vulnerable social conditions, who can be expected to have shorter life expectancy[13]. Therefore, they can be considered innovative measures among the policies aimed at contrasting social inequalities, because they represent the first attempt to take into account the inequalities in life expectancy in social security policy and reserve favourable eligibility requirements to groups of workers who have smaller longevity.

Once life expectancy's heterogeneity has been acknowledged as a relevant issue for the social security system, however, a thorough overhaul of eligibility requirements and benefit computations is very much needed. Three main questions should be answered: how to identify harsh occupations and how many years of retirement anticipation to allow; how compute the pension benefits for harsh workers once that actuarial fairness

[13] Pestieau, Racionero (2016) presents a model where the optimality of allowing the pension policies to differ by occupation is analysed in an analytical framework where longevity is private information and free riding is avoided by optimal policy design.

based on population life expectancy is admittedly inadequate to ensure fairness; how to avoid free riding by individuals who could try to be included in vulnerable workers in order to take advantage from softer eligibility requirements, and possibly improved benefits.

Bibliography

Bazzoli, M., De Poli, S., Florio, C.V. (2017). The impacts of the Renzi government's economic policies on income distribution. In Ginebri, S. (ed.), *Italian Fiscal Policy Review 2015*. Roma: Roma TrE-Press.

Bertoni, M., Brunello, G. (2017). *Does A Higher Retirement Age Reduce Youth Employment?*. IZA Discussion Paper 10733. <https://ssrn.com/abstract=2960542> (last access 19.10.2017).

Boeri, T., Garibaldi, P., Moen, E.R. (2016). A clash of generations? Increase in Retirement Age and Labor Demand for Youth. *CEPR Discussion Papers*, n. 11422.

European Commission, Directorate-General for Economic and Financial Affairs (2015). The 2015 Ageing Report. Economic and budgetary projections for the 28 EU Member States (2013-2060). *European Economy*, n. 3, <http://ec.europa.eu/economy_finance/publications/european_economy/2015/pdf/ee3_en.pdf> (last access 19.10.2017).

Gabriele, R., Tundis, E., Zaninotto, E. (2017). Ageing workforce and productivity: the unintended effects of retirement regulation in Italy. *Economia Politica*, 35(6), <https://doi.org/10.1007/s40888-017-0079-x> (last access 19.10.2017).

Gruber, J., Wise, D., eds. (2010). *Social security programs and retirement around the world. The relationship to youth unemployment*. Chicago: University of Chicago Press.

Holzmann, R., Alonso-Garcia, J., Labit-Hardy, H., Villegas, A.M. (2017). *NDC Schemes and Heterogeneity in Longevity: Proposals for Re-design*. Paper presented to the 3rd NDC Conference, Rome, October 5-6.

Ilmakunnas, P., van Ours, J., Skirbekk, V., Weiss, M. (2010). Age and Productivity. In Garibaldi, P., Oliveira Martins, J., van Ours, J. (eds.), *Ageing, Health, and Productivity: The Economics of Increased Life Expectancy*, Oxford: Oxford University Press.

ISTAT (2017). *Condizioni di vita dei pensionati. Anni 2015-2016*, <https://www.istat.it/it/files/2017/12/Focus_pensionati_DEF.pdf> (last access 19.10.2017).

Lee, R.D., Sanchez-Romero, M. (2017). *Overview of the Relationship of Heterogeneity in Life Expectancy to Pension Outcomes and Lifetime Income*. Paper presented to the 3rd NDC Conference, Rome, October 5-6.

Marano, A., Mazzaferro, C., Morciano, M. (2012). The strengths and failures of incentive mechanism in notional defined contribution pension system. *Giornale degli economisti e Annali di economia,* 71(1), 33-70.

Marmot, M. (2015). *The health gap: the challenge of an unequal world*. London: Bloomsbury Publishing.

MEF, Ragioneria Generale dello Stato (2017). *Le tendenze di medio-lungo periodo del sistema pensionistico e socio-sanitario. Rapporto n. 18*, <http://www.rgs.mef.gov.it/_Documenti/VERSIONE-I/Attivit--i/Spesa-soci/Attivita_di_previsione_RGS/2017/NARP2017-08.pdf> (last access 19.10.2017).

Mercuri, M.C. (2017). La manovra per il 2017 nel quadro programmatico dei conti pubblici. *UPB. Focus tematico*, n. 1, <http://www.upbilancio.it/wp-content/uploads/2017/01/Focus_n_2_2017.pdf> (last access 19.10.2017).

NASEM, National Academies of Sciences, Engineering, and Medicine (2015). *The Growing Gap in Life Expectancy by Income: Implications for Federal Programs and Policy Responses*. Washington, DC: The National Academies Press.

Natali, D., Spasova, S., Vanhercke, B. (2016). Retirement regimes for workers in arduous or hazardous jobs in Europe. A study of national policies. *European Commission. European Social Policy Network*, <http://ec.europa.eu/social/BlobServlet?docId=16329&langId=en> (last access 19.10.2017).

OECD (2016). Fragmentation of retirement markets due to differences in life expectancy. In *OECD Business and Finance Outlook 2016*, Paris: OECD Publishing, 177-206

Pestieau, P., Racionero, M. (2016). Harsh occupations, life expectancy and social security. *Economic Modelling*, 58, 194-202.

Raitano, M. (2011). Carriere fragili e pensioni attese: i possibili correttivi al sistema contributivo e la proposta di una pensione di garanzia. *La Rivista delle Politiche Sociali*, n. 3, 99-130.

Salerno, N.C., Marchionni, E. (2016). Il dibattito sulla flessibilità pensionistica. *UPB. Focus tematico*, n. 6, <http://www.upbilancio.it/wp-content/uploads/2016/09/Focus_61.pdf> (last access 19.10.2017).

WHO, Regional office for Europe (2012). *Report on social determinants of health and the health divide in the WHO European region. Executive Summary*, <http://www.euro.who.int/__data/assets/pdf_file/0004/171337/RC62BD05-Executive-summary-Report-on-social-determinants-of-health-and-the-health-divide-in-the-WHO-European-Region.pdf> (last access 19.10.2017).

Table 1. Budget impact of main pension policy innovations (Euro mln).

	2017	2018	2019
Higher expenditure	**1,793**	**2,575**	**2,831**
raise of low pensions (somma aggiuntiva, SA)	800	800	800
social advance pension (Social APE)	300	609	647
anticipated retirement of early workers (EW)	360	550	570
anticipated retirement of workers in arduous and hazardous jobs (WAHJ)	85	86	92
retirement in derogation form pension rules (8thMID)	137	305	368
early retirement of working women	18	47	88
summing up contributions	93	144	182
no penalties on younger retirees		34	84
Lower revenues	**321**	**539**	**616**
no tax area on pension incomes	213	247	246
alignment of contribution rates	108	292	370
Total	**2,114**	**3,114**	**3,447**

Source: UPB (2017).

Table 2. Welfare benefits to older individuals (annual amounts in euro, 2017).

Assegno sociale (AS)	5,825
Trattamento minimo (TM)	6,525
AS plus additional benefits, at the age of 70	8,298
Somma aggiuntiva (SA) with work seniority (a)	
less or equal to 15/18 years	437
between 15/18 years and 25/28 years	546
larger than 25/28 years	655
TM plus SA and additional benefits, at the age of 70 (b) with work seniority (a)	
less or equal to 15/18 years	8,579
between 15/18 years and 25/28 years	8,688
Larger than 25/28 years	8,797

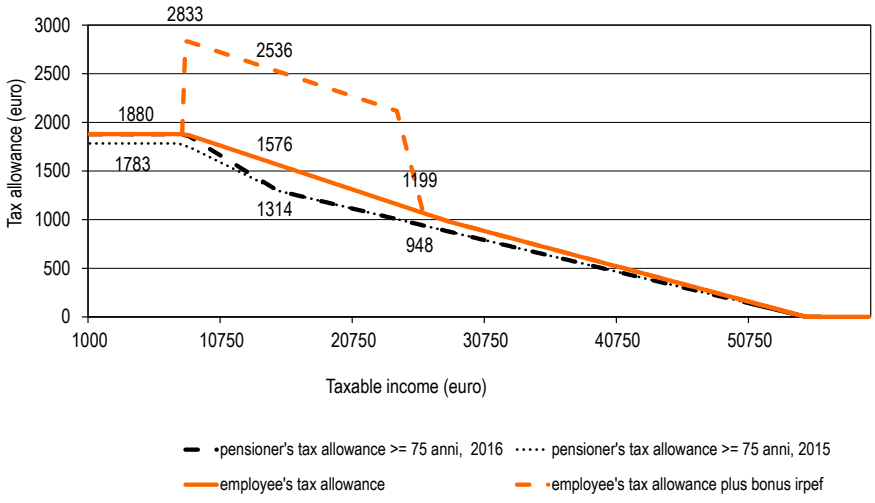
(a) the seniority thresholds apply to employee/self-empolyed

(b) SA and the additional benefits can not be completely added. This explains why the difference between the total benefits received at the age of 70 with or without SA is smaller than the corresponding SA

Table 3. *Somma aggiuntiva* before and after the 2017 reform (annual amount in euro)

Income requirement for eligibility	**Years of seniorities**		**Annual amount in euro**	
	Employees	*Self-employed*	*untill 2016*	*from 2017*
less or equal 1.5 times «trattamento minimo»	less or equal to 15	less or equal to 18	336	437
	from 16 to 25	from 19 to 28	420	546
	larger than 25	larger than 28	504	655
from 1.5 to 2 times «trattamento minimo»	less or equal to 15	less or equal to 18		336
	from 16 to 25	from 19 to 28		420
	larger than 25	larger than 28		504

Figure 1. Tax allowances for employees and pensioners older than 75 year (euro)



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